
Verification Report and VCU Certification Statement

Carbon Resource Management Ltd.
Heilongjiang Huafu Muling Wind Farm
Project

Reporting period: from 14 December 2005 to 10 May 2007

PROJECT No. VOL0066

DATE: 03 AUG 2007



Date of first issue: 03 Aug 2007	Project No.: Vol 0066
Approved by: Siddharth Yadav	Organisational unit: SGS Climate Change Programme
Client: Carbon Resource Management Ltd.	Client ref.: Ms. Qian Yiwen

Summary:

SGS United Kingdom Ltd was contracted by Carbon Resource Management Ltd to verify the reduction in greenhouse gas emissions through the implementation of the "Heilongjiang Huafu Muling Wind Farm Project" (the project) in Muling City, Heilongjiang Province, P.R. China for the period from 14 December 2005 to 10 May 2007 according to Voluntary Carbon Standard version 1.

The objective of this project is to generate renewable electricity using wind power resources and to sell the generated electricity to the North East China Power Grid. The project activity generates greenhouse gas (GHG) emission reductions by avoiding CO₂ emissions from electricity generation by fossil fuel power plants that is supplied to North East China Power Grid.

The project activity has been monitored and emissions reductions were calculated on the basis of the approved CDM baseline and monitoring methodology ACM0002 Version 6, Monitoring Report version 1.2 and relevant documentation presented to SGS .

In our opinion, the GHG emission reductions as reported in the monitoring report are fairly stated. As a consequence, SGS assessors were able to verify that the emission reductions for the period from 14 December 2005 to 10 May 2007 amount to 22319 tonnes of CO₂ equivalent.

This report presents the findings of the assessment and provides justification for the verification process and the verification and certification opinion.

Report No.: Vol 0066	Subject Group: GHG project verification
Report title: Verification of Heilongjiang Huafu Muling Windfarm Voluntary Project	
Work carried out by: Robin Wang Jing; Sarah Ruan	
Work verified by: Irma Lubrecht Elton Chen (Trainee)	
Date of this revision: 14 Aug 2007	Rev. No.: 01
Number of pages: 23	

Indexing terms

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reductions
CO ₂	Carbon dioxide
CO _{2e}	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
GHG	Green House Gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
NEPG	North East China Power Grid
NGO	Non-governmental Organization
NIR	New Information Requests
ODA	Official Development Assistance
PDD	Project Design Document
PPA	Power Purchase Agreement
SGS	SGS United Kingdom Ltd
VCS	Voluntary Carbon Standard
VCUs	Voluntary Carbon Units

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1 INTRODUCTION

SGS United Kingdom Ltd was contracted by Carbon Resource Management Ltd to verify the reductions in greenhouse gas emissions through the implementation of the wind project, namely, Heilongjiang Huafu Muling Wind Farm Project according to Voluntary Carbon Standard. This report covers the monitoring period from 14 December 2005 to 10 May 2007. This report presents the findings of the assessment and provides justification for the verification for the verification process and the verification and certification opinion.

1.1 Objective

The client has commissioned an independent verification by SGS United Kingdom Ltd. of its reported greenhouse gas emission reductions from the Heilongjiang Huafu Muling Wind Farm Project. The verifiers have reviewed the GHG data collected to date for the period from 14 December 2005 to 10 May 2007.

The purposes of this verification exercise are, by review of objective evidence, to independently review:

- Whether the project has resulted in emission reductions as declared by the project design document and monitoring report
- The data reported are accurate, complete, consistent, transparent and free of material error or omission.

1.2 Scope

This engagement covers verification of emission reductions from anthropogenic sources of greenhouse gases included within the project boundary of the 'Heilongjiang Huafu Muling Wind Farm Project', criteria in proposed Voluntary Carbon Standard (VCS) has been taken into account for this verification.

Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Our examination includes assessment, on a test basis, of evidence relevant to the amounts and disclosures in relation to the project's GHG emission reductions for the defined reporting period.

