

# Guohua Tongliao Kezuo Zhongqi Phase I 49.5 MW Wind Farm Project



Document Prepared By Guohua (Tongliao) Wind Power Co., Ltd.

<b>Project Title</b>	Guohua Tongliao Kezuo Zhongqi Phase I 49.5 MW Wind Farm Project
<b>Version</b>	03
<b>Report ID</b>	
<b>Date of Issue</b>	27-03-2013
<b>Project ID</b>	UNFCCC Ref. 4495
<b>Monitoring Period</b>	16-01-2009 to 23-02-2011
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## 1 PROJECT DETAILS

### 1.1 Summary Description of Project

Guohua Tongliao Kezuo Zhongqi Phase I 49.5 MW Wind Farm Project (hereinafter referred to as “the project” or project “P”) is constructed and operated by Guohua (Tongliao) Wind Power Co., Ltd.

The project generates renewable power electricity by using the wind power resource, and supplies electricity to Northeast China Power Grid (NECPG) replacing fossil fuel consumption and thus reducing GHG (CO<sub>2</sub>) emissions. It involves installation and operation of 33 wind turbines with the unit capacity of 1,500 kW and total capacity of 49.5 MW.

The construction of the project was started on 28/06/2007. The first wind turbine-generator was put into operation on 16/01/2009, which is the project start date according to its given definition. All generators were put into operation on 13/04/2009.

This document reports the emission reductions of 186,249 tCO<sub>2</sub>e achieved by Guohua Tongliao Kezuo Zhongqi Phase I 49.5 MW Wind Farm Project during the following monitoring period: 16/01/2009 – 23/02/2011.

### 1.2 Sectoral Scope and Project Type

The Project under sectoral scope 1: Energy Industries (renewable - / non-renewable sources)

Project Category: Renewable electricity in grid connected applications.

The project is a not grouped project.

### 1.3 Project Proponent

Guohua (Tongliao) Wind power Co., Ltd.

Li Jia, Project Manager

Tel: +86-(0)10-58151713, Fax: +86-(0)10-58151705,

E-mail: lijia@guohua.com.cn

### 1.4 Other Entities Involved in the Project

N/A

### 1.5 Project Start Date

16/01/2009 (the date of the first wind turbine-generator was put into operation.).

**1.6 Project Crediting Period**

The VCS crediting period is from 16/01/2009 to 23/02/2011.

**1.7 Project Location**

The project is located in Dailiji County, Kezuozhong Qi, Tongliao City, Inner Mongolia Autonomous Region, China.

The geographical coordinates of the proposed project is east longitude 122°57' and north latitude 41°13'.



### 1.8 Title and Reference of Methodology

The project applied approved consolidated baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, Version 11, dated 12/02/2010.

## 2 IMPLEMENTATION STATUS

### 2.1 Implementation Status of the Project Activity

The project was implemented in consistency with the registered CDM-PDD. The project has been put into commercial operation since 16/01/2009. During this VCS verification period, the project was in normal and smooth operation as per the registered CDM-PDD without any emergencies or special events, which might impact the applicability of the methodology.

### 2.2 Project Description Deviations

N/A

### 2.3 Grouped Project

N/A

## 3 DATA AND PARAMETERS

### 3.1 Data and Parameters Available at Validation

Data Unit / Parameter:	EF <sub>grid,CM,y</sub>
Data unit:	tCO <sub>2</sub> e/MWh
Description:	Baseline emission factor
Source of data:	Refer to registered CDM-PDD
Value applied:	1.0280
Purpose of the data:	Baseline emission calculation
Any comment:	The emission factor of the project (EF <sub>grid,CM,y</sub> ) is ex-ante determined.

### 3.2 Data and Parameters Monitored

Data Unit / Parameter:	EG <sub>Total,y</sub>
Data unit:	MWh
Description:	The total net electricity supply to the NECPG by projects “P” and “X” in year y.
Source of data:	The data was measured by the main meter.
Description of measurement methods and procedures to be applied:	This item is determined according to directly measured EG <sub>export,y</sub> and EG <sub>import,y</sub> by using the

