

FIRST MONITORING REPORT

Emission reductions: 129,550 tCO₂e

Monitoring period: 11th November 2008 – 31st May 2009
(inclusive of both days)

Version 2
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1. Introduction.

This is the First Monitoring Report for the referred project activity. The purpose of this document is to:

1. Report the emission reductions generated by 123 MW wind power project in Oklahoma, USA (VCS Project ID 157, with validation report dated 31/12/2009) during the period 11th November 2008 to 31st May 2009, and
2. To serve as the basis for verification, certification and issuance of VERs.

The start of operations, marked by the start of commercial operations which is October 26, 2008, is the start of the crediting period, which will last for ten years from this moment, as per the PD.

The start of the monitoring period for this Monitoring Report is November 11th, 2008, because that is the date the first turbine was commissioned. There were tests going on beforehand, for example 1 MWh was generated on November 7th 2008, but as this date was before the official commissioning of the first turbine, this generation was not considered. The start of the monitoring period is therefore November 11th, 2008.

2. General description of the project.

2.1. Project activity

The objective of the project activity is to construct, operate and maintain a wind power project in Southern Custer and Roger Mills counties in the North American state of Oklahoma. The project will provide renewable power to Southwest Power Pool (SPP) Regional Transmission Organization (RTO) with interconnection with the Western Farmers Electric Cooperative. The project will reduce greenhouse gas emissions caused by reliance on fossil fuels.

The 123 MW project activity is comprised of 82 Acciona Wind Turbine Generators (WTGs), with each WTG having a capacity of 1,5 MW. Turbines commissioning dates were as follows:

