CDM – Executive Board

MONITORING REPORT (CDM-MR)
Version 01 - in effect as of: 28/09/2010

CONTENTS

MONITORING REPORT
Version 03 30/06/2011
Jilin Zhenlai Mali Wind Power Project
Reference number: 3314
1st monitoring period (19/07/2010 - 25/04/2011)

SECTION A. General description of the project activity

A.1. Brief description of the project activity:

>>

The Jilin Zhenlai Mali Wind Power Project (hereafter refers to the Project) is located in Zhenlai County, Baicheng City, Jilin Province, P.R.China. It involves the installation of 33 turbines, each of which has a rated output of 1500kW, providing a total capacity of 49.5MW. The electricity generated is delivered to Northeast China Power Grid (NECPG).The purpose of the Project is to supply clean energy by using renewable wind resources. It will help reduce GHG emissions generated from the high-growth, coal-dominated power generation from NECPG which is dominant of fossil fuel fired power plants.The project generates GHG emission reductions by displacing electricity generation from grid connected fossil fuel-fired power plants that would otherwise be generating electricity needed. Relevant dates for the project activity is as below:

Construction start date	05/01/2009
Operation of 1st generator	27/10/2009
Operation of all generators	29/12/2009
Operation lifetime	20 years

The total emission reductions achieved in this monitoring period is 85,977 tCO_2.

A.2. Project Participants

>>

Name of Party involved (*)((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
People's Republic of China (host)	Jilin Huaneng Renewable Energy Co., Ltd.	No
Sweden	Carbon Asset Management Sweden AB	No

A.3. Location of the project activity:

>>

The project site is located in Zhenlai County, Baicheng City, Jilin Province. The central geographical coordinates of project is longitude 123°08′ 09 " E and latitude 45°49′ 38 " N , where is 8km from the Zhenlai County. Figure A-1 and Figure A-2 shows the location of the Project.