	method in the VCD PD.												
Frequency of monitoring/recording:	Continuously measurement and monthly recorded.												
Value monitored:	Total value in this monitoring period: 659,972.412 MWh. For the value in the monitoring period, please refer to the ER spreadsheet.												
Monitoring equipment:	<p>Main meter M with the backup meter (bidirectional meter) are installed in the 220kV substation to monitor the value of the electricity of projects "P", and "X" exported to the grid (<math>EG_{\text{export}, y}</math>) and the value of the electricity of projects "P" and "X" imported from the grid (<math>EG_{\text{import}, y}</math>), details as below:</p> <p>Information of main meter M;</p> <ol style="list-style-type: none"> <li>Type: Electricity meter</li> <li>Accuracy class: 0.2S</li> <li>Serial number: 95173915</li> <li>Calibration frequency: Annually</li> <li>Calibration agency, date of calibration, and validity:</li> </ol> <table border="1"> <thead> <tr> <th>Calibration agency</th> <th>Date of calibration</th> <th>Validity</th> </tr> </thead> <tbody> <tr> <td>Northeast Electric Power Design Institute Co., Ltd.</td> <td>05/09/2008</td> <td>05/09/2008-04/09/2009</td> </tr> <tr> <td>Tongliao Electric Power Bureau Electric Measurement Office</td> <td>04/09/2009</td> <td>04/09/2009-03/09/2010</td> </tr> <tr> <td>Tongliao Electric Power Bureau Electric Measurement Office</td> <td>13/06/2010</td> <td>13/06/2010-12/06/2011</td> </tr> </tbody> </table> <p>Information of backup meter of main meter M:</p> <ol style="list-style-type: none"> <li>Type: Electricity meter</li> <li>Accuracy class: 0.2S</li> <li>Serial number: 95173914</li> <li>Calibration frequency: Annually</li> <li>Calibration agency, date of calibration, and</li> </ol>	Calibration agency	Date of calibration	Validity	Northeast Electric Power Design Institute Co., Ltd.	05/09/2008	05/09/2008-04/09/2009	Tongliao Electric Power Bureau Electric Measurement Office	04/09/2009	04/09/2009-03/09/2010	Tongliao Electric Power Bureau Electric Measurement Office	13/06/2010	13/06/2010-12/06/2011
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Northeast Electric Power Design Institute Co., Ltd.	05/09/2008	05/09/2008-04/09/2009											
Tongliao Electric Power Bureau Electric Measurement Office	04/09/2009	04/09/2009-03/09/2010											
Tongliao Electric Power Bureau Electric Measurement Office	13/06/2010	13/06/2010-12/06/2011											

	validity:		
	Calibration agency	Date of calibration	Validity
	Northeast Electric Power Design Institute Co., Ltd.	05/09/2008	05/09/2008-04/09/2009
	Tongliao Electric Power Bureau Electric Measurement Office	04/09/2009	04/09/2009-03/09/2010
	Tongliao Electric Power Bureau Electric Measurement Office	13/06/2010	13/06/2010-12/06/2011
QA/QC procedures to be applied:	According to "JJG596-1999 Verification Regulation of Electrical Energy Meters with Electronics", meter M is calibrated annually. Value of $EG_{Total,y}$ has been cross checked by sales receipts.		
Calculation method:	$EG_{Total,y} = EG_{export,y} - EG_{import,y}$		
Any comment:	-		

Data Unit / Parameter:	$E_{P,y}$
Data unit:	MWh
Description:	Electricity generation by project "P" in year y.
Source of data:	Measured
Description of measurement methods and procedures to be applied:	Meter M1 is installed at the low-voltage side of the transformer 1. Actual data is read from the meter M1.
Frequency of monitoring/recording:	Continuously measurement and monthly recorded.
Value monitored:	Total value in this monitoring period: 182,768.040 MWh. For the value in the monitoring period, please refer to the ER spreadsheet.

<p>Monitoring equipment:</p>	<p>Meter M1 is installed at the project activity site to monitor the value of the electricity generation of project “P” (<math>E_{p,y}</math>), details as below:</p> <ol style="list-style-type: none"> <li>1. Type: Electricity meter</li> <li>2. Accuracy class: 0.5</li> <li>3. Serial number: 20071204060087 (before meter replacement on 13/07/2009). 09030048740091 (after meter replacement on 13/07/2009).</li> <li>4. Calibration frequency: Annually</li> <li>5. Calibration agency, date of calibration, and validity:</li> </ol>																				
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Northeast Electric Power Research Institute Co., Ltd.	09030048740091	28/12/2010	28/12/2010-27/12/2011																		
<p>QA/QC procedures to be applied:</p>	<p>According to “JJG596-1999 Verification Regulation of Electrical Energy Meters with Electronics”, meter</p>																				

