

Monitoring Report

Title: Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm
Project

CDM Registration Reference Number: 2088

Monitoring period: 17 July 2008-22 Feb 2009

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1 Introduction

The purpose of this monitoring report for Hebei Yuxian Kongzhongcaoyuan 49.5MW wind farm project is to calculate the emission reductions achieved by the project activity in the period covered by this report, and to serve as the basis for the verification of these reductions and issuance of the VCS.

1.1 monitoring period

17/07/2008-22/02/2009

1.2 Document details

Version 02

2 Project description

2.1 Title

Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm Project

2.2 UNFCCC reference number

2088

2.3 Project participants

Hebei Construction Investment Yuzhou Wind Energy Co., Ltd.

2.4 Project summary

Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm Project is located in the Xiagongcun Village of Yuxian County, Zhangjiakou City, Hebei Province in North China, The site location's coordinates are East Longitude of 114°30'45"~114°32'25"and North Latitude of 39°36'32"~39°33'58.6". The project consists of 33 turbines with the unit capacity of 1500kW. The turbines were manufactured by Dongfang Steam Turbine Works. The project is expected to generate electricity approximately 111.61 GWh per year. Through the onsite 110kv Step-up Substation, the wind power is delivered to the Laiyuan County 110kV transformer station which is connected with the North China Power Grid.

2.5 Category of Project activity

Sectoral scope 1: Energy industries

2.6 Eligible GHGs

1. Carbon dioxide

2.7 Project timeline**Table 1 Project timeline**

The generation date of the first turbine	17 July 2008
Project Commercial Operation Date	15 January 2009
CDM registration Date	23 February 2009
CDM crediting period(Renewable)	23 February 2009- 22 February 2016
Start of this monitoring period	17 July 2008
End of this monitoring period	22 February 2009

3 Methodology**3.1 Baseline Methodology**

The approved baseline methodology applied in the proposed project activity is ACM0002 – “Consolidated methodology for grid-connected electricity generation from renewable sources (version 06) ”.

Applying ACM0002, the emission reductions achieved by the project activity can be calculated by multiplying the net electricity supplied to the grid and the appropriate emission factor of the grid. The emission reductions ER_y by the project activity during a given year y is

$$ER_y = BE_y - EG_y \times EF_y$$

Where:

BE_y is the baseline emissions.

EG_y is the net electricity supplied to the grid.

EF_y is the CO₂ emission factor of the grid.

The emission factor EF_y of the grid is represented as a combination of the Operating Margin and the Build Margin, and was fixed for the duration of the monitoring period in the PD. The Operating Margin emission factor $EF_{OM,y}$ was calculated in the PD as 1.1208tCO₂e/MWh.the Build margin emission factor $EF_{BM,y}$ was calculated as 0.9397 tCO₂e/MWh.The weighted average of Operating and Build Margin factors is

$$EF_y = W_{OM} \times EF_{OM,y} + W_{BM} \times EF_{BM,y} = 1.0755 \text{ CO}_2\text{e/MWh.}$$

3.2 Monitoring Methodology

The approved monitoring methodology applied in the proposed project activity is ACM0002 – “ Consolidated methodology for grid-connected electricity generation from renewable sources (version 06) ”.

In keeping with the monitoring methodology, the following parameter needs to be monitored:

EG_y : the net electricity supplied to the grid.

Table 2 the parameter to be monitored

ID	Data type	Data variable	Data unit	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic /paper)	For how long is archived data to be kept?
EG_y	Electricity	Electricity supplied to the grid	MWh	Continuous reporting is done monthly	100%	Electronic with paper back up	During the crediting period and two years after

4 Monitoring data

The power line supplying electric power to the grid can also deliver power from the grid to the wind farm in case of emergencies and when the wind farm does not produce enough power for auxiliary power use. The metering equipment runs in two directions and records two readings, i.e. electricity supplied to the grid ($EG_{s,y}$) and electricity consumed from the grid ($EG_{c,y}$). The simplified electrical grid connection diagram is shown in the following figure1:

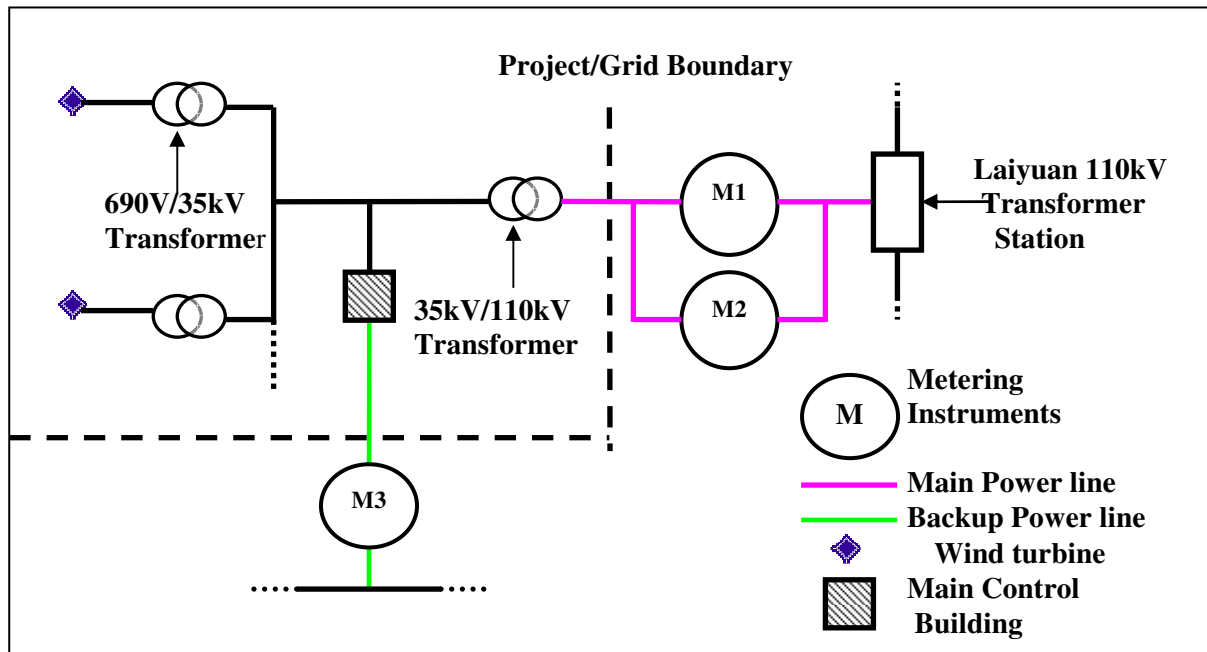


Figure 1 monitoring system flow chart of the proposed project.

The electricity supplied to North China Power Grid is continuously measured by the main meter installed at the output of onsite 110kV Step-up Substation (as shown at M1 in the Figure 1). The meter instrument at M2 in Figure 1 is the backup meter. The main meter and the backup one are as like as two peas. Both of them can measure the bi-directional electricity flows including exported to and imported from the grid via 110kV line.

The grid company will monitor the main meter at M1. The logbook of monthly operation is conducted by the project owner and conformed by the grid company. The sale receipts and invoices will serve as a cross-check. The project owner will read and record the main (M1) and backup (M2) instruments monthly.

According to the Power Purchase Agreement, the readings at 24:00 of the main meters were read and recorded by the grid company on the 24th of each month. A reading ($EG_{s,y}$) was recorded at 24:00 of 16 July 2008 for the crediting period started from 17 July 2008. The electricity consumed from the grid in February was regarded as the $EG_{c,y}$ of the wind farm in the first calendar month of the crediting period. This is conservative.

In case blackout in the main power line, power delivered to the project through the backup power line

($EG_{\text{backupline},y}$) is measured by instrument at M3 in Figure 1. M3 located in Laiyuan transformer station is monitored by Laiyuan County Power Supply Company. The cut-off time of M3 is at 24:00 on the 24th of each month. The power purchase invoice will be served as a cross-check.

Net electricity supplied to the grid by the project is calculated on a monthly basis as:

$$EG_y = EG_{s,y} - EG_{c,y} - EG_{\text{backupline},y}$$

With:

$EG_{s,y}$ is the electricity supplied to the grid by the project. $EG_{s,y}$ is monitored by M1 in Figure 1 and conducted by grid company and the project owner. The logbook of monthly operation is done by the project owner and confirmed by the grid company. The cut-off time is at 24:00 on the 24th of each month. The sale receipts will be served as cross-check.

$EG_{c,y}$ is the electricity consumed from the grid by the project through the main power line. $EG_{c,y}$ is monitored by M1 in Figure 1 and conducted by grid company and the project owner. The logbook of monthly operation is done by the project owner and confirmed by the grid company. The cut-off time is at 24:00 on the 24th of each month. The power purchase invoices will be served as cross-check.

$EG_{\text{backupline},y}$ is the electricity delivered to the project through the backup power line. $EG_{\text{backupline},y}$ is monitored by M3 in Figure 1 and conducted by Hebei Electric Power Research Institute. The cut-off time is at 24:00 on the 24th of each month. The power purchase invoices will be served as cross-check.

For every parameter ($EG_{s,y}$, $EG_{c,y}$, $EG_{\text{backupline},y}$), there are two values sourced from the electricity sales receipt and the monitored data. The minor value of $EG_{s,y}$ and the larger one of $EG_{c,y}$ and $EG_{\text{backupline},y}$ are used to calculate emission reductions(ER). These are conservative.