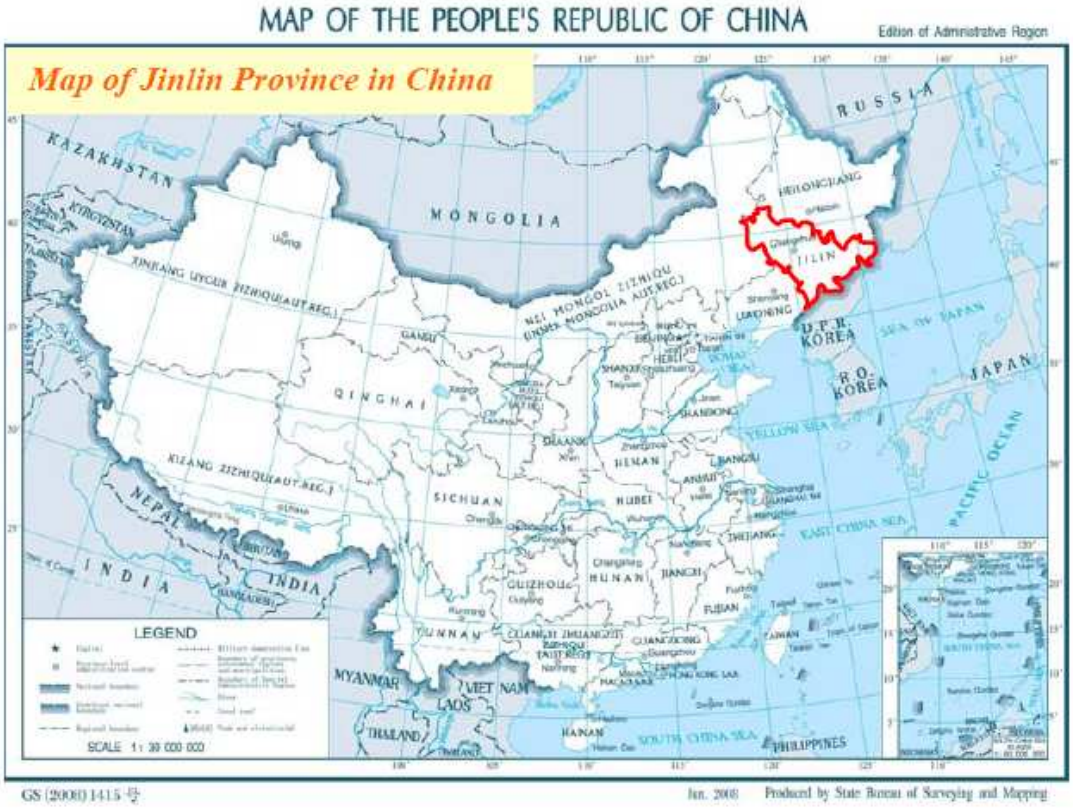

Figure A -1 Map of Jilin Province in China

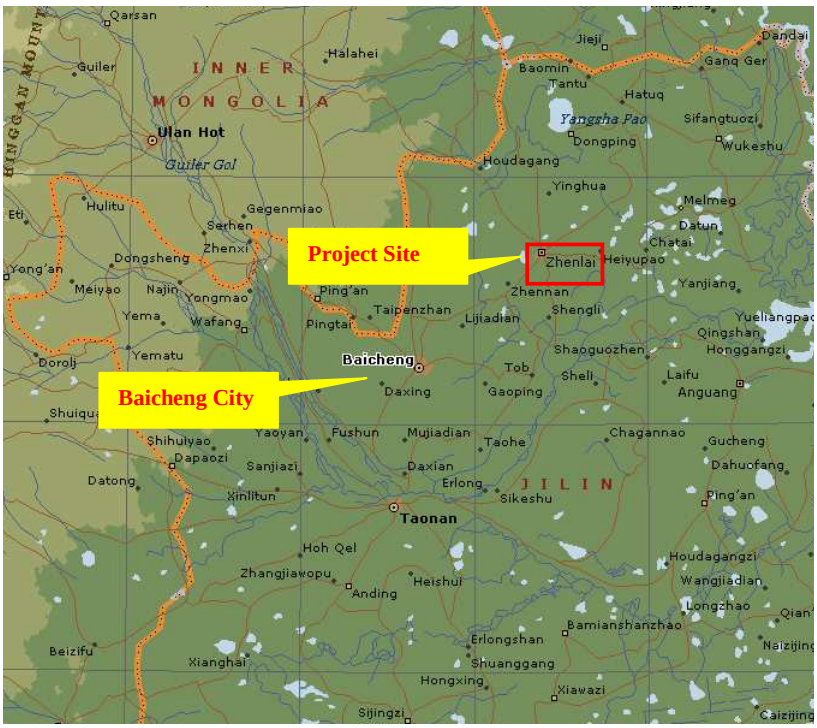

Figure A- 2: Location of the Project site

A.4. Technical description of the project

>>

The Project activity involves installation of 33 wind turbines with each capacity of 1,500 kW, totals up an installation capacity of 49.5 MW. The lifetime of wind turbines is 20 years. The Project adopts a unit connection mode of one-turbine-one-transformer. Each turbine is equipped with a 35kV transformer. The full-load operation time of the Project is estimated to be 2,056 hours per year (PLF 23.47%), and thus contributes to net electricity output of 101,696MWh annually connected to NECPG. The electricity will be finally upgraded to 220kV, and then connected to NECPG.

A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:

>>

The following approved baseline and monitoring methodology is applied to the proposed project:

The approved consolidated baseline and monitoring methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 09, EB45)

Tool for the demonstration and assessment of additionality (Version 05.2, EB39)

Guidelines on the assessment of investment analysis (Version 03, EB51)

Tool to calculate the emission factor for an electricity system (Version 02, EB50)

For more information on these methodologies, please refer to:
http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html

A.6. Registration date of the project activity:

>>

19/07/2010

A.7. Crediting period of the project activity and related information (start date and choice of crediting period):

>>

19/07/2010 – 18/07/2017 (Renewable)

A.8. Name of responsible person(s)/entity(ies):

>>

Ms. Shunrong Lin
Carbon Asset Management Sweden AB
Email: sunny.lin@tricorona.se
Tel: +86-010-65981579

