CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-PDD)
Version 03 - in effect as of: 28 July 2006

CONTENTS

Annexes

SECTION A. General description of project activity

A.1. Title of the project activity:

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Inner Mongolia Jingneng Saihan Wind Farm Phase II Project

Version number of the document: 2

Date: 01/04/2011

A.2. Description of the project activity:

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Inner Mongolia Jingneng Saihan Wind Farm Phase II Project (hereinafter referred to as the proposed project) is to build and operate a 48 MW grid connected wind farm. Upon completion, the electricity generated from the proposed project will be supplied to the North China Power Grid. By replacing the electricity generated from fossil fuel-fired power plants dominated North China Power Grid, the proposed project activity will achieve obvious greenhouse gas (GHG) emission reductions by avoiding CO_2 emissions.

The purpose of the proposed project is to generate renewable wind power and deliver it to North China Power Grid. For the proposed project,

(a) Prior to the start of implementation of the project activity, there is no power generation unit at the site of the proposed project, and the electricity was supplied by the North China Power Grid which was dominated by fossil fuel-fired power plants.
(b) The project scenario is the implementation of the proposed project, the installation and operation of 24 sets of wind turbines with a total capacity of 48 MW which will supply an average annual generation of 118,560 MWh to North China Power Grid and replace the same amount of electricity generated by fossil fuel-fired power plants connected to North China Power Grid.
(c) The baseline scenario of the proposed project is the electricity supply of equal amount as the proposed project from the North China Power Grid. The baseline scenario of the proposed project is the same against the scenario prior to the start of the implementation of the project activity.

The proposed project is located in Suniteyouqi, Xilinguole League, Inner Mongolia Autonomous Region, P. R. China. The proposed project involves the installation of 24 wind turbines with capacity of 2000 kW each, which amount to a total installed capacity of 48 MW. The proposed project is invested by Beijing International New Energy Co., Ltd. The estimated annual net electricity supplied to the grid and average annual emission reductions of the proposed project are 118,560 MWh and 112,655CO_2e[1], respectively.

The proposed project makes contribution to the sustainable development as follows:

[1] The annual emission reductions of the proposed project are 112,655 tCO2e, higher than the 105,438 tCO2e in GSP PDD. Main reasons of the change are that wrong default weights for the proposed project are applied (0.5 and 0.5) in GSP PDD, which should be 0.75 and 0.25. Then the correct combined margin emission factor 0.9502tCO_2/MWh is adopted for the proposed project. And the net annual electricity supplied to the grid should be 118,560 MWh, higher than 118,000 MWh in GSP PDD.

1. GHG emission reduction
The project will help reduce the greenhouse gas GHG emissions versus the high-growth, coal-dominated business-as-usual scenario in the North China Power Grid by reducing the electricity generation from the fossil-fuel fired power plants, particularly the emission of SO_x、NO_x and dust.

2. Employment opportunities
The conducting of the proposed project will create employment opportunities during the construction phase and operational period.

3. Economic Improvement
The construction of the wind farm will promote local economy by contributing to local government with more tax revenues through selling power generation.

A.3. Project participants:

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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)	Beijing International New Energy Co., Ltd.	Yes
(*) In accordance with the CDM modalities and procedures, at the time of making the CDM PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time of requesting registration, the approval by the Party(ies) involved is required.		

Further contact information of project participants is provided in Annex 1.

A.4. Technical description of the project activity:

A.4.1. Location of the project activity:

A.4.1.1. Host Party(ies):

>>
People's Republic of China

A.4.1.2. Region/State/Province etc.:

>>
Inner Mongolia Autonomous Region

A.4.1.3. City/Town/Community etc:

>>
Suniteyouqi, Xilinguole League

A.4.1.4. Detail of physical location, including information allowing the unique identification of this project activity (maximum one page):

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The proposed project is in Suniteyouqi, Xilinguole League, Inner Mongolia Autonomous Region, P. R. China. The project has central geographical coordinates with east longitude of 112°51′00″and north latitude of 42°37′00″. The figure A1 shows the location of Inner Mongolia Autonomous Region, figure A2 shows the location of the Project.

Figure A1. Location of Inner Mongolia Autonomous Region

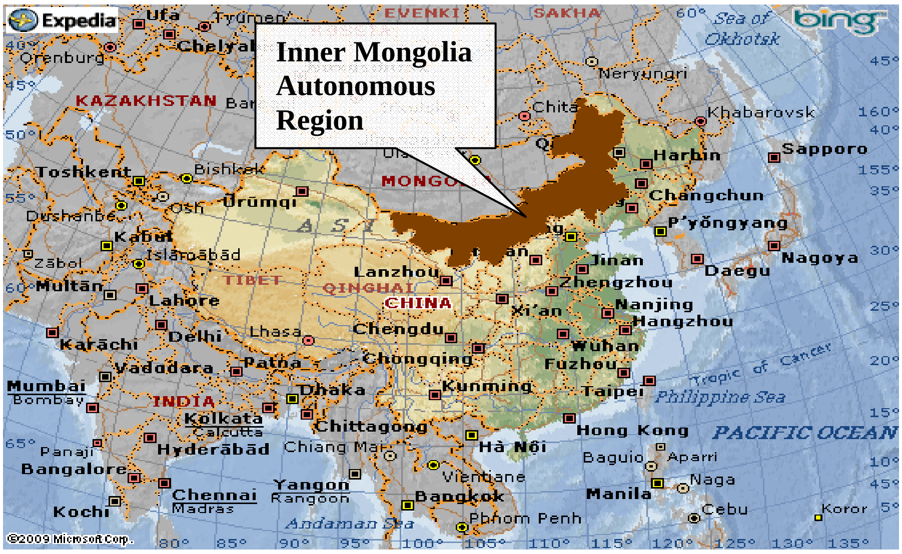

Figure A2. The proposed project on the map of Suniteyouqi, Xilinguole League, Inner Mongolia Autonomous Region P. R. China

A.4.2. Category(ies) of project activity:

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Category: Renewable electricity in grid connected applications
Sectoral Scope: 1 Energy industries

A.4.3. Technology to be employed by the project activity:

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The proposed project is to utilize wind resources for electricity generation in Suniteyouqi, Xilinguole League, Inner Mongolia Autonomous Region, P. R. China. The proposed project is a grid-connected renewable energy project.