	M1 is calibrated annually.
Calculation method:	-
Any comment:	-

Data Unit / Parameter:	$E_{x,y}$
Data unit:	MWh
Description:	Electricity generation by project "X" in year y, consists of electricity generation by project "2" and "3" in year y.
Source of data:	Measured
Description of measurement methods and procedures to be applied:	<p>The value of <math>E_{x,y}</math> is the electricity export to the NECPG by the other projects owned by the same project owner in year y, measured by on-site meters M2 and M3.</p> $E_{x,y} = E_{2,y} + E_{3,y}$ <p><math>E_{2,y}</math> is the electricity export to the NECPG by the project "2" owned by the same project owner in year y, measured by on-site meter M2;</p> <p><math>E_{3,y}</math> is the electricity export to the NECPG by the project "3" owned by the same project owner in year y, measured by on-site meter M3.</p>
Frequency of monitoring/recording:	Continuously measurement and monthly recorded.
Value monitored:	Value of $E_{2,y}$ is 224,315.280 MWh and value of $E_{3,y}$ is 258,725.600 MWh. As $E_{x,y} = E_{2,y} + E_{3,y}$ , the total value $E_{x,y}$ in this monitoring period: 483,040.880 MWh. For the value in the monitoring period, please refer to the ER spreadsheet.

Monitoring equipment:	Meter M2 is installed at the phase II project activity site to monitor the value of the electricity generation of project "2" (E <sub>2,y</sub> ), details as below:			
	1. Type: Electricity meter 2. Accuracy class: 0.5 3. Serial number: 20071204060083 (before meter replacement on 13/07/2009). 09030048740098 (after meter replacement on 13/07/2009). 4. Calibration frequency: Annually 5. Calibration agency, date of calibration, and validity:			
	Calibration agency	Serial number	Date of calibration	Validity
	Tongliao Electric Power Bureau Electric Measurement office	20071204060083	20/12/2008	20/12/2008-19/12/2009
	Tongliao Electric Power Bureau Electric Measurement office	09030048740098	10/07/2009	10/07/2009-09/07/2010
	Tongliao Electric Power Bureau Electric Measurement office	09030048740098	30/12/2009	30/12/2009-29/12/2010
Northeast Electric Power Research Institute Co., Ltd.	09030048740098	28/12/2010	28/12/2010-27/12/2011	

	<p>Meter M3 is installed at the transformer of Phase III and Phase IV projects to monitor the value of the electricity generation of project "3" (E<sub>3,y</sub>), details as below:</p> <ol style="list-style-type: none"> <li>1. Type: Electricity meter</li> <li>2. Accuracy class: SN:09030048740067: 0.5 SN:10110473910122: 0.5S</li> <li>3. Serial number: 09030048740067 (before meter replacement on 22/12/2010). 10110473910122 (after meter replacement on 22/12/2010).</li> <li>4. Calibration frequency: Annually</li> <li>5. Calibration agency, date of calibration, and validity:</li> </ol>			
	Calibration agency	Serial number	Date of calibration	Valid ity
	Tongliao Electric Power Bureau Electric Measurement Office	09030048740067	01/09/2009*	01/09/2009-31/08/2010
	Tongliao Electric Power Bureau Electric Measurement Office	09030048740067	13/06/2010	13/06/2010-12/06/2011
	Tongliao Electric Power Bureau Electric Measurement Office	10110473910122	07/12/2010	07/12/2010-06/12/2011
<p>*The M3 has been put into operation in 09/2009, so the first calibration date of meter M3 is 01/09/2009, which is later than the starting date of the monitoring period.</p>				

QA/QC procedures to be applied:	According to “JG596-1999 Verification Regulation of Electrical Energy Meters with Electronics”, meter M2, and M3 are calibrated annually.
Calculation method:	-
Any comment:	-

### 3.3 Description of the Monitoring Plan

The monitoring has been carried out in accordance with the monitoring plan contained in the registered CDM-PDD.

As per the registered CDM-PDD, “P” stands for the project, and “X” stands for the corresponding projects owned by the same project owner. Thus, project “X” consist of following two parts:

- Project “2”, stands for the Guohua Tongliao Kezuo Zhongqi Phase II 49.5 MW Wind Farm Project;
- Project “3”, stands for the Inner Mongolia Tongliao Wind Farm Project Phase III and Inner Mongolia Tongliao Wind Farm Project Phase IV.

The main meter M with the backup meter were installed to record the electricity of project “P”, project “2” and project “3” exported to the grid ( $EG_{\text{export}, y}$ ) and imported from the grid ( $EG_{\text{import}, y}$ ). The total net electricity supplied by “P”, “2” and “3” to the grid ( $EG_{\text{Total}, y}$ ) is the difference between  $EG_{\text{export}, y}$  and  $EG_{\text{import}, y}$ , i.e.  $EG_{\text{Total}, y} = EG_{\text{export}, y} - EG_{\text{import}, y}$ . The main meter M with the backup meter are owned, operated and maintained by the grid company. The reading records are recorded by grid company together with the project owner regularly, and are cross-checked by sales receipts. During this monitoring period, the main meter M and the backup meter were under a well operation.