SECTION B. Implementation of the project activity

B.1. Implementation status of the project activity

>>

The project is implemented in strict accordance with the description in the registered PDD. No abnormal circumstance occurred during this monitoring period. The detailed implementation status is as follows:

1. Relevant dates for the project implementation is as below:

Construction start date	05/01/2009
Operation of 1st generator	27/10/2009
Operation of all generators	29/12/2009
Operation lifetime	20 years

2. No overhaul, down of equipment or exchange of equipment has been found during the monitoring period.
3. No event or situation that occurred during the monitoring period, which may impact the applicability of the methodology, has been found during the monitoring period.

B.2. Revision of the monitoring plan

>>

The monitoring plan has not been revised.

B.3. Request for deviation applied to this monitoring period

>>

No deviation to this monitoring period.

B.4. Notification or request of approval of changes

>>

No notification or request of approval of changes from the project activity as described in the registered CDM-PDD.

SECTION C. Description of the monitoring system

>>

1. Data to be monitored

As emission factor of the Project is determined ex-ante, the main data to be monitored includes electricity exports to the grid (NECPG) by the Project ($EG_{out,y}$) and the electricity imports from the grid via main line by the Project ($EG_{in,y}$) for operation, and auxiliary electricity imported from the grid through back up line in case of emergency ($EG_{aux,y}$).

Therefore, the net electricity output of the Project is calculated as $EG_{y}=EG_{out,y} - EG_{in,y} - EG_{aux,y}$

2. Operational and management structure for monitoring

The monitoring of the emission reductions will be carried out according to Figure C-1 below.

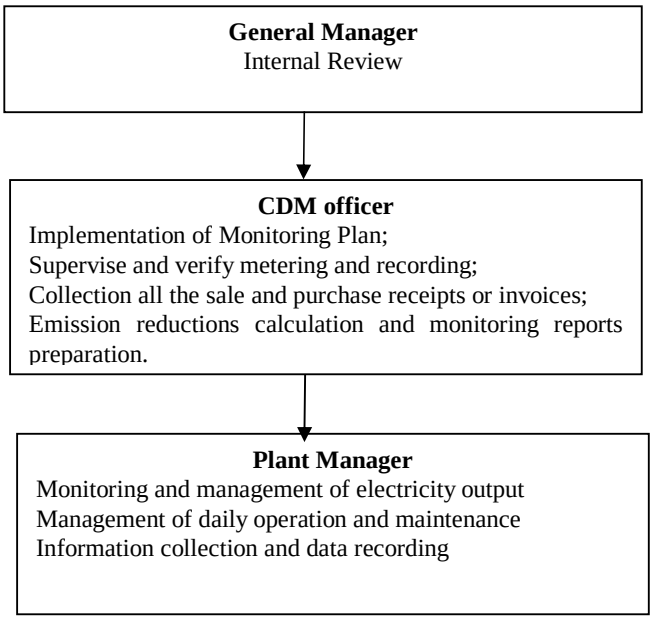

Figure C-1 the personnel structure of the project monitoring

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 are documented and sent to the CDM officer monthly. The CDM officer works out the monitoring plan, charges 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.

3. Monitoring energy meters and installation:

The electricity exports ($EG_{out,y}$) to and imports ($EG_{in,y}$) from the grid via main line by the Project are continuously monitored through the main energy meter installed at the project site. Also, a backup energy meter is installed beside the main energy meter for double checking in case of the erroneous of main energy meter occurred. Both main energy meter and backup energy meter have bidirectional function that can read the electricity exports ($EG_{out,y}$) to and imports ($EG_{in,y}$) from the grid, and precision of 0.2s.

In case of emergency, the backup line starts up to let the auxiliary electricity imported from the grid ($EG_{aux,y}$). The data is monitored by the auxiliary energy meter with precision of 0.5s installed at the backup line in the project site.

All the above energy meters are managed and operated by the grid company, which are installed in accordance with Technology & Management Regulations for Power Metering Devices. The accuracy of the energy meters are up to the national standard. Electricity data are cross-checked against relevant electricity sale receipts .The location of energy meters is shown in Figure C-2 below.