Prior to the start of implementation of the project activity, there is no power generation unit at the site of the proposed project, and the electricity was supplied by the North China Power Grid. The baseline scenario of the proposed project is the electricity supply of equal amount as the proposed project from the North China Power Grid. In the North China Power Grid, thermal power plant is dominant in the installed capacity of power generation. The baseline scenario of the proposed project is the same as the scenario prior to the start of the implementation of the project activity.

By replacing the electricity generated from fossil fuel-fired power plants dominated North China Power Grid; the proposed project activity will achieve obvious greenhouse gas (GHG) emission reductions by avoiding CO_2 emissions.

The proposed project involves the installation of 24wind turbines with capacity of 2000kW each, which amount to a total installed capacity of 48MW. The net electricity supply to the grid is expected to be 118,560MWh. The wind turbines will be supplied by Beijing Beizhong Steam Turbine Generator Co., Ltd. The selected model is FD80-2000. The main technical specifications of the wind turbine are provided in the following table.

Item	Unit	Index
Rated capacity	kW	2000
Number of blades	piece	3
Rotor diameter	m	80
Rated wind speed	m/s	13.5
Rated Power	kW	2000
Rated voltage	V	690
Life time	Year	20
Plant load Factor[2]		0.28

The proposed project will share the 35kV/220kV substation with Inner Mongolia Jingneng Saihan Wind Farm Phase I Project (referred to as *Project B,* Ref.2567). The wind power generated will be switched by

[2] The plant load factor of the proposed project is 0.28, which is calculated with annual operational hours (2,470 hrs) divided by the whole hours in a year (8760 hours), the annual operational hours is calculated with annual power supplied to the grid (118,560MWh) divided by the installed capacity(48MW). The annual power supplied to the grid is determined by a qualified third party contracted by the PP, Inner Mongolia Power Exploration & Design Institute.

the shared 35kV/220 kV substation through 4 groups of 35kV transmission lines of each project, and then connected to the 220 kV Wenduer substation, and then transmitted to the North China Power Grid finally (see following diagram).

Electricity supplied to the grid by the proposed project activity will be directly monitored by the meters (MA1, MA2, MA3 and MA4), which installed at the connection point between the proposed project and the 35kV/220kV substation. And the meters (MB1, MB2, MB3 and MB4) are installed between *Project B* and the 35kV/220kV substation to monitor the electricity supplied to the grid by *Project B.* Details information is described in B.7.2.

The proposed project uses wind turbines manufactures by domestic supplier and there is no international technology transfer involved.

A.4.4. Estimated amount of emission reductions over the chosen crediting period:

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A crediting period of 7 years (01/09/2011 – 31/08/2018) is selected for the project activity. An estimation of emissions reductions expected over the crediting period is provided in the table below.

Years	**Annual estimation of emission reductions in tonnes of CO_2e**
01/09/2011-31/08/2012	112,655
01/09/2012-31/08/2013	112,655
01/09/2013-31/08/2014	112,655
01/09/2014-31/08/2015	112,655
01/09/2015-31/08/2016	112,655
01/09/2016-31/08/2017	112,655
01/09/2017-31/08/2018	112,655
Total estimated reductions (tonnes of CO_2e)	788,585
Total number of the first crediting years	7
Annual average over the crediting period of estimated reductions (tonnes of CO_2e)	112,655

A.4.5. Public funding of the project activity:

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There is no public funding from Parties included in Annex I is involved in this project.

SECTION B. Application of a baseline and monitoring methodology

B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity:

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The approved methodology applied in the proposed project activity is ACM0002 (version 12.1.0) – “Consolidated methodology for grid-connected electricity generation from renewable sources” and monitoring methodology.

“Tool for the Demonstration and Assessment of Additionality (version 05.2)”

“Tool to calculate the emission factor for an electricity system (version 02.1.0)”

For more information regarding the methodology please refer to:
http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html

B.2. Justification of the choice of the methodology and why it is applicable to the project activity:

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The proposed project installs a new power plant at a site where no renewable power was operated prior to the implementation of the project activity. It meets all applicability conditions of methodology ACM0002 (version 12.1.0) which is listed as follows:

1) The proposed project is a new grid-connected renewable wind power project that installs a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity; and it does not involve capacity addition, retrofit or replacement;
2) The proposed project does not involve switching from fossil fuels to renewable energy at the site.