1.3 Description of the Project Activity

Sectoral scope 1: Energy industries

Project Parties:	Heilongjiang Huafu Muling Wind Power Co., Ltd. (P.R.China) Carbon Resource Management Ltd. (UK)
Title of project activity:	Heilongjiang Huafu Muling Win Farm Project
Project Entity:	Heilongjiang Huafu Muling Wind Power Co., Ltd. (P.R.China)
Location of the project activity:	The project is located in the Muling City, Heilongjiang Province, P.R.China.

The project is located in Muling City, which is located in the southeast of Heilongjiang province. A decision has been made to install a total of 24 wind turbines, each with a power output of 1300KW providing a total capacity of 31.2 MW.

The generated electricity is exported to Jixi grid of North East China Power Grid via a 66kV transmission line. The project therefore helps to reduce GHG emissions versus the high-growth, coal-dominated business-as-usual scenario.

The project boundary is defined as the site of the project activity and the North East China Power Grid. The baseline is determined as the electricity exported to the grid by the project that would have otherwise been generated by other grid-connected power plants and by new addition of generation sources.

The project has installed capacity of 31.2 MW (24 units of 1300kW), power transmission line and six Gateway Meters at the project site. Check meters were installed at the project site for measuring the generated electricity. The amount of electricity exchanged with the grid by Heilongjiang Huafu Muling Wind Farm is calculated according to the meter reading records and relevant electricity bills following a conservative approach.

The project was commissioned on 14-12-2005. During the period of 14-12-2005 to 10-05-2007, the total net electricity supplied to the grid amounts to 20288MWh. The grid emissions factor is calculated ex-ante to be 1.1001tCO₂/MWh. Thus, the emission reductions reported from the project for the period from 14-12-2005 to 10-05-2007 calculated as 22319 tonnes of CO₂ equivalent.

2 METHODOLOGY

The verification process is a two-stage process.

In the first stage, SGS completed a strategic review and risk assessment of projects activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report.

At the end of this stage, SGS produced:

- A Periodic Verification Checklist which, based on the risk assessment of the parameters and data collection and handling processes for each of those parameters, describes the periodic verification protocol.
- Corrective Action Requests and New Information Requests, if necessary.

In the second stage, SGS verified the implementation of the monitoring plan and the data presented in the Monitoring Report for the period in question, using the Periodic Verification Checklist. This involved site visit and a desk review of the monitoring report.

At the end of this stage, SGS produced this verification report which will form the basis of verification statement.

Verification team

Lead auditor: Robin Wang SGS China

Auditor: Sarah Ruan SGS China

Duration of verification

Preparations: *From 20-06-2007 to 21-06-2007*
 On-site verification: *From 26-06-2007 to 27-06-2007*
 Reporting: *From 15-07-2007 to 03-08-2007*

2.1 Review of Documentation

The verification is performed primarily as a document review of the monitoring report, the project design document against the approved CDM methodology ACM0002 version 6. The assessment is performed by trained assessors using a verification protocol. The verification team have also assessed the operational records, invoices of electricity sales and purchases, calibration records of the electricity meters for the period of 14 Dec 2005 to 10 May 2007, and the working requirement for the operation staff and training records of the operation staff.

2.2 Site Visits

Robin Wang visited the site at Heilongjiang Huafu Muling Wind Power Co., Ltd. on 26 June 2007. During the site visit, the following people were interviewed or participated in the interview:

Name	Position /Organization
Mr. Shi Xiangfeng	Project Manager of Carbon Resource Management
MS. Li Ning	Project Manager of Carbon Resource Management
Mr. Zhang Jingyi	Vice president of Heilongjiang Huafu Muling Wind Power Co. Ltd.
Mr. Liu Aijun	Dept. manager of Heilongjiang Huafu Muling Wind Power Co. Ltd.
Ms. Zhang Xiaoyu	Dept. manager of Heilongjiang Huafu Electric Power Investment Co., Ltd.

Main topics covered by the interview were: Installation plan, Project management and monitoring; Operational issues and records, Evidences of electricity exchanged with the grid, GHG source, Data archiving etc

2.3 Assessment

The parameters and values presented in the monitoring report were assessed through review of detailed project documentation and production records, interviews with personnel at Heilongjiang Huafu Muling Wind Power Co. Ltd. check of log book, collection of electricity bills, observation of established monitoring and reporting practices and assessment of the reliability of measuring equipment. Data for determination of the grid emission factor have also been assessed.