Turbine	Dates	Location	
	Commissioning	Latitude	Longitude
A1.01	12/17/08	35 32 46.69910	99 22 06.86166
A1.02	12/18/08	35 32 44.82597	99 21 57.05673
A1.03	12/17/08	35 32 37.94108	99 21 45.68363
A1.04	12/16/08	35 32 34.96413	99 21 34.86064
A1.05	12/16/08	35 32 26.21120	99 21 24.95269
A1.06	12/17/08	35 31 53.17795	99 21 42.01771
A1.07	12/18/08	35 31 53.36020	99 21 36.00451
A1.08	12/17/08	35 31 53.40978	99 21 29.15546
A1.09	12/18/08	35 31 53.30498	99 21 23.40115
A1.10	12/16/08	35 31 53.34609	99 21 17.52471
A1.11	12/18/08	35 31 53.31048	99 21 11.44505
A1.12	12/17/08	35 31 53.37973	99 20 59.74539
A1.13	12/17/08	35 31 53.47098	99 20 53.54401
A1.14	12/18/08	35 31 53.59599	99 20 44.94563
A2.01	11/25/08	35 33 03.71817	99 25 24.87123
A2.02	11/25/08	35 33 03.79131	99 25 30.87131
A2.03	12/12/08	35 33 03.84881	99 25 37.01788
A2.04	11/26/08	35 33 03.76545	99 25 43.04711
A2.05	11/24/08	35 33 03.88504	99 25 51.48664
A2.06	12/04/08	35 33 18.23004	99 26 03.68256
A2.07	11/25/08	35 33 18.06794	99 26 09.80187
A2.08	12/07/08	35 33 18.38151	99 26 15.91701
A2.09	11/25/08	35 33 19.36490	99 26 22.07751
A2.10	12/07/08	35 33 17.58203	99 26 30.42400
A3.01	12/12/08	35 32 41.14209	99 24 12.59977
A3.02	12/12/08	35 32 41.11453	99 24 18.54139
A3.03	12/10/08	35 33 02.31001	99 24 14.46753
A3.04	12/12/08	35 33 02.25307	99 24 20.64588
A3.05	12/18/08	35 32 58.80764	99 24 03.95839
A3.06	12/18/08	35 32 46.77846	99 24 26.87370
A3.07	12/14/08	35 32 46.85242	99 24 33.05712
A3.08	12/14/08	35 32 46.82775	99 24 39.31740
A3.09	12/14/08	35 32 45.61453	99 24 51.28095
A3.10	12/14/08	35 32 45.37438	99 24 57.62711
A3.11	12/15/08	35 32 45.62098	99 25 03.98985
A4.01	12/02/08	35 32 18.52894	99 24 44.13472
A4.02	12/12/08	35 32 28.86107	99 25 14.79755
A4.03	12/05/08	35 32 28.64540	99 25 20.58721
A4.04	12/07/08	35 32 28.59273	99 25 26.44690
A4.05	12/07/08	35 32 29.24218	99 25 38.58372
A4.06	12/14/08	35 32 29.94703	99 25 44.78251
A4.07	12/07/08	35 32 47.46958	99 25 52.76057
A4.08	12/18/08	35 32 45.87116	99 26 00.30700
A4.09	12/01/08	35 32 44.43373	99 26 10.44258
A4.10	12/02/08	35 32 45.58577	99 26 19.22241
A4.11	12/01/08	35 32 46.23892	99 26 28.20228
A5.01	12/05/08	35 32 01.54547	99 24 05.50626
A5.02	11/19/08	35 32 02.13378	99 24 11.59560
A5.03	11/18/08	35 32 02.26884	99 24 17.73608
A5.04	12/04/08	35 32 06.14133	99 24 26.42905
A5.05	12/06/08	35 32 06.39011	99 24 32.75220
A5.06	12/01/08	35 32 12.26176	99 24 52.18423
A5.07	11/19/08	35 32 12.17890	99 24 58.48484
A5.08	12/06/08	35 32 07.01081	99 25 08.26812
A5.09	12/05/08	35 32 06.74851	99 25 14.51124
A5.10	11/18/08	35 32 06.28833	99 25 22.64503
A5.11	12/01/08	35 32 08.55236	99 25 34.81980
A5.12	11/18/08	35 32 08.67946	99 25 40.94305
A6.01	11/11/08	35 31 45.20520	99 24 53.53410
A6.02	11/14/08	35 31 45.78695	99 24 59.65329
A6.03	11/16/08	35 31 46.00956	99 25 06.65636
A6.04	11/14/08	35 31 46.06713	99 25 12.68871
A6.05	11/17/08	35 31 46.03456	99 25 18.90903
A6.06	11/18/08	35 31 45.77848	99 25 24.89676
A6.07	12/06/08	35 31 49.20243	99 25 34.56340
A6.08	11/18/08	35 31 49.24920	99 25 40.67346
A6.09	11/15/08	35 31 52.61411	99 25 55.69097
A6.10	11/15/08	35 31 52.34888	99 26 03.97502
A6.11	11/15/08	35 31 52.13432	99 26 11.66682
A6.12	11/14/08	35 31 53.06692	99 26 18.03149
A7.01	12/07/08	35 31 54.80032	99 23 22.56216
A7.02	12/07/08	35 31 53.49177	99 23 32.52954
A7.03	12/05/08	35 31 54.76104	99 23 39.64153
A7.04	12/05/08	35 31 54.71697	99 23 45.76742
A7.05	12/07/08	35 31 54.72374	99 23 51.85400
A7.06	12/11/08	35 31 42.74456	99 24 07.97127
A7.07	12/18/08	35 31 42.67484	99 24 14.14334
A7.08	12/04/08	35 31 42.65221	99 24 20.23576
A7.09	11/26/08	35 31 42.63466	99 24 27.53667
A7.10	12/15/08	35 31 43.20576	99 24 35.60414
A7.11	12/07/08	35 31 43.79690	99 24 41.72731
A7.12	12/12/08	35 31 44.55400	99 24 47.53600

The project is located 10 miles north of Elk City in Western Oklahoma at grid coordinates: Latitude: 35.5°N Longitude: -99.4°W.

2.2. Technology employed by the project activity

The Red Hills wind project will consist of 82 Acciona AW-77/1500 Class IEC IIa turbines. Each turbine will have a hub height of 80 meters (m) and a rotor diameter of 77 m, for a total height of approximately 118.5 m. The turbines will be accessed by constructed project roads, and interconnected by communication and electric power collection cable within the wind farm.

The design of the AW-77/1500 was developed based on the experience gained by Acciona in the course of operating turbines manufactured by others, and the lessons learned from over ten years of operations were incorporated into the AW-77/1500 design. The Acciona AW77/1500 is a proprietary design that incorporates features such as the dual-bearing main shaft to reduce axial loads on the gearbox, internal access to the inside of the hub, and a wider nacelle enclosure to make servicing the AW-77/1500 easier and safer than servicing other manufacturer's turbines. The turbines also have noise insulation and utilize non-flammable materials. These design elements create an unsurpassed turbine known for performance that exceeds the highest industry standards.

Each wind turbine will be connected to a pad mount transformer located at the base of the tower. The individual pad mount transformers will be interconnected in series ("Daisy Chained") with other pad mount transformers forming a series of circuits or "strings" called the collection system. The collection system (34.5 kV electrical lines) will run underground to the project substation. Here the voltage will be increased to 138 kV and then sent via an overhead transmission line to the interconnection substation at the Point of Interconnect (POI) at Western Farmers Electric Cooperative transmission line.