B.3. Description of the sources and gases included in the project boundary:

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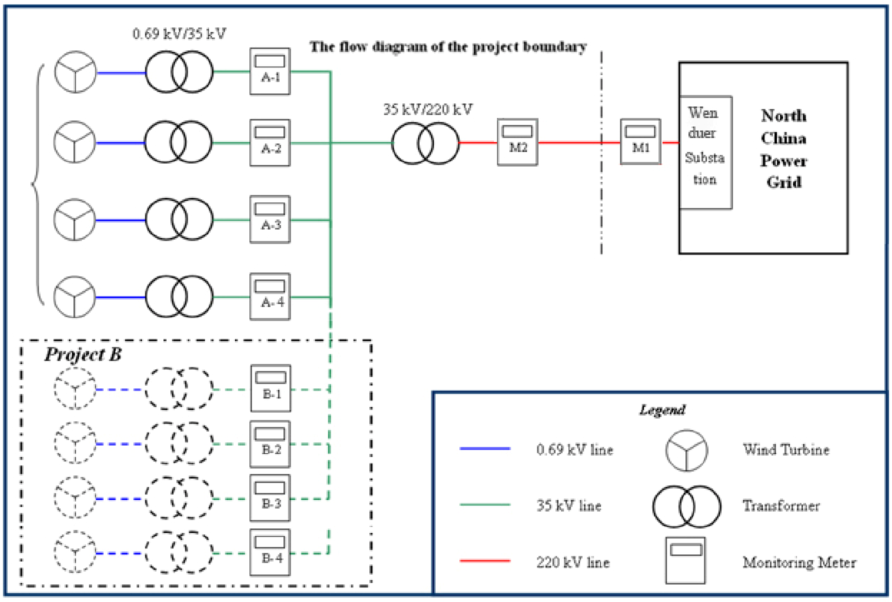
	Source	Gas	Included?	Justification / Explanation
Baseline	CO2 emissions from electricity generation in fossil fuel-fired power plants that is displaced due to the project activity.	CO_2	Yes	Main emission sources
		CH_4	No	Minor emission source.
		N_2O	No	Minor emission source.
Project Activity	The wind power plant	CO_2	No	According to methodology, the proposed project is a wind power project, so it does not involve project emission.
		CH_4	No	According to methodology, the proposed project is a wind power project, so it does not involve project emission.

		N_2O	No	According to methodology, the proposed project is a wind power project, so it does not involve project emission.

The flow diagram of the project boundary is illustrated as follow:



The spatial extent of the proposed project boundary includes the proposed project site and all power plants connected physically to the North China Power Grid. The connected electricity system is the Northeast China Power Grid which consists of Liaoning, Jilin and Heilongjiang Power Grids, and Central China Power Grid (CCPG) which consists of Chongqing, Henan, Hubei, Hunan, Jiangxi and Sichuan Power Grids.

According to the "Tool to calculate the emission factor for an electricity system" (version 02.1.0), the delineation of grid boundaries as provided by the DNA[3] of China is used. North China Power Grid composed by Beijing, Tianjing, Hebei, Shanxi, Shandong and Inner Mongolia Power Grids is the project electricity system.

B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario:

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According to ACM0002 (version 12.1.0), if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline is the following:

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system" (version 02.1.0).

[3] Source: 2009 Baseline Emission Factors for Regional Power Grids in China

http://qhs.ndrc.gov.cn/qjfzjz/t20090703_289357.htm

The North China Power Grid only possesses 0.903% of its total electricity generation that comes from renewable energy sources in 2007, 0.745% in 2006, 0.749% in 2005, 0.708% in 2004, and 0.862% in 2003[4]. Hence, the low operating cost/must run sources is much less than 50% of the total grid generation. Consequently, Simple OM method is selected to calculate the Operating Margin emission factor (OM) of the proposed project.

Parameters, which are described in B.6.1, used to determine the baseline emission are listed in the following table:

$EF_{grid,OMsimlpe}$	tCO_2e/MWh	1.0069
$EF_{grid,BM,y}$	tCO_2e/MWh	0.7802
$EF_{grid,CM,y}$	tCO_2e/MWh	0.9502

Therefore, supply of equivalent annual power to the grid by the North China Power Grid is the baseline scenario for the proposed project activity.

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality):

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Prior Consideration of CDM

The timeline of milestone of the proposed project is shown in the table below:

Time	**Milestones**
22/05/2008	Environment Impact Assessment (EIA) Report developed
05/2008	Feasibility Study Report (FSR) developed
10/07/2008	EIA Report approved by Inner Mongolia Autonomous Regional Environment Protection Bureau
22/12/2008	Boarding meeting made decision to seek CDM support
06/01/2009	CDM Consultancy Contract signed
19/01/2009	FSR approved by Inner Mongolia Autonomous Regional Development and Reform Commission
06/02/2009	Wind turbine purchasing contract signed (Starting date)
06/2009	Wind turbine foundation construction contract signed
20/06/2009	Construction commencement permit issued

[4] China Electric Power Yearbook *2003-2008*

15/07/2009	The notification for the prior consideration of the CDM was sent to China DNA[5]
15/07/2009	Long term loan contract signed
July 2009	China LoA was obtained
13/08/2009	The GSP was started

The Feasibility Study Report (FSR) was complied by Inner Mongolia Power Exploration & Design Institute and completed in May 2008. Inner Mongolia Autonomous Regional Development and Reform Commission approved this FSR on 19/01/2009.

Based on the FSR finished in May 2008 and approved tariff in Inner Mongolia Autonomous Region, the project developer found that the Project IRR (6.43%) much lower than the benchmark of 8%. The proposed project is thus financially unattractive to investors. Then the project owner decided to seek additional financial support from CDM to make the proposed project feasible and made investment decision therefore.

At present, the project owner has purchased wind turbine in 06/02/2009. The development procedure shows that CDM was serious considered before the proposed project started.

The additionality of the proposed project is demonstrated and assessed by the approved "Tool for the Demonstration and Assessment of Additionality" (Version 05.2). Following steps include:

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

Define realistic and credible alternatives to the project activity(s) that can be (part of) the baseline scenario through the following sub-steps:

Sub-step 1a. Define alternatives to the project activity:

Identify realistic and credible alternative(s) available to the project participants or similar project developers that provide outputs or services comparable with the proposed CDM project activity.
These alternatives are to include:

1) The proposed project not undertaken as CDM project;
2) Construction of a fossil fuel power plant with equivalent amount of annual electricity output;
3) Construction of a power plant using other source of renewable energy with equivalent amount of annual electricity output; and
4) Supply of equivalent annual power output by the Grid to which the proposed project is connected.