Information which was not available during site visit was reported as New Information Request (NIR) following submission of additional information, monitoring and operational records, and the reconsolidation of all reported data was assessed again.

2.4 Reporting of Findings

As an outcome of the verification process, the team can raise different types of findings.

In general, where insufficient or inaccurate information is available and clarification or new information is required the Assessor shall raise a **New Information Request (NIR)** specifying what additional information is required.

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR)**. A CAR is issued, where:

- I. mistakes have been made with a direct influence on project results;
- II. validation protocol requirements have not been met; or
- III. there is a risk that the project would not be accepted as a VER project or that emission reductions will not be verified.

The verification process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a NIR may result in a CAR. Information or clarifications provided as a result of an NIR may also lead to a CAR.

Observations may be raised which are for the benefit of future projects and future verification actors. These have no impact upon the completion of the verification activity.

3. VERIFICATION FINDINGS

Based on the information of the PDD, this reporting period of the project covers the period from 14 Dec 2005 to 10 May 2007 which is consistent with the submitted monitoring report.

The project was in pursuance of CDM methodology ACM0002 Version06. The monitoring methodology has been correctly applied and the documents for this verification are complete and transparent. QA/QC procedures stipulated in the PDD have been strictly followed.

During site visit, no change was observed on the physical and spatial configuration of the project. The project boundary was consistent with the PDD, total of 24 wind turbines of 1300kW (Nordex – N60) rating capacity to reach 31.2MW. The wind turbines have been commissioned since 14 Dec 2005, and electricity generated after starting date of reporting period was taken into consideration.

The electricity generated by the project is transmitted to a 66 kV step-up substation in wind farm and then is delivered to Jixi Substation (grid owned) through a transmission line. The total electricity exported to the grid (E_{Ex}) can be monitored by five main meters (#111 to #115) at five 10KV branch lines respectively before confluence to the main line according to the Power Purchase Agreement (PPA) signed by the grid company and wind farm.

The electricity imported from the grid (E_{Im}) via the same transmission line can be monitored by a backup meter (#602) installed at 66KV step-up substation in wind farm as per the PPA. This meter has multiple channels and is measuring electricity exported and imported by wind farm.

The reported values both of electricity exported and imported by the project were based on the reading records of the backup meter and crosschecked electricity invoices.

The net electricity delivered to the grid by the project is determined as follows:

Table 1. Reported values

Period	Electricity exported (KWh)	Electricity imported (KWh)	EG (net electricity supplied) (KWh)
Dec-05	206096	22000	184096
Jan-06	1485820	8500	1477320
Feb-06	1025760	12000	1013760
Mar-06	1160216	9000	1151216
Apr-06	688556	11000	677556
May-06	635089	8500	626589
Jun-06	358618	11000	347618
Jul-06	183324	10000	173324
Aug-06	145573	12000	133573
Sep-06	605743	12000	593743
Oct-06	1903037	14000	1889037
Nov-06	789833	10000	779833
Dec-06	513267	20000	493267
Jan-07	281455	20000	261455
Feb-07	3386512	10000	3376512
Mar-07	3879812	12000	3867812
Apr-07	2357658	12000	2345658
1-10 May 07	898000	2400	895600
2005 Total	206096	22000	184096
2006 Total	9494835	138000	9356835
1 Jan-10 May 2007	10803437	56400	10747037
Total	20504368	216400	20287968

The reported values were verified by crosschecking against reading records of above six meters with all relevant electricity invoices, the results are as below:

Table 2. Verified values

Period	Verified value of Electricity exported to the grid (KWh)	Verified value of Electricity imported from the grid (KWh)	Verified value of Net electricity supplied to the grid (KWh)
14/12/2005 – 31/12/2005	206096	22000	184096
01/01/2006 – 31/01/2006	1485820	8500	1477320
01/02/2006 – 28/02/2006	1025760	12000	1013760
01/03/2006 – 31/03/2006	1160216	9000	1151216
01/04/2006 – 28/04/2006	688556	11000	677556
01/05/2006 – 31/05/2006	635089	8500	626589
01/06/2006 – 30/06/2006	358618	11000	347618
01/07/2006 – 31/07/2006	183324	10000	173324
01/08/2006 – 31/08/2006	145573	12000	133573
01/09/2006 – 30/09/2006	605743	12000	593743
01/10/2006 – 31/10/2006	1903037	14000	1889037
01/11/2006 – 30/11/2006	789833	10000	779833
01/12/2006 – 31/12/2006	513267	20000	493267
01/01/2007 – 31/01/2007	281455	20000	261455