The data adopted for ER are listed in the following table 2:

Table 3 the data for ER

Period	$EG_{s,y}$ (MWh)	$EG_{c,y}$ (MWh)	$EG_{\text{backupline},y}$ (MWh)	EG_y (MWh)
17/07/2008-24/07/2008	22.44	36.221	0.519	-14.30
25/07/2008-24/08/2008	170.28	25.872	2.805	141.603
25/08/2008-24/09/2008	2,306.04	11.642	18.486	2,275.912

25/09/2008-24/10/2008	4,288.68	21.991	28.578	4,238.111
25/10/2008-24/11/2008	9,766.614	14.23	34.941	9,717.443
25/11/2008-24/12/2008	11,041.00	3.881	26.4	11,010.719
25/12/2008-24/1/2009	5,000.00	9.055	0	4,990.945
25/1/2009-22/2/2009	8,101.00	15.523	0	8,085.477
Total	40,695.954	138.415	111.729	40,445.910

5 Quality Assurance and Quality Control Measures

5.1 Roles and responsibilities

The person with overall responsibility for monitoring activity is Mr Zhao Yongchao. The responsibility for electricity data management reporting and the accuracy of metering equipment in the whole stage is Mr.Cai Zhiyong. Mr.Bai Pengyu and Mr.Yu Lei are responsible for recording, management and storing electronic data. The sales receipt of electricity supplied by the grid is also be kept by them. The responsibility for the calibration and maintenance of the metering equipments is Mr.Cai Zhiyong, Mr.Yang Yongheng and Mr.Li Yugang.

5.2 Training

In this monitoring period, a comprehensive training course including operation of wind turbines, use of monitoring equipments, safety and other relative skill has been held to relative staffs by the project owner.

5.3 Calibrations

The initial calibrations of the metering equipments (Meters at M1 and M2 in the Figure 1) were carried out on 20 May 2008 by Hebei Electric Power Research Institute when they were just installed. The validity is one year. The accuracy of both meters is 0.2S and the error in each calibration report didn't exceed 0.5% of full-scale rating as required in PD.

The last two calibrations of M3 in the Figure 1 were carried out on 12 August 2007 and 12 August 2008 respectively by Hebei Electric Power Research Institute. The validity is one year. The accuracy of Meter at M3 is 0.5s and the error in each calibration report didn't exceed 0.5% of full-scale as required in PD.

Hebei Electric Power Research Institute is accredited entities authorized by Quality and Technology Supervision Bureau of Hebei Province

5.4 QA/QC Procedure

ID	QA/QC procedure
EG_y	The data will be directly used for calculation of emission reductions. Sales receipts and invoices are used to cross-check ensure the consistency.
$EG_{s,y}$	$EG_{s,y}$ is used in the calculation of EG_y . In order to accurately monitor EG_y , the following QA/QC are applied to $EG_{s,y}$: Sales receipts are used to cross-check.
$EG_{c,y}$	$EG_{c,y}$ is used in the calculation of EG_y . In order to accurately monitor EG_y , the following QA/QC are applied to $EG_{c,y}$: Power purchase invoices are used to cross-check.
$EG_{backupline,y}$	$EG_{backupline,y}$ is used in the calculation of EG_y . In order to accurately monitor EG_y , the following QA/QC are applied to $EG_{backupline,y}$: Power purchase invoices are used to cross-check.

According to the Monitoring Manual of Hebei Construction Investment Yuzhou Wind Energy Co., Ltd, the monitoring activity involves 8 employments including 1 project manager. There are 3 departments organized for data report, quality control and training. Data report department is responsible for corresponding duties such as operation and maintains, data recording, data processing, etc. Quality control department is assigned to take charge of the internal auditing and management review. Relevant trainings are the duty of training department.

5.5 Emergency Procedure

In this monitoring period, the wind farm ran smoothly and no emergency happened.

6 Emission reduction calculations

6.1 Project emissions

There is no auxiliary fuel consumed in the project. Therefore, the project activity does not have any GHG emissions.

$$PE_y = 0$$

6.2 Baseline emissions

Table 3 Baseline emission calculation

Period	EGy(MWh)	EF(tCO ₂ e/MWh)	Baseline emission (tCO ₂ e)
17/07/2008-22/02/2009	40,445.910	1.0755	43,499

6.3 Leakage

According to ACM0002 version 06, when the baseline scenario is grid power imports, no leakage needs to be considered. According to ACM0002 version 06, the main emission potentially giving rise to leakage in the context of electricity sector projects are emissions arising due to activities such as power plant construction, fuel handling, and land inundation. Project participants do not need to consider these sources as leakage in applying the methodology. There is no diesel engine/boiler used during the monitoring period. Therefore, the leakage from the project is zero.

$$L_y=0$$

6.4 Emission reduction calculation

Table 4 Emission reduction calculation

Period	Baseline emissions (tCO ₂ e)	Project Emissions (tCO ₂ e)	Leakage (tCO ₂ e)	Emission Reductions (tCO ₂ e)
17/07/2008-22/02/2009	43,499	0	0	43,499

The total emission reductions of the project for this monitoring period are 43,499tCO₂e.