The alternative 3) is to construct renewable power plants whose annual power supply is equivalent to the projects. However, due to the technology development status and high investment costs for power

[5] When the notification on prior consideration of CDM was required to be sent to UNFCCC secretariat on EB48 meeting dated on 14-17/07/2009, it had been five-month later for the proposed project. According to the letter which replied from UNFCCC secretariat, it indicated that notifications sent to the DNA only prior to EB 48 are acceptable. The letter has been provided to DOE.

generation, solar PV[6] is far from being economically attractive. The project locates at areas where lacks of geothermal resources, exploitable biomass or hydro resource on-site or around that can provide same electricity generation output of the proposed project activity. Hence, Alternative 3) is not a realistic and credible alternative.

Sub-step 1b. Consistency with mandatory laws and regulations:

There is a large difference between thermal power and wind farm in their annual operating hours and the stability of their operation. However, an alternative fossil fuel power plant that can provide the equivalent generation capacity with a comparable annual utilization rate of 5,344hours utilization hours (Reference: *P734China Electric Power Yearbook 2008*), which was the average utilization hours of the thermal units in China in 2007, would be one with installed capacity of less than 22MW. The alternative fossil fuel power plant with the equivalent power output as the proposed project will be less than 135 MW, while coal-fired plants with a capacity of 135 MW or less are prohibited from development in large grid such as provincial girds[7], and the fossil fuel-fired power units with less than 100MW capacity is strictly regulated for installation[8] according to current regulations in China. Consequently, Alternative 2) is not a realistic and credible alternative.

The alternative 1) and 4) are in line with the existing Chinese laws and regulations.

Step 2. Investment analysis

The purpose of this step is to determine whether the proposed project activity is economically or financially less attractive than other alternatives without an additional funding that may be derived from the CDM project activities. The investment analysis was conducted in the following steps:

Sub-step 2a. Determine appropriate analysis method

The three analysis methods suggested by *Tool for the demonstration and assessment of additionality (version 05.2)* are simple cost analysis (Option I), investment comparison analysis (Option II) and benchmark analysis (Option III). Since the proposed project will earn revenues from not only the CDM but also the electricity output, the simple cost analysis method is not applicable. Investment comparative analysis method is only applicable to the case that alternative baseline scenario is similar to the proposed projects, so that comparative analysis can be conducted. The alternative baseline scenario of the proposed project is to supply electricity from the North China Power Grid rather than a new investment project. Therefore, Option II is not an appropriate method either. The proposed project will use benchmark analysis method based on Project IRR.

Sub-step 2b. Apply benchmark analysis (Option III)

With reference to the *Interim Rules on Economic Assessment of Electric Engineering Retrofit Projects*, issued by the State Power Corporation in 2002, the financial benchmark return adopted as a guideline for investments in the electric power industry in China is 8% for the Project Post-tax IRR and only if the

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[6] Source: Page 54, *China Solar PV Report 2007*, China Environment Science Press. The cost of solar PV is USD 0.5/kWh, which is around RMB 3.7/kWh.

[7] Notice on Strictly Prohibiting the Installation of Fuel-fired Generation with the Capacity of 135MW or below issued by the General Office of the State Council, decree no. 2002-6.

[8] Notice on Strictly Controlling the Manufacturing and Construction of Small-scale Fuel-fired Generators, Ref. No.[Jijiqing (1995) 2372].

Project IRR of the proposed project is higher than or equivalent to this benchmark, the proposed project is financially feasible. Thus, 8% is adopted as the benchmark of the proposed project.

Sub-step 2c. Calculation and comparison of financial indicators

Based on the above-mentioned benchmark analysis, the calculation and comparative analysis of financial indicators for the proposed project are carried out in sub-step 2c.

(1) Basic parameters for calculation of financial indicators

Basic parameters for calculation of financial indicators are as follows:

Parameter	*Data*	*Data Source*
Installed capacity	***48 MW***	Feasibility Study Report
Annual power supply	***118,560 MWh***	Feasibility Study Report
Project lifetime	***20 years***	Feasibility Study Report
Total static investment	***466.35 million RMB***	Feasibility Study Report
Debt-equity ratio	80/20	Feasibility Study Report
Annual O&M cost	***11.7865Million RMB (average value)***	Feasibility Study Report
Tariff	***0.51 RMB/kWh (including VAT)***	Feasibility Study Report
Depreciation period	***15 years***	Feasibility Study Report
Recovery value	***5%***	Feasibility Study Report
Interest rate	***5.94%***	Feasibility Study Report
Tax rate	***8.5% (Value added tax)***	Feasibility Study Report
	25% (Income tax)	
	3% (Educational surtax)	
	5% (City construction surtax)	
Expected CERs price	***12 Euro/tCO_2e***	Expected

Justification of the appropriateness of the tariff applied for the project

National Development & Reform Commission (NDRC) has issued the notifications about on-grid tariff of wind farm projects in Western Inner Mongolia on 22nd December 2006[9], 9th June 2007[10], 3rd December 2007[11], 23rd July 2008[12] and 20th July 2009[13], respectively. The following list is considered to estimate the tariff which would be applied to the proposed project.

[9] Source: Fagaijiage [2006] No.2908. The document has been provided to DOE for validation.

[10] Source: Fagaijiage [2007] No.1260. The document has been provided to DOE for validation.