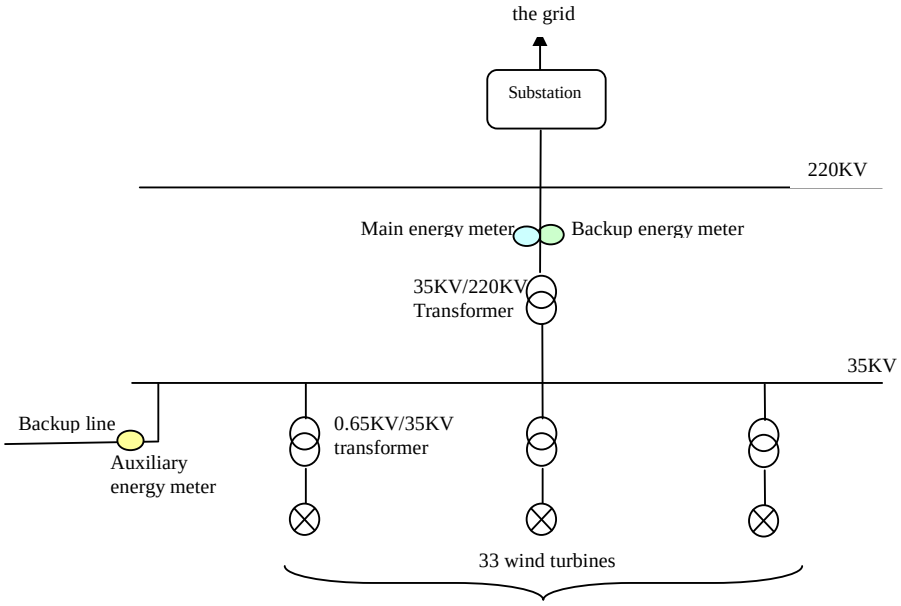

Figure C-2 Sketch for the location of the energy meters

4. Data monitoring

The electricity exported to and imported from the grid via main line ($EG_{out,y}$ and $EG_{in,y}$) are recorded by the main energy meter owned by the grid company, the monitoring steps are as follows:

(1) The Grid Company measures the electricity data of main energy meter continuously and record monthly, together with the project owner.
(2) The Grid Company provides the project owner with the monthly electricity export data and electricity import record;
(3) The project owner provides the Grid Company with sales receipts and preserves the copies of the sales receipts.
(4) The project owner provides DOE with readings record of the energy meter and copies of sales receipts.

In case of the back up line startup under emergency, the auxiliary energy meter installed in the project site for backup line is used to continuously measure the electricity imported from the backup line ($EG_{aux,y}$). The project owner and the grid company read and record the data monthly, and then the project owner provides the grid company with receipts and preserves the copies.

The electricity exported to and imported from the grid via main line ($EG_{out,y}$ and $EG_{in,y}$), and auxiliary electricity imported from the backup line ($EG_{aux,y}$) (if any) are used in the emission reduction calculation.

5. Quality Assurance and Quality Control

The calibration of meters conducted by qualified organization must comply with national standard and sectorial regulations to ensure the accuracy. The calibration records must be archived together with other monitoring records.

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

(a) first, by reading backup energy meter installed beside the main energy meter, unless a test by either party reveals it is inaccurate;
(b) if the backup energy meter is not within acceptable limits of accuracy or is otherwise performing improperly the project owner and grid company shall jointly prepare an estimate of the correct reading;
(c) if the Grid Company and the project owner fail to agree then the matter will be referred for arbitration according to agreed procedures.

If any previous reading of the auxiliary energy meter are inaccurate by more than the allowable error, or otherwise functioned improperly, the project owner and grid company shall jointly prepare an estimate of the correct reading of the auxiliary electricity imported form the grid. If the grid company and the project owner fail to agree then the matter will be referred for arbitration according to agreed procedures.

If any emergency occurred, after handling of the emergency the project owner must prepare a report regarding the emergency to explain to DOE that the handling method is reasonable.