01/02/2007 – 28/02/2007	3386512	10000	3376512
01/03/2007 – 31/03/2007	3879812	12000	3867812
01/04/2007 – 30/04/2007	2357658	12000	2345658
01/05/2007 – 10/05/2007	898000	2400	895600
2005 Total	206096	22000	184096
2006 Total	9494835	138000	9356835
1 Jan-10 May 2007	10803437	56400	10747037
Total	20504368	216400	20287968

After on-site visit, all required evidences and documents were obtained.

No Findings were raised.

The grid emissions factor is properly calculated ex-ante to be 1.1001tCO₂/MWh in the registered PDD. Emission reductions achieved by Heilongjiang Huafu Muling Wind Farm for this period is calculated as below table:

Table 3 Verified VCUs

Period	EGy (MWh)	Emission Factor	VCUs (tCO ₂ e)
14-12-2005 to 31-12-2005	184	1.1001	203
01-01-2006 to 31-12-2006	9357		10293
01-01-2007 to 10-05-2007	10747		11823
Total	20288		22319

3.1 Remaining Issues, CARs, NIRs from Previous Validation or Verification

No. This is the first periodic verification. No remaining issues from validation.

3.2 Project Implementation

The physical components, project boundaries are in conformity with description in registered PDD and monitoring report. No additional emission sources used for project activity.

The first wind turbine started operation since 14 Dec 2005, the last wind turbine started operation since 25 Apr 2007, and total 24 turbines were put into operation.

3.3 Completeness of Monitoring

The monitoring of the project activity is found to be in conformity with monitoring methodology described in ACM0002 and monitoring plan indicated in PDD of project activity.

The required metering systems have been installed and operational. The meters comply with appropriate quality standards applicable for this technology.

The sustaining records were sufficient to enable verification of emission reductions.

3.4 Accuracy of Emission Reduction Calculations

Data of electricity delivered to the grid are telemetric download. Calibration records or certificates have been presented for verification. Total uncertainty of metering system is properly addressed by using conservative values.

Emission factor of the grid is assessed as per ACM0002.

Formula used to calculate the emission reduction is checked and found correct.

3.5 Quality of Evidence to Determine Emission Reductions

Operational records and other evidences have been documented, collected and archived in either hard-copies or electronic manners. Electricity is measured by calibrated instruments, data can be crosschecked through log book of turbines, meter readings at project side as well as at the grid side, and electricity bills. All values used in determining emission reduction are substantiated with proofs which are free from any material error.

3.6 Management System and Quality Assurance

GHG management organization of Heilongjiang Huafu Muling Wind Power Co., Ltd. has been established, all related records have been documented. Team member responsibility has been allocated as per PDD and monitoring plan.

3.7 Additionality

The selected baseline is 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 connected to the North East China Power Grid.

Furthermore, this project was registered as CDM project on 11 May 2007 (UNFCCC reference number 0906), please refer to following website for more details:

<http://cdm.unfccc.int/Projects/DB/DNV-CUK1169849299.65/view.html>

In the registered PDD, the additionality has been established using the “Tool for the demonstration and assessment of additionality version 2” as below:

Step 1: Identification of the alternatives to the project activity consistent with the current laws and regulation.

The alternate baseline scenarios for the project activity have been identified as,

1. Construction of a fuel-fired power plant with equivalent amount of annual electricity supply;
2. The project activity not undertaken as a CDM project activity;
3. Construction of a power plant using other sources of renewable energy with equivalent amount of annual electricity supply;
4. Provision of an equivalent amount of annual power output by the grid into which the project is connected.

Step 2: Investment Barrier

Benchmark analysis (option III of Step 2 of Tool for the demonstration and assessment of additionality) is selected for conducting the investment analysis.