[11] Source: Fagaijiage [2007] No.3303. website: http://www.sdpc.gov.cn/jggl/zcfg/t20080218_193008.htm

[12] Source: Fagaijiage [2008] No.1876. website: http://www.sdpc.gov.cn/jggl/zcfg/t20080813_230726.htm

Date	Code of Tariff Notification	Tariff issued in the Notification (**RMB Yuan/kWh**, including VAT)	Remarks
22nd December 2006	Fagaijiage [2006] No.2908	0.579	Issued for Inner-Mongolia Ximeng Abag 49.5MW Wind Power Project
		0.5497	Issued for Inner Mongolia Wulatezhongqi Wind Farm Project
		0.548	Issued for Inner Mongolia Bailingmiao Wind Farm Project
9th June 2007	Fagaijiage [2007] No.1260	0.51	Issued for Inner Mongolia Datang Zhuozi Wind Farm
3rd December 2007	Fagaijiage [2007] No.3303	0.51	Issued for 28 projects in Western Inner Mongolia
23rd July 2008	Fagaijiage [2008] No.1876	0.51	Issued for 6 projects in Western Inner Mongolia
20th July 2009	Fagaijiage [2009] No.1906	0.51	Issued for the wind farm projects in Western Inner Mongolia approved after 1st August 2009.

From the table above, the highest tariff for the wind projects commissioned in West Inner Mongolia is 0.579 (including VAT, Yuan/kWh). According to the NDRC tariff approval of Fa Gai Jia Ge [2006]2908 on 22/12/2006, the electricity for the first 30,000 operation hours is 0.579 (including VAT, Yuan/kWh), and electricity tariff after 30,000 operation hours is equal to the average electricity tariff of all other power plants in West Inner Mongolia Region which is determined by government. The electricity tariff is strictly regulated by government in China. The increased rate is under tight control. West Inner Mongolia Grid is dominated by coal fired power plants. So we select the electricity tariff of coal fired power plant as the average electricity tariff of West Inner Mongolia Grid for simplification. The electricity tariff for coal-fired generating units with Flue Gas Desulfurization (hereafter refers to as FGD) is higher that of coal-fired generating units without FGD, therefore the average electricity tariff of coal-fired generating units with FGD in West Inner Mongolia Grid is selected in conservative manner. The variation of the electricity tariff of the coal-fired generating with FGD in West Inner Mongolia Grid is listed in the below table.

Electricity tariff of the coal fired generating units with FDG in West Inner Mongolia Grid since 2002[14]

Year	Electricity tariff	Average annual increase rate
2002	0.245	2%

[13] Source: Fagaijiage [2009] No.1906. website: http://www.sdpc.gov.cn/zcfb/zcfbtz/2009tz/t20090727_292827.htm

[14] http://www.dqzc.gov.cn/nshowmain.asp?tid=10095

http://www.nmpi.gov.cn/jgzz/jgzz_040804.htm

http://www.nmpi.gov.cn/jgzz/jgzz_050604.htm

http://www.nmpi.gov.cn/jgzz/jgzz_060902.htm

2004	0.252	
2005	0.257	
2006	0.2659	
2007	0.2659	

Considering the above annual increase rate of 2% for electricity tariff in West Inner Mongolia Grid, the electricity tariff in West Inner Mongolia Grid will be 0.34 Yuan/kWh after 30,000 operation hours (year 2019). According to the registered PDD of Inner-Mongolia Ximeng Abag 49.5MW Wind Power Project[15], the electricity tariff for the first 30,000 operation hours is 0.579 (including VAT, Yuan/kWh), and electricity tariff after 30,000 operation hours is 0.40 (including VAT, Yuan/kWh) with annual increase by 3%. To be conservative, the higher tariff of 0.40 (including VAT, Yuan/kWh) with annual increase by 3% after 30,000 operation hours is applied for the proposed project after 30,000 operation hours. With this high tariff as Inner-Mongolia Ximeng Abag 49.5MW Wind Power Project for the proposed project, the Project IRR of the proposed project is calculated to be 7.273%, which is still lower than the benchmark of 8%.

When the the project owner was making the decision whether to implement the proposed project or not, the selected tariff is 0.51 RMB Yuan/kWh (including VAT) which directly sited from the FSR composed by Grade A design institute. Moreover, base on the tariff policy issued from 2007 which demonstrated the tariff of wind farm projects in Western Inner Mongolia is fixed on 0.51 RMB Yuan/kWh (including VAT), therefore the tariff is adopted by the design institute appropriately.

Furthermore, on 20th July 2009, a notification on the tariff policy of wind farms was issued by NDRC, in which the on-grid tariff of wind farm in Western Inner Mongolia remains 0.51 RMB Yuan/kWh (including VAT). And the Project IRR is 7.27% with application of the highest tariff of 0.54 RMB Yuan/kWh (including VAT) issued by EB in Inner Mongolia Autonomous Region, which is still below the benchmark. Therefore, the tariff of 0.51 RMB Yuan/kWh (including VAT) used in the PDD is appropriate.

(2) Comparison of Project IRR for the proposed project and the financial benchmark
In accordance with the benchmark analysis (Option III), the proposed project will not be considered as financially attractive if its financial indicators (such as Project IRR) are lower than the benchmark.

Table 1 shows the Project IRRs of the proposed project, with and without CDM-related income. Without CDM-related income, the Project IRR is 6.43% which lower than the benchmark and the proposed project is not financially acceptable. With it, the Project IRR is 9.60%, better than the benchmark and therefore, the proposed project is financially acceptable.