For the proposed project, meter calibrations are conducted annually by qualified organization. According to the calibration report, all of the meters including main energy meter, backup energy meter and auxiliary energy meter meet the national standard and sectorial regulations during the monitoring period. Additionally, main energy meter and auxiliary energy meter are working normally during the monitoring period. No abnormal case or emergency occurred such as reading of main meter and auxiliary meter is inaccurate or functioned improperly, so the reaction procedure mentioned above has not been launched for quality assurance and control.

6. Data Management System

All monitoring data and records will be archived in electronic document and paper document. The project owners will also keep copies of sales receipts and prepare a monitoring report at the time of verification, which includes the net electricity generation, the calibration records, the emission reductions calculation and energy meters' corrective action records.

All the electronic and paper documents will be archived during the crediting period and two years after.

SECTION D. Data and parameters

D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors

Data / Parameter:	*EF*
Data unit:	**tCO_2e/MWh**
Description:	Combined emission factor of the grid
Source of data used:	China Electric Power Yearbook
Value(s) :	1.143775
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For baseline emission calculation
Additional comment:	This parameter is ex ante determined in PDD and fixed during the first crediting period.

D.2. Data and parameters monitored

Data / Parameter:	$EG_{out, y}$
Data unit:	MWh
Description:	Annual electricity export to NECPG by the Project in year y.
Measured /Calculated /Default:	Directly measured
Source of data:	Monitored by the main energy meter
Value(s) of monitored parameter:	Details showed in Table E-1
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	The main energy meter is a bidirectional meter Type: ZMD402CT44 Accuracy class: 0.2S Serial number: 78040208 Calibration frequency: annually Dates of last calibration: 06/07/2010 Calibration validity: one year, latest calibration valid until 05/07/2011 The back-up energy meter is a bidirectional meter. The backup energy meter will be used for double checking in case of the erroneous of main energy meter occurred. Type:ZMD402CT44 Accuracy class: 0.2S Serial number: 78040191 Calibration frequency: annually Dates of last calibration: 06/07/2010 Calibration validity: one year, latest calibration valid until 05/07/2011
Measuring/ Reading/ Recording frequency:	Measuring: continued Recording: monthly
Calculation method (if applicable):	-
QA/QC procedures applied:	Sales receipts will be used for double check to ensure the consistency. The energy meter will be calibrated according to the industry standard by a qualified organization to ensure accuracy.

Data / Parameter:	$EG_{in, y}$
Data unit:	MWh
Description:	Annual electricity imports from NECPG by the Project for operation.
Measured /Calculated /Default:	Directly measured
Source of data:	Monitored by the main energy meter
Value(s) of monitored parameter:	Details showed in Table E-2
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For baseline emission calculation
Monitoring equipment (type,	The main energy meter is a bidirectional meter

accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: ZMD402CT44 Accuracy class: 0.2S Serial number: 78040208 Calibration frequency: annually Dates of last calibration: 06/07/2010 Calibration validity: one year, latest calibration valid until 05/07/2011 The back-up energy meter is a bidirectional meter. The backup energy meter will be used for double checking in case of the erroneous of main energy meter occurred. Type:ZMD402CT44 Accuracy class: 0.2S Serial number: 78040191 Calibration frequency: annually Dates of last calibration: 06/07/2010 Calibration validity: one year, latest calibration valid until 05/07/2011
Measuring/ Reading/ Recording frequency:	Measuring: continued Recording: monthly
Calculation method (if applicable):	-
QA/QC procedures applied:	Sales receipts will be used for double check to ensure the consistency. The energy meter will be calibrated according to the industry standard by a qualified organization to ensure accuracy

Data / Parameter:	$EG_{aux,y}$
Data unit:	MWh
Description:	Auxiliary electricity imported from NECPG through backup line in emergency situation during operation period in year y.
Measured /Calculated /Default:	Directly measured
Source of data:	Monitored by the energy meter
Value(s) of monitored parameter:	Details showed in Table E-3
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Type: DSSD71 Accuracy class: 0.5S Serial number: 0600193049 Dates of last calibration: 03/01/2010 02/01/2011 Calibration validity: one year 03/01/2010 ~ 02/01/2011 02/01/2011 ~ 01/01/2012
Measuring/ Reading/ Recording frequency:	Measuring: Continued Recording: monthly
Calculation method (if applicable):	-
QA/QC procedures applied:	Meters will be calibrated according to the relevant national standard. Data measured by the main revenue meter will be cross checked using

	electricity sales receipts.