In China an IRR of 8% for total investment of a project is regarded as benchmark for investment in hydropower plants, fossil fuel fired plants and wind farm project. The project IRR without revenues from selling emission reduction is 7.45% which shows that the project is not financially attractive in absence of emissions reduction benefits.

Step 4: Common practice analysis

There are three wind power projects operated in Heilongjiang Province. Thereinto, one project is operated with higher on-grid tariff, one project is implemented with a favorable loan and one project is registered as a CDM project. Therefore these three projects are not affects the additionality of the proposed project.

Step 5: Impact of emissions reduction revenues

With the sales revenues of emission reductions, the financial indicator of the project will be significantly improved and the loan payback will be guaranteed.

Thus, according to the VCS version 1 using the CDM additionality criteria, this wind project is additional.

4. TESTING ON VCU VERIFICATION CRITERIA

#	Criterion	Finding/Conclusion
1	Project Category	1. Energy Industries (Renewable/non-renewable)
2	Geographic Location	In conformity with the description in PDD.
3	Eligible GHGs	1. Carbon dioxide
4	Project Start Date	First turbine commissioned on 14 Dec 2005.
5	Emission reduction start date	Emission Reduction start date is 14 Dec 2005.
6	Public Funding and Grants	No indication that project has employed Public Funding, grants or Official Development Assistance (“ODA”) for construction or running operations in the geographic location of the Project Activity
7	Project Boundary/GHG Assessment Boundary	Heilongjiang Huafu Muling Windfarm Project site and North East China Power Grid is selected as the project boundary.
8	Calculation Methodology	CDM methodology ACM0002 Version 06 has been correctly applied.
9	Secondary Effects	To be a wind farm project, no significant secondary effects are foreseen.

10	Project Additionality	Confirmed, please refer to section 3.7 for details.
11	Quality of Reductions	Relevant permits have been obtained by project owner. Project's design and implementation has been carried out in compliance with all relevant local and national environmental and social legislation in China.
12	Monitoring Process	CDM monitoring methodology ACM0002 version 06 has been used, sustaining records were sufficient to enable verification of emission reductions.

5. VERIFICATION AND CERTIFICATION STATEMENT

Reporting period: From 14 Dec 2005 to 10 May 2007

Verified emission in the above reporting period:

Project emissions 0 t CO₂ equivalents
Baseline emissions 22319 t CO₂ equivalents
Emission reductions 22319 t CO₂ equivalents
Hereinto: 203 tCO₂e from 14-12-2005 to 31-12-2005,
10293 tCO₂e from 01-01-2006 to 31-12-2006,
11823 tCO₂e from 01-01-2007 to 10-05-2007

Introduction

SGS United Kingdom Ltd. has been engaged by Carbon Resource Management Ltd to verify the greenhouse gas (GHG) emission reductions reported from the Heilongjiang Huafu Muling Wind Farm Project for the period, equating to 22319 tonnes of CO₂ equivalents.

Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported for the period 14-12-2005 to 10-05-2007 and the verification testing conducted against the monitoring report of Carbon Resource Management Ltd, and the PDD of Heilongjiang Huafu Muling Wind Farm Project.

Responsibilities of Carbon Resource Management Ltd. and SGS United Kingdom Ltd.

The management of the Carbon Resource Management Ltd. is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Monitoring and Verification Plan. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project is the responsibility of the management of the Carbon Resource Management Ltd.

It is our responsibility to express an independent GHG verification opinion on the GHG emissions from the project for the period 14-12-2005 to 10-05-2007 and on the calculation of GHG emission reductions from the project based on the verified emissions for the same period.

Basis of GHG verification opinion

Our verification approach was based on the requirements as defined in Voluntary Carbon Standard version 1.

Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Our examination includes assessment, on a test basis, of evidence relevant to the amounts and disclosures in relation to the project's GHG emission reductions for the given period.

We planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that the amount of GHG emission reductions for the given period, prepared on the basis of the Monitoring Report, are fairly stated.

This assessment included:

- Collection of evidence supporting the reported data
- Checking whether the provisions of the Monitoring Plan in the PDD, were consistently and appropriately applied

We have verified whether the information included in the attached appendix representing the emissions reduction achieved has been determined correctly for the given period from the baseline figure.