Table 1. Financial indicators of the Proposed Project

	Project IRR (benchmark = 8%)
Without CDM-related income	6.43%
With CDM-related income	9.60%

Sub-step 2d. Sensitivity analysis (only applicable to options II and III):

[15] http://cdm.unfccc.int/Projects/DB/RWTUV1218614638.67/view

The purpose of the sensitivity analysis is to assess the impact of uncertainties in the input values of the financial model on the calculated Project IRR. Based on the analysis in the FSR, for a wind farm project without CDM funding, the critical factors that influences the Project IRR are mainly as follows:

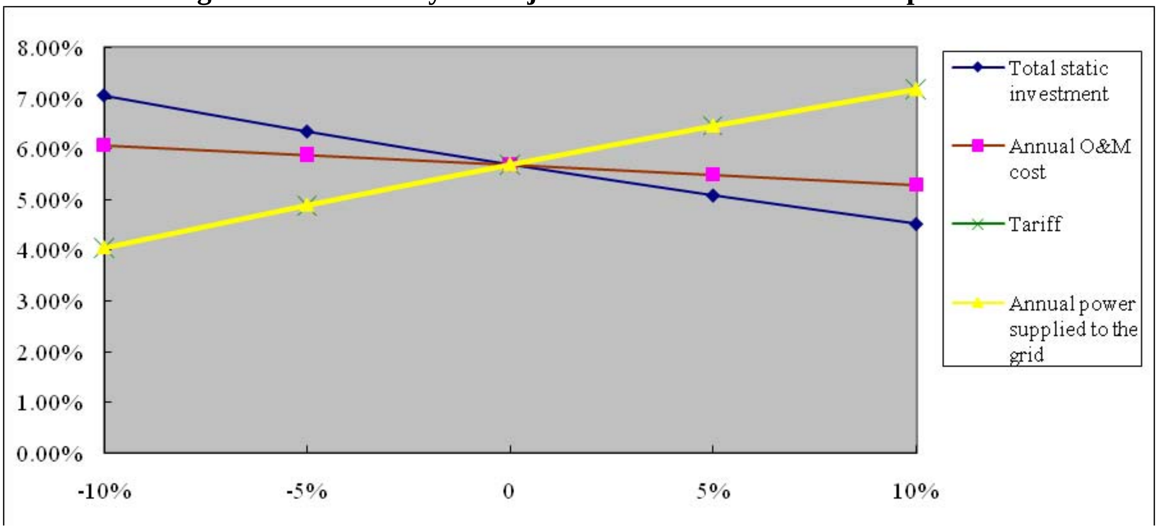
1) Total static investment;
2) Annual O&M cost;
3) Tariff;
4) Annual power supplied to the grid

They are fluctuated within the range from -10% to +10% in the FSR and the selection is also in accordance with the Guidance from "Tool for the demonstration and assessment of additionality" (Version 05.2). Their impacts on Project IRR of the proposed project were presented in Table 2 and Figure 2.

Table 2. Sensitivity of Project IRR to different financial parameters

Project IRR sensitive	-10%	-5%	0	5%	10%
Total static investment	7.83%	7.10%	6.43%	5.81%	5.23%
Annual O&M cost	6.74%	6.58%	6.43%	6.27%	6.11%
Tariff	4.88%	5.67%	6.43%	7.15%	7.83%
Annual power output	4.88%	5.67%	6.43%	7.15%	7.83%

Figure 2. Sensitivity of Project IRR to different financial parameters



As shown in Table 2 and Figure 2, the Project IRR of the proposed project varies to different extents, when the above four financial indicators fluctuated within the reasonable range from -10% to +10% and the Project IRR does not exceed the benchmark of 8%.

Total static investment

When the total investment decreases by 10%, the project IRR is 7.83%, lower than benchmark 8%. If the total investment decreases by 11.1%, the project IRR reaches the benchmark. According to the current signed contracts of the proposed project, the total amount is 427.384 million RMB. These contracts contribute to 91.64% of total static investment (466.35 million RMB). Due to these actual contracts, the total investment is not likely to decrease by 11.1%. Therefore the project is still additional.

Annual O&M cost

When the annual O&M cost decreases by 10%, the project IRR is 6.74% lower than the benchmark. If the annual O&M cost decreases by 52.80%, the project IRR reaches the benchmark. The average annual O&M cost for the proposed project is evidenced by "Methodology of Feasibility Study Report of Wind Farm Projects" (DL/T5067-1996). Based on the Price Index from 2002 to 2008 (below Table), it is indicated that Chinese economy is experiencing a relatively high inflation. Furthermore, the price of material and fuel are gradually increasing in China, which leads annual O&M cost gradually increasing. Besides, compared with the O&M/Total static investment of previous wind projects which have been registered as CDM project in Inner Mongolia Autonomous Region, the O&M/Total static investment of the proposed project (2.53%) falls into the range from 1.18%[16] to 4.01%[17], which means the cost of the proposed project is reasonable. Therefore the O&M cost is impossible to decrease annually by 52.80%compared with the one listed in FSR.