The on-site meters are installed at the on-site 220kV transformers, which are used to monitor the electricity generation of project “P” ( $E_{P,y}$ ), project “2” ( $E_{2,y}$ ) and project “3” ( $E_{3,y}$ ) respectively. The on-site meters (M1, M2 and M3) are owned, operated and maintained by the project owner.

The magnification of meter M has been changed two times during the monitoring period, detailed as follows:

- The magnification of meter M has been changed from 132,000 to 264,000 on 17/09/2010.
- The magnification of meter M has been changed from 264,000 to 528,000 on 23/12/2010.

The meters (M1, M2 and M3) have been replaces as new ones during the monitoring period, detailed as follows:

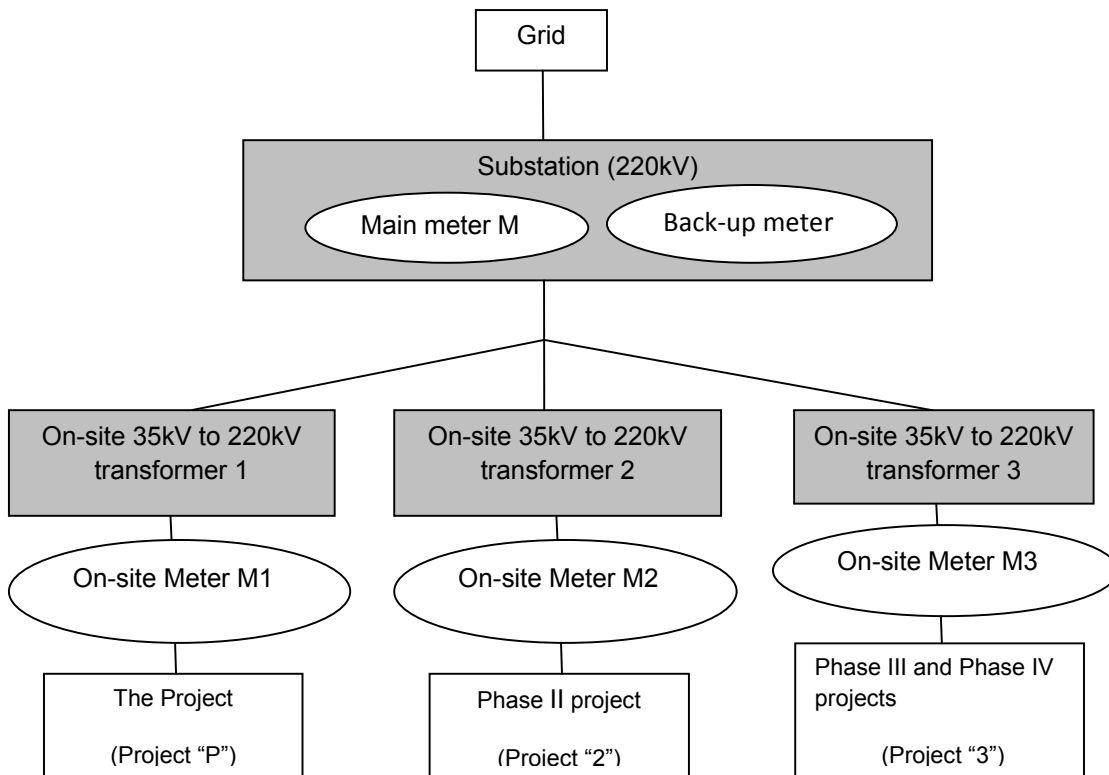
- The former on-site meter M1 was replaced by a new one on 13/07/2009, which has been recorded by a formal work order. The serial number of M1 is 20071204060087 before the meter replacement and 09030048740091 after the meter replacement. The accuracy class of M1 is still 0.5.
- The former on-site meter M2 was replaced by a new one on 13/07/2009, which has been recorded by a formal work order. The serial number of M2 is 20071204060083 before the

meter replacement and 09030048740098 after the meter replacement. The accuracy class of M2 is still 0.5.

- The former on-site meter M3 was replaced by a new one on 22/12/2010, which has been recorded by a formal work order. The serial number of M3 is 09030048740067 before the meter replacement and 10110473910122 after the meter replacement. The accuracy class of M3 is not lower than 0.5.

The data of the monitoring parameter mentioned above have been continuously measured and monthly recorded during the whole monitoring period. Currently implementation status has no impact on the monitoring plan. The monitoring process is in line with the monitoring plan of the registered CDM-PDD during the whole monitoring period.