Certification Statement

Based on process and procedures conducted, in our opinion, Carbon Resource Management Ltd's monitoring report on emission reductions for the Heilongjiang Huafu Muling Wind Farm Project during the reporting period 14-12-2005 to 10-05-2007 is materially correct and is a fair representation of the GHG data and information and the emission reductions are fairly stated. The GHG emission reductions were calculated correctly on the basis of approved monitoring methodology ACM0002 version 06.

Therefore, SGS United Kingdom Limited is able to certify that the project is in full compliance with the Voluntary Carbon Standard Version 1, and the reported emission reductions achieved by Heilongjiang Huafu Muling Windfarm Project, certified as VCUs, during the reporting period 14-12-2005 to 10-05-2007 is 22319 VCUs.

03 Aug 2007



Robin Wang Jing
GHG Lead Assessor

6. REFERENCES

- /1/ *Voluntary Carbon Standard, Version 1.*
- /2/ *Approved consolidated monitoring methodology ACM0002 Version 06.*
- /3/ *Project Design Document, version 4, 16 Jan 2007.*
- /4/ *Monitoring report of Heilongjiang Huafu Muling Windfarm Project, 14 Dec 2005 to 10 May 2007 Version 1.2, see appendix*
- /5/ *Calibration Certificates of main meters and backup meter*
- /6/ *Metering records both of electricity exported and imported by the project*
- /7/ *Invoices lists both of electricity exported and imported by the project*

7. APPENDIX

Monitoring Report

Start monitoring period: 14 Dec 2005

End monitoring period: 10 May 2007

Title: Heilongjiang Huafu Muling Wind Farm Project

Project Parties:

Heilongjiang Huafu Muling Wind Power CO. Ltd

Carbon Resource Management Ltd.

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1 Introduction

This Monitoring Report is based on THE VOLUNTARY CARBON STANDARD Version 1. The purpose of this Monitoring Report 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 VCUs.

2 Geographic Location and Project description

The windfarm is in Muling city in the southeast of Heilongjiang province. The project site is located in the middle range of the Tai Ping Mountain, with north latitude of 44°44', east longitude of 130°55', and altitude of 1040.8 meters. The project is proposed to install 24 units of 1300 KW turbines. The annual electricity supply to Northeast Power Grid is about 69669.6 MWh per year once fully operational which will be exported to the Northeast Power Grid.

2.1 Project Category

1. Energy industries (Renewable)

2.2 Eligible GHGs

1. Carbon dioxide

2.3 Project & Emission Reduction Start Date

The first turbine was commissioned on 14 Dec 2005 and Emission Reduction start date is also 14 Dec 2005, as listed below:

Table 1 Commissioning dates of turbines

No.	Commissioning Date
T1	20 Sep 2006
T2	21 Sep 2006
T3	17 Sep 2006
T4	16 Sep 2006
T5	14 Dec 2005
T6	23 Aug 2006
T7	23 Aug 2006
T8	23 Aug 2006
T9	22 Dec 2005

T10	20 Dec 2005
T11	19 Sep 2006
T12	2 Oct 2006
T13	13 Oct 2006
T14	14 Oct 2006
T15	15 Oct 2006
T16	16 Dec 2005
T17	17 Oct 2006
T18	Oct 2006
T19	20 Oct 2006
T20	15 Oct 2006
T21	25 Apr 2007
T22	8 May 2007
T23	10 May 2007
T24	20 Mar 2007

Table 2 Project timeline

Starting date of the project activity	14 Dec 2005
CDM Registration Date	11 May 2007
Start of monitoring period	14 Dec 2005
End of monitoring period	10 May 2007

2.4 Public funding and grants

No public funding or official development assistance has been employed in the project activity.

2.5 Project Boundary/GHG Assessment Boundary

The project activity windfarm and Northeast Power Grid are selected as the project boundary.

2.6 Secondary Effects and Leakage

To be a windfarm project, the unintended change caused by the project activity in GHG emissions is insignificant, and like the demonstration in the registered PDD and the CDM methodology, there is no leakage for a windfarm project.