Table Price index from 2002~2008* (100 for previous years)

Item\Year	2002	2003	2004	2005	2006	2007	2008
Total Index	97.7	104.8	111.4	108.3	106.0	104.4	110.5
Fuel, power, price	100.1	107.4	109.7	115.0	111.9	104.3	120.6
Ferrous metal	98.2	107.9	120.4	107.5	98.3	105.4	118.4

* The price index of past 7 years prior to the investment decision was cited from the National Bureau of Statistic of China, [18]

Tariff

When the tariff increases by 10%, the project IRR is 7.83% lower than the benchmark. If the tariff increases by 11.30%, the Project IRR reaches the benchmark. The tariff of 0.51 RMB Yuan/kWh (including VAT) will be applied to the proposed project, and the tariff of 0.51 RMB Yuan/kWh (including VAT) has been stable since June 2007. Furthermore, on 20th July 2009, a notification on the tariff policy of wind farms was issued by NDRC, in which the on-grid tariff of wind farm in Western Inner Mongolia remains 0.51 RMB Yuan/kWh (including VAT) and the tariff will be applied for the subsequent projects approved from 20th July 2009 onwards. According to "Information note on the highest tariffs applied by the executive board in its decisions on registration of projects in the People's Republic of China"[19] published by the EB, for the project activity category, the highest tariff in Inner Mongolia Autonomous Region equals to 0.54 RMB/kWh (VAT included), the Project IRR is 7.27% with application of this tariff, which still below the benchmark. Even the tariff (0.579 (including VAT, Yuan/kWh) for the first 30,000 operation hours, and 0.40 (including VAT, Yuan/kWh) after 30,000 operation hours) of Inner-Mongolia Ximeng Abag 49.5MW Wind Power Project[20] adopted, the Project IRR is 7.273% still below the benchmark. Therefore, the tariff could not increase to cross the benchmark.

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16 Guohua Hulunbeier Xinbaerhu Youqi 49.5MW Wind Farm Project, Ref No.981.

17 Inner Mongolia Dali Phase IV 49.5MW Wind Power Project, Ref No.1628.

18 http://www.stats.gov.cn/tjsj/ndsj/2009/indexch.htm

19 http://cdm.unfccc.int/Reference/Notes/reg_note07.pdf

20 http://cdm.unfccc.int/Projects/DB/RWTUV1218614638.67/view

Annual power supplied to the grid
When the annual power output increases by about 10%, the project IRR is 7.83%. If the annual power output increases by 11.30%, the project IRR reaches the benchmark. Although the wind resource might be variable year by year, the year's average wind resource is not likely to be changed since it was based on historic wind resource (Based on 1 year on-site assessment of wind resource of the project (01/09/2006 – 31/08/2007) and 56 years (1952-2007) wind resource data from Zhurihe Weather Station). Therefore, the annual power supplied to the grid of the proposed project is not possible to be increased significantly.

In conclusion of the sensitive analysis, as the financial indicators vary within reasonable range, the proposed project remains financially unattractive without CDM support and the proposed project is additional. Hence, the Scenario 1) is not a realistic alternative.

Step 4. Common practice analysis

Sub-step 4a. Analyze other activities similar to the proposed project activity:

In line with the EB guidance on the additionality tool, the common practice analysis is carried out on similar projects in the same region and taking place in a comparable environment with regards to regulatory framework, investment climate, access to technology, and access to financing, etc.

In China, the regulatory framework and investment climate for wind farm projects are only similar and comparable in the same Province/ Autonomous Region. Wind farm project proposals are approved by the provincial DRC, and the projects' EIAs by the provincial Environmental Protection Bureau. The common practice analysis of the proposed project activity, therefore, covers projects in the Shandong province.

Choose similar construction year
In April 2002, China implemented the policy "Separate power plants from network and compete in price to enter network[21]. The objective of this power sector reform is to establish a more commercialized power market in China. Power project investment has to be under a more commercialized condition and considers project investment return more seriously. Since market condition for wind power project development changes much since April 2002, this common practice analysis starts from April 2002.

Choose similar area
The proposed project is located in the Inner Mongolia Autonomous Region, and the electricity generated from the proposed project will be supplied to the Inner Mongolia Power Grid. Due to the difference in price policy, especially the approved on-grid tariff of wind farm; grid-connected structure; geological conditions and economic development status in different Province/Autonomous Region, the geographical scope is defined within the Inner Mongolia Autonomous Region.

Choose similar scale
Projects with installed capacity of or below 15 MW are small scale projects and are not applicable for ACM0002. The installed capacity of the proposed project is 48MW, therefore, this common practice analysis compares projects larger than 15 MW.

[21] China implemented the policy "S*eparate power plants from network and compete in price to enter network*"

In conclusion, 'Similar projects' to the project activity are identified by the criteria of: (1) wind power projects with capacity more than 15MW; (2) construction year from 2002-2010; and (3) located at Inner Mongolia Autonomous Region (4) without CDM support.

With reference to *Statistic of installed capacity of China's Wind Farms* s published in recent years[22], and website of *the Gold Standard*, which collected by Professor Shi Pengfei issued by Chinese Wind Energy Association, there are four similar wind farms (capacity over 15 MW) as proposed project put into commission in Inner Mongolia Autonomous Region without CDM support.

Table 3 Wind Farm Development in Inner Mongolia Autonomous Region (since 2002)

No.	Project	Commissioned date	Total capacity	Remark
1	Dali Phase Three	Mar.2004	31.2MW	Supported by National Debt Fund
2	Bailingmiao phase one Wind Project	Dec.2007	50MW	Applying for Voluntary Emission Reduction under Golden Standard Voluntary Carbon Standard
3	Bailingmiao phase two Wind Project	Jan.2008	50MW	Applying for Voluntary Emission Reduction under Golden Standard Voluntary Carbon Standard
4	Honiton Xiwu Phrase one Wind Farm Project	Jan.2010	50MW	Applying for Voluntary Emission Reduction under Golden Standard Voluntary Carbon Standard

Sub-step 4b. Discuss any similar options that are occurring:

From Table 3, it clearly shows that Dali Phase Three Wind Power Project is a Demonstration Project supported by National Debt Fund[23].Bailingmiao phase one (project ID: GS449)[24], Bailingmiao phase two (project ID: GS505)[25] and Honiton Xiwu phase one (project ID: GS620)[26] Wind Project applied for Voluntary Emission Reduction under Golden Standard Voluntary Carbon Standard to obtain the support from Gold Standard VER funding to solve the financial barriers. Therefore they are essentially different from the proposed project.