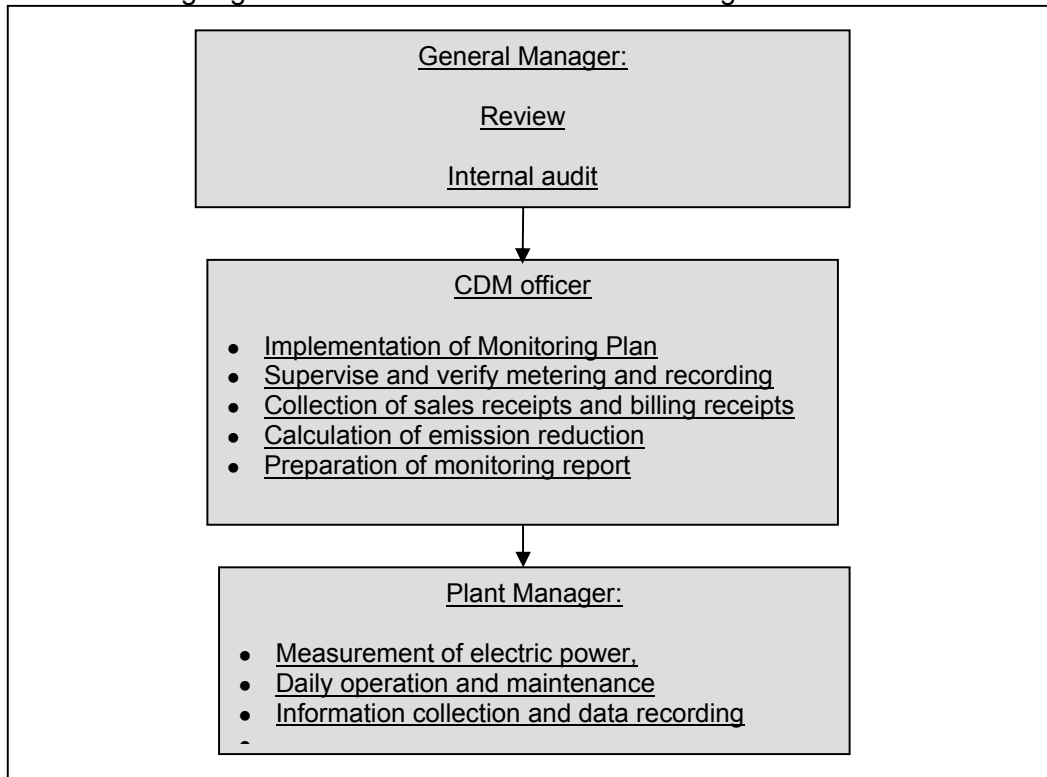
The line diagram of monitoring system is shown in the figure below.



Serial number and accuracy class of meters are shown in following table.

Meter	In service period	Serial number	Accuracy class
M	16/01/2009~23/02/2011	95173915	0.2S
Backup meter of main meter M	16/01/2009~23/02/2011	95173914	
M1(before replacement)	16/01/2009~13/07/2009	20071204060087	0.5
M1(after replacement)	13/07/2009~23/02/2011	09030048740091	
M2(before replacement)	16/01/2009~13/07/2009	20071204060083	0.5
M2(after replacement)	13/07/2009~23/02/2011	09030048740098	
M3(before replacement)	01/06/2010~22/12/2010	09030048740067	0.5
M3(after replacement)	22/12/2010~23/02/2011	10110473910122	0.5S

The monitoring organizational structure is shown in the figure below.



Plant manager of wind farm is responsible to record and collect the information and data required by the Monitoring Plan. The required information and data has been documented and sent to the CDM officer monthly. The CDM officer works out the monitoring plan, takes charge of its implementation and reports to the General Manager of the company. The General Manager of the company makes the confirmations on monitoring calculation data and reports.

The data collection procedures are as follows:

- At 24:00 on the last day of each month, the grid company together with the project owner read and record data from the main meter and on-site meters installed in each project site and then check the reading of the main meter against the on-site meters.
- The grid company provides the project owner with the monthly record of  $EG_{Total,y}$ .
- The sales receipts are used for cross check purpose.
- The project owner carries out an internal audit on the readings, grid data and calculations, and report to DOE for verification.

Should any previous months reading of the main meter be inaccurate by more than the allowable error, or otherwise functioned improperly, the net energy output shall be determined by:

- first, by reading backup meter installed, unless a test by either party reveals it is inaccurate;
- if the backup system is not within acceptable limits of accuracy or is otherwise performing improperly the developer and grid company shall jointly prepare an estimate of the correct reading;

- if the grid company and the developer fail to agree then the matter will be referred for arbitration according to agreed procedures.