SECTION E. Emission reductions calculation

E.1. Baseline emissions calculation

>>

The baseline emission *BE* during the monitoring period results from:

$$BE = (EG_{out,y} - EG_{in,y} - EG_{aux,y}) \times EF$$

Where

$EG_{out,y}$	=	electricity exported to NECPG by the Project during the monitoring period
$EG_{in,y}$	=	electricity imported from NECPG by the Project during the monitoring period
$EG_{aux,y}$	=	electricity imported from NECPG through backup line during the monitoring period
EF	=	emission factor of the grid (calculated ex-ante and will not be updated during the first crediting period)

Based on the metering data, the net electricity supplied to the grid during the monitoring period will be calculated. In order to improve the reliability of the electricity data, net electricity delivered to the grid which is recorded by Electricity Sales Receipts (ESR) have also been compared. Conservative value between the meter reading and the ESR is used. The monthly data has been listed in Table E-1, table E-2 and table E-3 as following:

Table E-1 The electricity exported to the Grid

Period	$EG_{out,y}$ Electricity exported to the Grid(MWh)			
	By Meter Reading	By Electricity Sales Receipts	The lower value between meter readings and ESR	Data for CER calculation
	A	B	C=Min(A,B)	D=C
19/07/2010-24/07/2010	454.92	454.92	454.92	454.92
25/07/2010-24/08/2010	6016.27	6020.00	6016.27	6016.27
25/08/2010-24/09/2010	6480.88	6480.00	6480.00	6480.00
25/09/2010-24/10/2010	9318.91	9320.00	9318.91	9318.91
25/10/2010-24/11/2010	9743.05	9740.00	9740.00	9740.00
25/11/2010-24/12/2010	8925.76	8930.00	8925.76	8925.76
25/12/2010-24/01/2011	6339.17	6340.00	6339.17	6339.17
25/01/2011-22/02/2011	4898.86	4900.00	4898.86	4898.86
23/02/2011-24/03/2011	9284.11	9280.000	9280.00	9280.00
25/03/2011-24/04/2011[1]	13982.42	13980.00	13980.00	13980.00
Total	75444.36	75444.92	75433.89	75433.89

Table E-2 The electricity imported from the Grid

Period	$EG_{in,y}$ Electricity imported from the Grid(MWh)			
	By Meter Reading	By Electricity Sales Receipts	The lower value between meter readings and ESR	Data for CER calculation
	A	B	C=Max(A,B)	D=C
19/07/2010 （00:00-24:00）	1.74	1.74	1.74	1.74
20/07/2010-19/08/2010	23.76	23.76	23.76	23.76
20/08/2010-19/09/2010	31.68	31.68	31.68	31.68
20/09/2010-19/10/2010	18.48	18.48	18.48	18.48
20/10/2010-19/11/2010	18.48	18.48	18.48	18.48
20/11/2010-19/12/2010	34.32	34.32	34.32	34.32
20/12/2010-19/01/2011	23.76	23.76	23.76	23.76
20/01/2011-19/02/2011	66.00	66.00	66.00	66.00
20/02/2011-19/03/2011	13.20	13.20	13.20	13.20
20/03/2011-19/04/2011	10.56	10.56	10.56	10.56
20/04/2011-19/05/2011	15.84	15.84	15.84	15.84
Total	257.82	257.82	257.82	257.82

[1] The start time for export electricity record is 25th 00:00, and the end time is 24th 24:00(except Feb, more explanation please see “Note” behind the table) .The monitoring period of the project is 19/07/2010 - 25/04/2011, means 00:00 19/07/2010 to 00:00 25/04/2011, which equals to 00:00, 19/07/2010 to 24:00, 24/04/2011.so the monitoring period is in accordance with electricity record period.