3 Calculation Methodology

The project participants use the approved baseline and monitoring methodology ACM0002 (version 6) “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”.

Using ACM0002, the emission reductions achieved by the project activity can be calculated by multiplying the net electricity supplied to the grid and the appropriate emissions factor of the grid.

The emission reductions ER_y by the project activity during a given year y is

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

where EG_y is the net electricity supplied to the grid, EF_y is the CO_2 emission factor of the grid and BE_y is the baseline emissions.

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 crediting period in the PDD.

The Operating Margin emission factor EF_{OMy} was calculated in the PDD as 1.1983 t CO_2e /MWh. The Build Margin emission factor EF_{BMy} was calculated as 0.8056 t CO_2e /MWh. The weighted average of Operating and Build Margin emission factors is:

$$EF_y = w_{OM} \cdot EF_{OM,y} + w_{BM} \cdot EF_{BM,y}$$

$$= 0.75 \times 1.1983 + 0.25 \times 0.8056 = 1.1001 \text{ (tCO}_2\text{e/MWh)}.$$

4 Monitoring Process

4.1 Meters

As the emissions factor is fixed for the whole period, the monitored data for the project activity only includes the net electricity supplied from the windfarm.

The total generation can be monitored by five meters (111-115), and the electricity sold to grid and the electricity imported from grid can be monitored by the meter 602.

Table 3 Six meters in the windfarm substation

Variable	Source of data
Gen The total generation of the turbines	Electricity meter 111~115
Es the electricity sold to grid	Electricity meter 602
Ei the electricity imported from grid	Electricity meter 602

The net supplied power (**EG**) can be calculate as below:

$$EG = Es - Ei$$

4.2 Monitored data and baseline data

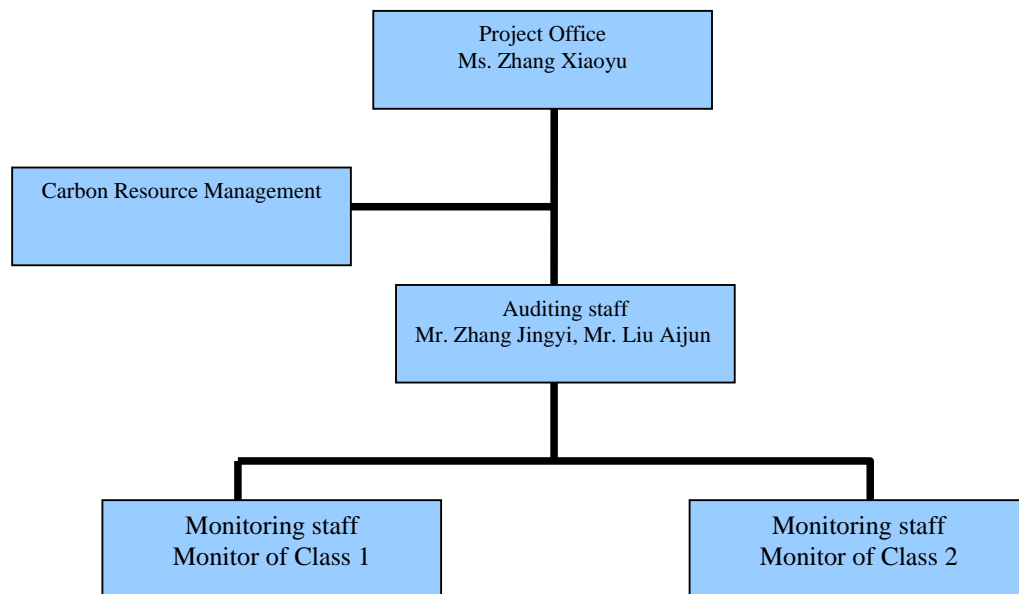
Table 4 Monitored electricity and calculation