3. Monitoring methodology and plan.

Among the methodologies approved by UNFCCC for grid connected electricity generation from renewable sources, ACM0002 (version 9) was chosen as the most suitable for this project activity. This baseline methodology shall be used in conjunction with the approved monitoring methodology ACM0002 "Consolidated monitoring methodology for grid-connected electricity generation from renewable sources".

Taking into account that the project used ex-ante Operating Margin and ex-ante Building Margin, the main parameter to be monitored is the Net electricity supplied to the grid by the project (EG_y), which is composed of total electricity produced (TEG_y) minus electricity consumed by the project.

The data unit will be MWh and the plant maintains the records of the total energy produced to the grid and the total energy consumed from the grid. Net electricity supply to the grid is calculated from those two data.

4. Quality Control and Quality Assurance.

4.1. QA/QC procedures

Electricity supplied to the grid by the project is measured through national standard electricity metering instruments recorded monthly by the project entity.

Two meters (Meter of Record and Check) are installed at the Point of Interconnection. Production and consumption registered by the Meter of Record alone is adequate for the purpose of billing. The Check meter should be used when the Meter of Record fails to register, in which case the meter agent, Constellation Energy Control and Dispatch, shall adjust measurements by using the Interconnection Customer's Check meter, if installed. Both the meters are read for electricity generation and electricity consumption purposes on a monthly basis.

The import of electricity from the grid is recorded by the same meters, since these are import-export meters. Net electricity supply to the grid (EG_y), the total electricity produced by the project activity (TEG_y) minus the electricity consumed from the grid, is used to calculate VERs. This data has been cross-verified with the invoices raised by SPP and payment received against the invoices.

The Meter of Record and Check meters have the same accuracy level of 0.1%, and both were tested for accuracy before installation..

Serial numbers for the meters are as follows:

- Meter of Record: 82093242
- Check meter: LT-0808A309-01

4.2. Meter reading procedure

Meter of record. As per the interconnection agreement, data is telemetered to one or more locations. Such telemetered data is used as the official measurement of the amount of energy delivered from the Large Generating Facility to the Point of Interconnection.

CECD performs meter data monitoring tasks for the Red Hills wind farm. A meter communication port has been made available to CECD by Western Farmers Electric Cooperative for the Meter of Record. A meter communication port has also been made available for the Check Meter.

The order of events leading from meter readings to invoices from Southwest Power Pool is as follow:

- Bidirectional hourly meter data is directly measured by the Meter of Record
- Meter data is telemetered to CECD

- Daily meter data is sent from CECD to SPP
- SPP generates Settlement Statements based on meter data and market prices
- SPP generates an invoice based on Settlement Statements
- SPP pays Red Hills via a wire transfer

4.3. Roles and responsibilities

Organisational structure, roles and responsibilities are stated in a separate document titled: 'Monitoring and verification manual for VCS purposes'.

5. Calibration of the meters.

The Meter of Record was calibrated before installation on October 15th, 2008 by Western Farmers Electric Cooperative. Periodic tests should be done every two years.

The Check meter was calibrated before installation on September 6th 2008 by Schneider Electric. Even though test procedures for the Check Meter are not governed by the Interconnection Agreement and periodic tests will only be necessary every four years, periodic controls discovered the Check Meter was not reading voltage. After trying to reboot it, it did not return to normal operation. On May 1st, 2009 the decision was made to remove the meter and send it off for testing and repair, so high quality measurement is guaranteed. New calibration on the meter was done by Power Measurement on May 11th 2009 and the meter was reinstalled on May 28th 2009.

Following data verification process, during monthly meter readings, the variation between the main meter and check meter have been less than +/- 2%. Data has been provided to verifier for verification along with excel sheet results.

6. Operation & Maintenance.

Red Hills Wind Project, L.L.C. has a two year warranty for the turbines and a two year Turbine Services Agreement with Acciona Wind Power North America LLC. For carrying out the necessary maintenance of the project activity Operation and Maintenance Agreement has been signed with Acciona Wind Energy USA LLC.

7. Calculation of emission reductions.

7.1. Emission reductions calculation equation.

The emission reduction ER_y by the project activity during a given year y is the difference between baseline emissions (BE_y), project emissions (PE_y) and emissions due to leakage (L_y), as follows:

$$ER_y = BE_y - PE_y - L_y$$

7.2. Project emissions.

The project involves the operation of a zero-emission wind farm, so $PE_y = 0$

7.3. Leakage.

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 NIL.