#### 4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

##### 4.1 Baseline Emissions

Follow the equation in ACM0002 (Version 11), calculation equation for baseline emissions should be:

$$BE_y = EG_{P,J,y} * EF_{grid,CM,y}$$

Where:

$BE_y$  is baseline emissions in year y;

$EG_{P,J,y}$  is the net electricity supplied by the project to the NECPG in year y;

$EF_{grid,CM,y}$  is combined margin CO<sub>2</sub> emission factor for grid connected power generation;

According to registered CDM-PDD, in the following calculation,  $EG_{P,J,y} = EG_{P,y}$

Where:

$$EG_{P,y} = EG_{Total,y} * E_{P,y} / (E_{P,y} + E_{X,y}) = EG_{Total,y} * E_{P,y} / (E_{P,y} + E_{2,y} + E_{3,y})$$

$EG_{P,y}$  is the calculated net electricity supplied from “P” in year y;

$EG_{Total,y}$  is the total net electricity supplied to the NECPG by “P”, “2” and “3” in year y, measured by the main meter M;

$E_{P,y}$  is the electricity export to the NECPG by the project “P” in year y, measured by on-site meter M1;

$E_{X,y}$  is the electricity export to the NECPG by the other projects (projects “2” and “3”) owned by the same project owner in year y, measured by on-site meters M2 and M3;

$E_{2,y}$  is the electricity export to the NECPG by the project “2” owned by the same project owner in year y, measured by on-site meter M2;

$E_{3,y}$  is the electricity export to the NECPG by the project “3” owned by the same project owner in year y, measured by on-site meter M3.

## 1. Net electricity supplied by the project activity to the grid

The conservative value of net electricity supply to the NECPG by project "P", "2" and "3" (MWh)					
Period	EG <sub>export,y</sub> by meter	EG <sub>import,y</sub> by meter	EG <sub>Total,y</sub> =EG <sub>export,y</sub> -EG <sub>import,y</sub>	EG <sub>Total,y</sub> by sale receipts	Conservative Value of EG <sub>Total</sub>
16/01/2009-31/01/2009	4,084.872	28.380	4,056.492	4,056.492	4,056.492
01/02/2009-28/02/2009	10,911.252	40.524	10,870.728	10,870.728	10,870.728
01/03/2009-31/03/2009	14,839.572	41.844	14,797.728	14,797.728	14,797.728
01/04/2009-30/04/2009	21,109.836	59.928	21,049.908	21,049.908	21,049.908
01/05/2009-31/05/2009	21,700.536	35.376	21,665.160	21,665.160	21,665.160
01/06/2009-30/06/2009	12,708.696	33.132	12,675.564	12,675.564	12,675.564
01/07/2009-13/07/2009	5,978.016	30.888	5,947.128	5,947.128	5,947.128
14/07/2009-31/07/2009	4,502.520	12.672	4,489.848	4,489.848	4,489.848
01/08/2009-04/08/2009	1,024.848	5.808	1,019.040	1,019.040	1,019.040
05/08/2009-31/08/2009	11,410.608	19.008	11,391.600	11,391.600	11,391.600
01/09/2009-17/09/2009	9,180.336	8.448	9,171.888	9,171.888	9,171.888
18/09/2009-30/09/2009	8,617.488	22.440	8,595.048	8,595.048	8,595.048
01/10/2009-31/10/2009	22,500.192	35.376	22,464.816	22,464.816	22,464.816
01/11/2009-30/11/2009	33,223.344	79.728	33,143.616	33,143.616	33,143.616
01/12/2009-31/12/2009	35,347.752	134.640	35,213.112	35,213.112	35,213.112
01/01/2010-31/01/2010	39,771.072	173.448	39,597.624	39,597.624	39,597.624
01/02/2010-28/02/2010	35,280.168	72.864	35,207.304	35,207.304	35,207.304
01/03/2010-31/03/2010	51,816.336	47.256	51,769.080	51,769.080	51,769.080
01/04/2010-30/04/2010	39,103.416	46.200	39,057.216	39,057.216	39,057.216
01/05/2010-31/05/2010	41,377.248	67.320	41,309.928	41,309.928	41,309.928
01/06/2010-30/06/2010	33,727.320	88.440	33,638.880	33,638.880	33,638.880
01/07/2010-31/07/2010	16,515.576	102.960	16,412.616	16,412.616	16,412.616
01/08/2010-31/08/2010	20,436.240	60.456	20,375.784	20,375.784	20,375.784
01/09/2010-30/09/2010	27,612.024	55.968	27,556.056	27,556.056	27,556.056
01/10/2010-31/10/2010	39,074.904	66.264	39,008.640	39,008.640	39,008.640
01/11/2010-30/11/2010	33,260.304	125.400	33,134.904	33,134.904	33,134.904
01/12/2010-22/12/2010	20,030.208	45.408	19,984.800	19,984.800	19,984.800
23/12/2010-31/12/2010	9,936.432	38.544	9,897.888	9,897.888	9,897.888
01/01/2011-31/01/2011	21,149.568	75.504	21,074.064	21,074.064	21,074.064
01/02/2011-23/02/2011	15,471.456	75.504	15,395.952	15,395.952	15,395.952
<b>Total</b>	661,702.140	1,729.728	659,972.412	659,972.412	659,972.412