Table E-3 The electricity imported from the backup line

Period	$EG_{aux,y}$ Electricity imported from the backup line (MWh)			
	By Meter Reading	By Electricity Sales Receipts	The lower value between meter readings and ESR	Data for CER calculation
	A	B	C=Max(A,B)	D=C
19/07/2010-24/07/2010	0.10	0.10	0.10	0.10
25/07/2010-24/08/2010	0.51	0.51	0.51	0.51
25/08/2010-24/09/2010	0.53	0.53	0.53	0.53
25/09/2010-24/10/2010	0.51	0.51	0.51	0.51
25/10/2010-24/11/2010	0.54	0.54	0.54	0.54
25/11/2010-24/12/2010	2.40	2.40	2.40	2.40
25/12/2010-24/01/2011	0.55	0.55	0.55	0.55
25/01/2011-24/02/2011	0.54	0.54	0.54	0.54
25/02/2011-24/03/2011	0.48	0.48	0.48	0.48
25/03/2011-24/04/2011	0.53	0.53	0.53	0.53
Total	6.70	6.70	6.70	6.70

Note:

1. All the start time for electricity record in above tables is on 00:00, 19/07/2010, which is the registration date of project activity.
2. According to the requirement of local grid company, the electricity export to the grid would be recorded on 0:00 of the 25th. In the table E-1, the start time for exported electricity record of each month is normally 25th 00:00 and the end time is 24th 24:00. For example, 25/07/2010-24/08/2010 means 00:00 of 25/07/2010- 24:00 of 24/08/2010. In February, grid company recorded electricity earlier for 2 days due to vacation of Chinese Spring Festival.
3. According to the requirement of local grid company, the electricity import from the grid would be recorded on 0:00 of the 20th. In the table E-2, the start time for exported electricity record of each month is normally 20th 00:00 and the end time is 19th 24:00. For example, 20/07/2010-19/08/2010 means 00:00 of 20/07/2010-24:00 of 19/08/2010.*Due to difference of record time between export electricity and import electricity, the import electricity data of May (20/04/2011-19/05/2011) is deducted in net electricity calculation for conservative consideration.*
4. According to the requirement of local grid company, the auxiliary electricity import from the grid would be recorded on 0:00 of the 25th. In the table E-3, the start time for auxiliary electricity record of each month is normally 25th 00:00 and the end time is 24th 24:00. For example, 25/07/2010-24/08/2010 means 00:00 of 25/07/2010- 24:00 of 24/08/2010.

From electricity data list as above, the net electricity delivered to the grid which has been confirmed by Grid Company is: EG =75,169.36MWh.

Therefore, the baseline emission could be calculated as following, based on the baseline emission factor fixed in the first crediting period.

$BE_y = EG_y \times EF_y$=75,169.36 MWh $\times$1.143775 tCO_2e/MWh = **85,977 tCO_2e**

E.2. Project emissions calculation

>>

According to the PDD of the project, the project emission is zero. PE = 0.

E.3. Leakage calculation

>>

According to the PDD of the project, the leakage is not considered. *LE* = 0.

E.4. Emission reductions calculation / table

>>

According to the PDD of the project, ER = BE, so the emission reduction of the project is **85,977** tCO_2 during the monitoring period.

E.5. Comparison of actual emission reductions with estimates in the CDM-PDD

>>

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

Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions (tCO_2e)	116,317 (365 days)	85,977 (281 days)

E.6. Remarks on difference from estimated value in the PDD

>>

As per the registered PDD, the estimated emission reduction of 281 days is 89,548 tCO_2, which is calculated from BE_y =116,317 tCO_2 ×281days /365days. The emission reduction of 281 days generated in this monitoring period is reported as 85,977 tCO_2 which is lower than the estimated value of PDD.

- - - - -

History of the document

Version	Date	Nature of revision
01	EB 54, Annex 34 28 May 2010	Initial adoption.
Decision Class: Regulatory **Document Type**: Guideline, Form **Business Function**: Issuance		