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.

7.4. 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 system for which active power will be drawn from the grid. The metering of the drawn power will be done by the same import-export meters.

Net electricity supply to the grid (EG_y) is the total electricity produced by the project activity (TEG_y^1) 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 PD registered, $EF_y = 0.67 tCO_2/MWh$.

Net electricity supplied to the grid by the project (EG_y) is measured by the meters, resulting in the net production figures shown in the below table:

¹ To be conservative, TEG_y is the minimum production from the Meter of Record production ($TEG_{y,MR}$) and the Check Meter production ($TEG_{y,CM}$).

Month	METER OF RECORD (MWh)		CHECK METER (MWh)		CO2 CALCULATION CHECK CORRECT (MWh)		
	Consumption	Production (TEG _{MR})	Consumption	Production (TEG _{CM})	Max consumpt.	Min production (TEG _y)	Net production (EG _y)
13 Nov. 2008 - 30 Nov. 2008	57.20	881.00	51.98	754.11	57.20	881.00	823.80
December 08	45.90	7,802.00	47.17	7,800.03	47.17	7,800.03	7,752.86
January 09	55.11	29,023.00	60.51	29,018.74	60.51	29,018.74	28,958.24
February 09	20.58	40,575.00	21.06	40,585.36	21.06	40,575.00	40,553.94
March 09	25.12	44,752.00	25.66	41,390.54	25.12	44,752.00	44,726.88
April 09	20.70	44,895.00	0.66	4,540.82	20.70	44,895.00	44,874.30
May-09	58.81	25,722.00	7.69	3,028.28	58.81	25,722.00	25,663.19
	283.42	193,650.00	214.71	127,117.88	290.56	193,643.77	193,353.21
Check meter programmed Nov 15th					Baseline		0.67 tCO2/MWh
Check meter failure noticed March 24th					Emission reductions		129,546.65 VERs

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

7.5. Emission reductions.

As explained above, $ER_y = BE_y$.

Even though the Meter of Record has been working properly in the crediting period for which this report is prepared and this measurement alone is adequate for the purpose of billing, during the time when the Check Meter was functioning properly for the whole month, this data has been taken into account as well, and the “minimum” export and ‘maximum’ import data from both meters has been used for a conservative approach. Total emission reductions during the monitoring period were 129,546 tn CO₂

7.6 Comparison with PD estimate.

PERIOD MONITORED	11 th November 2008 to 31 st May 2009	
Total estimated reduction in PD	293,839	tCO2 per annum
Estimated reduction for the period	161,007	tCO2 for the 200 days
Real reduction	129,546	tCO2
Deviation	-20%	

The deviation calculation is purely pro-rated by the number of days in the monitoring period, and does not correlate with the wind pattern during the year.

The reason for the deviation between estimated and real emission reductions is that the beginning of the period marks the start of operation of the wind farm, when electricity production was lower.

Emission reductions for the remainder of the period were in line with PD estimates.

8. Information Reference List.

Reference no.	Document or type of information
1	Final Project Document for VCS project ‘123 MW wind power project in Oklahoma, USA’, VCS registration reference n° VCS157 dated November 2008, VCS website reference: https://vcsregistry1.apx.com/mymodule/ProjectDoc/EditProjectDoc.asp?id1=157
2	Final validation report n° CCP.Vol.0399, issued by SGS United Kingdom Ltd, dated on

	November 18 th 2009, signed on December 2 nd 2009
3	Monitoring and verification manual for VCS purposes, date approved 12 October 2008
4	Training evidence, dated 27 October 2008
5	Initial calibration certificate for Meter of Record dated 15 th October 2008
6	Initial calibration certificate for Check meter dated 6 th September 2008
7	Second calibration certificate for Check meter dated 11 th May 2009
8	Excel monthly deviation sheets if we decide it for data verification process
9	Excel sheet for net electricity calculation for period 11th November 2008 to 31 st May 2009
10	Invoices from period November 2008 to May 2009
11	Payment received from invoices period November 2008 to May 2009
12	Monitoring report dated 3 rd May 2010

9. Submission and authorization

This monitoring report has been prepared and submitted by the Project Entity, Red Hills Wind Project L.L.C. The below officer declares that the contents of the report provides an accurate representation of the monitoring results.

Name: Chris Vickery
Position: Settlement Specialist