Net electricity supplied from project "P" (MWh)						
Period	Electricity generation by project "P"	Electricity generation by project "2"	Electricity generation by project "3"	Electricity generation by project "2" and "3"	Conservative Value of EG <sub>Total,y</sub>	The net electricity supplied from project "P"
	E <sub>P,y</sub>	E <sub>2,y</sub>	E <sub>3,y</sub>	E <sub>X,y</sub> =E <sub>2,y</sub> + E <sub>3,y</sub>		$EG_{P,y} = EG_{Total,y} * E_{P,y} / (E_{P,y} + E_{X,y})$
16/01/2009-31/01/2009	294.000	3,817.800	0.000	3,817.800	4,056.492	290.045
01/02/2009-28/02/2009	317.520	10,637.760	0.000	10,637.760	10,870.728	315.069
01/03/2009-31/03/2009	4,336.080	10,563.840	0.000	10,563.840	14,797.728	4,306.341
01/04/2009-30/04/2009	9,240.000	11,970.840	0.000	11,970.840	21,049.908	9,169.894
01/05/2009-31/05/2009	9,649.080	12,197.640	0.000	12,197.640	21,665.160	9,568.890
01/06/2009-30/06/2009	6,272.280	6,513.360	0.000	6,513.360	12,675.564	6,218.280
01/07/2009-13/07/2009	2,258.760	3,749.760	0.000	3,749.760	5,947.128	2,235.681
14/07/2009-31/07/2009	3,169.320	1,356.600	0.000	1,356.600	4,489.848	3,144.060
01/08/2009-04/08/2009	576.240	451.920	0.000	451.920	1,019.040	571.129
05/08/2009-31/08/2009	6,667.080	4,818.240	0.000	4,818.240	11,391.600	6,612.677
01/09/2009-30/09/2009	9,662.520	7,978.320	280.000	8,258.320	17,766.936	9,579.538
01/10/2009-31/10/2009	9,889.320	8,260.560	4,512.200	12,772.760	22,464.816	9,803.238
01/11/2009-30/11/2009	9,596.160	8,520.960	15,328.600	23,849.560	33,143.616	9,509.481
01/12/2009-31/12/2009	9,157.680	7,828.800	18,524.800	26,353.600	35,213.112	9,080.788
<b>sub-total (16/01/2009-31/12/2009)</b>	<b>81,086.040</b>	<b>98,666.400</b>	<b>38,645.600</b>	<b>137,312.000</b>	<b>216,551.676</b>	<b>80,405.111</b>
01/01/2010-31/01/2010	9,951.480	9,206.400	20,799.800	30,006.200	39,597.624	9,861.808
01/02/2010-28/02/2010	9,018.240	8,300.880	18,204.200	26,505.080	35,207.304	8,938.014
01/03/2010-31/03/2010	13,366.080	12,879.720	25,975.600	38,855.320	51,769.080	13,250.309
01/04/2010-30/04/2010	10,805.760	11,771.760	16,839.200	28,610.960	39,057.216	10,707.205
01/05/2010-31/05/2010	10,610.880	8,042.160	23,028.600	31,070.760	41,309.928	10,516.253
01/06/2010-30/06/2010	9,371.880	8,676.360	15,911.000	24,587.360	33,638.880	9,283.469
01/07/2010-31/07/2010	3,771.600	4,389.000	8,411.200	12,800.200	16,412.616	3,735.371
01/08/2010-31/08/2010	5,160.120	4,926.600	10,486.000	15,412.600	20,375.784	5,110.724
01/09/2010-30/09/2010	6,113.520	5,820.360	15,874.600	21,694.960	27,556.056	6,058.026
01/10/2010-31/10/2010	7,063.560	12,017.040	20,262.200	32,279.240	39,008.640	7,003.565
01/11/2010-30/11/2010	6,678.840	10,626.840	16,105.600	26,732.440	33,134.904	6,623.593
01/12/2010-31/12/2010	4,864.440	10,781.400	14,516.600	25,298.000	29,882.688	4,819.323