	Gen(KWh)	Es (KWh)	Ei(KWh)	EG(KWh)
	A	B	C	D = B - C
Dec-05	266240	206096	22000	184096
Jan-06	1494320	1485820	8500	1477320
Feb-06	1037520	1025760	12000	1013760
Mar-06	1160720	1160216	9000	1151216
Apr-06	689040	688556	11000	677556
May-06	645760	635089	8500	626589
Jun-06	380320	358618	11000	347618
Jul-06	202160	183324	10000	173324
Aug-06	164080	145573	12000	133573
Sep-06	632520	605743	12000	593743
Oct-06	1937760	1903037	14000	1889037
Nov-06	866440	789833	10000	779833
Dec-06	592080	513267	20000	493267
Jan-07	361440	281455	20000	261455
Feb-07	3470480	3386512	10000	3376512
Mar-07	3963520	3879812	12000	3867812
Apr-07	2423600	2357658	12000	2345658
1-10 May 07	961280	898000	2400	895600
2005 Total	266240	206096	22000	184096
2006 Total	9802720	9494835	138000	9356835
1 Jan-10 May 2007	11180320	10803437	56400	10747037
Total	21249280	20504368	216400	20287968

4.3 Quality assurance and quality control measures

4.3.1 Roles and responsibilities

Overall responsibility for monitoring and carrying out the monitoring following this monitoring plan lies with Heilongjiang Huafu Muling Wind Power CO. Ltd.



4.3.2 Training

Carbon Resource Management has advised the project developer on monitoring work.

The staff who are responsible for electricity meter reading and recording, and who are responsible for auditing these metered data have been trained according to the CDM monitoring and management manual for the Windfarm Project.

4.3.3 Calibrations

The Power Interchange Agreement between Heilongjiang Huafu Muling Wind Power CO. Ltd and Northeast Power Grid Company Limited defines the metering arrangements and the required quality control procedures to ensure accuracy.

The meters are calibrated and checked annually for accuracy. The metering equipment shall have sufficient accuracy so that any error resulting from such equipment shall not exceed 0.5% of full-scale rating.

Calibration is carried out by Jixi Power Company with the records being supplied to the Windfarm, and these records will be maintained by Heilongjiang Huafu Muling Wind Power CO. Ltd.

The meters shall be jointly inspected and sealed on behalf of the parties concerned and shall not be interfered with by either party except in the presence of the other party or its accredited representatives.

All the meters installed shall be tested by Northeast Power Grid within 10 days after:

- the detection of a difference larger than the allowable error in the readings of both meters;
- the repair of all or part of meter caused by the failure of one or more parts to operated in accordance with the specifications; and/or

If any errors are detected the party owning the meter shall repair, recalibrate or replace the meter giving the other party sufficient notice to allow a representative to attend during any corrective activity.

No errors occurred from the commissioning date, calibration took place as per schedule. Calibrations were carried out by Metering Station, Marketing Division of Jixi Power Company on the date given in Table 5 below.

Table 5 Dates of calibrations of monitoring equipment

Equipment	Dates of calibrations
meter 111~115	10 Oct 2005 9 Oct 2006 18 May 2007
meter 602	10 Oct 2005 9 Oct 2006 18 May 2007

The calibration results show that all meters operate in accordance with the industry standards and are qualified to measure the electricity supplied to the grid and consumed by the windfarm.

4.3.4 Quality control

Monthly net generation data has been approved and signed off by staff that is responsible for recording meter reading in the 66kV substation installed in windfarm side, and cross checked with receipt from Northeast Power Grid.

EMISSION REDUCTION CALCULATION

5.1 Project emissions

As a renewable energy project, project emissions are zero.

5.2 Baseline emissions

Table 6 Baseline emissions

	EG(MWh)	EF(tCO₂e/MWh)	BE(tCO₂e)
2005 Total	184	1.1001	203
2006 Total	9357	1.1001	10293
1 Jan- 10 May 2007	10747	1.1001	11823
Total	20288	1.1001	22319

5.3 Leakage emissions

Leakage from the project are considered zero.

5.4 Summary of emission reductions during the monitoring period

Table 7 Emission reduction calculation (tCO₂e)

	Project Emissions (tCO₂e)	Baseline Emissions (tCO₂e)	Leakage Emissions (tCO₂e)	Emission Reductions (tCO₂e)
2005 Total	0	203	0	203
2006 Total	0	10293	0	10293
1 Jan- 10 May 2007	0	11823	0	11823
Total	0	22319	0	22319

ANNEX 1: CONTACT DETAILS

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