<b>sub-total (01/01/2010-31/12/2010)</b>	<b>96,776.400</b>	<b>107,438.520</b>	<b>206,414.600</b>	<b>313,853.120</b>	<b>406,950.720</b>	<b>95,907.660</b>
01/01/2011-31/01/2010	2,706.480	10,641.120	7,931.000	18,572.120	21,074.064	2,680.465
01/02/2011-23/02/2011	2,199.120	7,569.240	5,734.400	13,303.640	15,395.952	2,183.969
<b>sub-total (01/01/2011-23/02/2011)</b>	<b>4,905.600</b>	<b>18,210.360</b>	<b>13,665.400</b>	<b>31,875.760</b>	<b>36,470.016</b>	<b>4,864.433</b>
Total	182,768.040	224,315.280	258,725.600	483,040.880	659,972.412	181,177.204

Electricity exported to and imported from the grid by the projects during this monitoring period from the original meter readings have been also provided in ER spreadsheet.

Therefore, net electricity supplied to the grid from the project during this monitoring period is 181,177.204MWh.

### **2. EF<sub>grid,CM,y</sub> - Emission factor of the grid (tCO<sub>2</sub>e/MWh)**

The Baseline Emissions Factor is calculated ex-ante as 1.0280 tCO<sub>2</sub>e/MWh in registered CDM-PDD.

### **3. Baseline emissions (BE<sub>y</sub>)**

The baseline emissions BE<sub>y</sub> (tCO<sub>2</sub>e) during monitoring period (16/01/2009-31/12/2009) is calculated as following:

$$BE_y = EG_{P,y} * EF_{grid,CM,y} = 80,405.111 \text{ MWh} * 1.0280 \text{ tCO}_2\text{e/MWh} = 82,656 \text{ tCO}_2\text{e}$$

The baseline emissions BE<sub>y</sub> (tCO<sub>2</sub>e) during monitoring period (01/01/2010-31/12/2010) is calculated as following:

$$BE_y = EG_{P,y} * EF_{grid,CM,y} = 95,907.660 \text{ MWh} * 1.0280 \text{ tCO}_2\text{e/MWh} = 98,593 \text{ tCO}_2\text{e}$$

The baseline emissions BE<sub>y</sub> (tCO<sub>2</sub>e) during monitoring period (01/01/2011-23/02/2011) is calculated as following:

$$BE_y = EG_{P,y} * EF_{grid,CM,y} = 4,864.433 \text{ MWh} * 1.0280 \text{ tCO}_2\text{e/MWh} = 5,000 \text{ tCO}_2\text{e}$$

## **4.2 Project Emissions**

The project is a wind power plant and the project emissions should not be taken into account according to ACM0002 (Version 11), thus PE<sub>y</sub> = 0 tCO<sub>2</sub>e.

## **4.3 Leakage**

According to ACM0002 (Version 11), leakage does not need to be considered.

## **4.4 Summary of GHG Emission Reductions and Removals**

The emission reductions during monitoring period (16/01/2009-31/12/2009) are calculated as following:

$$ER_y = BE_y - PE_y = 82,656 \text{ tCO}_2\text{e} - 0 \text{ tCO}_2\text{e} = 82,656 \text{ tCO}_2\text{e}$$

The emission reductions during monitoring period (01/01/2010-31/12/2010) are calculated as following:

$$ER_y = BE_y - PE_y = 98,593 \text{ tCO}_2\text{e} - 0 \text{ tCO}_2\text{e} = 98,593 \text{ tCO}_2\text{e}$$

The emission reductions during monitoring period (01/01/2011-23/02/2011) are calculated as following:

$$ER_y = BE_y - PE_y = 5,000 \text{ tCO}_2\text{e} - 0 \text{ tCO}_2\text{e} = 5,000 \text{ tCO}_2\text{e}$$

Thus, emission reductions generated in this whole monitoring period is 186,249tCO<sub>2</sub>e.

**5 ADDITIONAL INFORMATION**

This section includes a comparison of actual values of the emission reductions achieved during the monitoring period with the estimation in the registered CDM-PDD.

Comparison of actual emission reductions with estimates in the CDM-PDD			
Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period	Percentage compare to ex-ante value
Emission reductions (tCO <sub>2</sub> e)	235,708	186,249	79.02%

From above the actual emission reduction of 186,249 tCO<sub>2</sub>e reached 79.02% of the estimated value of 235,708 tCO<sub>2</sub>e in registered CDM-PDD, which is reasonable and credible.

History of Monitoring Report

Version	Date	Content
01	15-11-2012	Version 01 for verification
02	22-03-2013	The emission reduction has been calculated year by year and the date of meter replacement has been revised.
03	27-03-2013	Some typos have been revised.