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[22] Reference: 2007: http://www.cwea.org.cn/upload/20080324.pdf
2008: http://www.cwea.org.cn/upload/20090305.pdf
2009: http://www.cwea.org.cn/upload/201006102.pdf and http://www.windpower-china.com/node/1446
Statistic of installed capacity of China's Wind Farms is compiled by Professor Shi Pengfei.

[23] Source: http://www.chifeng.gov.cn/html/2008-11/3130.shtml

[24] Source: https://gs1.apx.com/mymodule/ProjectDoc/EditProjectDoc.asp?id1=449

[25] Source: https://gs1.apx.com/mymodule/ProjectDoc/EditProjectDoc.asp?id1=505

[26]Source: https://gs1.apx.com/mymodule/ProjectDoc/EditProjectDoc.asp?id1=620

Besides the above four projects, the others have all been applying for CDM projects in EB. CDM-related income is an effective measure for the project developers to overcome the barriers they encounter during project development. The proposed project, similar to other wind power projects in Inner Mongolia Autonomous Region, faces higher financial barriers and hard to be brought forth, which means that without the incentives of CDM, the proposed project is not a feasible project. Hence, it is concluded that the proposed project is not common practice within the region.

Therefore, the proposed project is additional.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

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The key methodological steps are as follows:

1. Calculating the Baseline Emission (*BEy*)
2. Calculating the Project Emission (*PEy*)
3. Calculating the Leakage Emission (*LEy*)
4. Calculating the Emission Reduction (*ERy*)

1. Calculating the Baseline emissions

Baseline Emissions are calculated by multiplying the ex-ante determined baseline emission factor by annual power supplied to the grid.

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y} \quad (1)$$

Where:

BE_y	=	Baseline emissions in year *y* (tCO_2 /yr)
$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year *y* (MWh/yr)
$EF_{grid,CM,y}$	=	Combined margin emission factor for grid connected power generation in year *y* calculated using the “Tool to calculate the emission factor for an electricity system” (version 02.1.0).

1.1 Calculation of the baseline emissions factor

Following ACM0002 (version 12.1.0), the baseline emission factor (EF_y) is calculated as a combined margin ($EF_{grid,CM}$), consisting of the combination of operating margin ($EF_{grid,OM}$,) and build margin ($EF_{grid,BM}$,) factors according to the following six steps defined in the “Tool to calculate the emission factor for an electricity system” (version 02.1.0). Data for the calculations are based on official national statistics books: China Energy Statistical Yearbook and China Electric Power Yearbook.

Step 1. Identify the relevant electricity systems.
Step 2. Choose whether to include off-grid power plants in the project electricity system (optional)
Step 3. Select a method to determine the operating margin (OM).
Step 4. Calculate the operating margin emission factor according to the selected method.
Step 5. Identify the group of power units to be included in the build margin (BM).

Step 6. Calculate the build margin emission factor.
Step 7. Calculate the combined margin (CM) emissions factor.

Step 1. Identify the relevant electric power system

For determining the electricity emission factors, a **project electricity system** is defined by the spatial extent of the power plants that are physically connected through transmission and distribution lines to the project activity (e.g. the renewable power plant location or the consumers where electricity is being saved) and that can be dispatched without significant transmission constraints.

Similarly, a **connected electricity system**, e.g. national or international, is defined as an electricity system that is connected by transmission lines to the project electricity system. Power plants within the connected electricity system can be dispatched without significant transmission constraints but transmission to the project electricity system has significant transmission constraint.

If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used.

The DNA of the host country has published a delineation of the project electricity system and connected electricity systems, this delineation is used[27]. Following the DNA delineation, the project electricity system is the North China Power Grid (NCPG), which consists of Beijing, Tianjin, Hebei, Shanxi, Shandong and Inner Mongolia Autonomous Region Power Grids. The proposed project is located in western Inner Mongolia Autonomous Region and covered by the North China Power Grid. Therefore, North China Power Grid is chosen as the relevant electric power system.

The connected electricity system is the Northeast China Power Grid which consists of Liaoning, Jilin and Heilongjiang Power Grids, and Central China Power Grid (CCPG) which consists of Chongqing, Henan, Hubei, Hunan, Jiangxi and Sichuan Power Grids.

Electricity transfers from connected electricity systems to the project electricity system are defined as **electricity imports** and electricity transfers to connected electricity systems are defined as **electricity exports**.

For the purpose of determining the build margin emission factor, the spatial extent is limited to the project electricity system, except where recent or likely future additions to transmission capacity enable significant increases in imported electricity. In such cases, the transmission capacity may be considered a build margin source.

The electricity imports from Northeast China Power Grid and CCPG to NCPG have not changed significantly from 2005 to 2007. Therefore, the spatial extent is limited to NCPG for the purpose of determining the build margin emission factor.

For the purpose of determining the operating margin emission factor, use one of the following options to determine the CO_2 emission factor(s) for net electricity imports ($EF_{grid,import,y}$) from a connected electricity system within the same host country(ies):

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27 http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2413.pdf

(a) 0 tCO_2/MWh, or
(b) The weighted average operating margin (OM) emission rate of the exporting grid, determined as described in step 4 (d) below; or
(c) The simple operating margin emission rate of the exporting grid, determined as described in step 4 (a), if the conditions for this method, as described in step 3 below, apply to the exporting grid; or
(d) The simple adjusted operating margin emission rate of the exporting grid, determined as described in step 4 (b) below.

The option (c) is selected to calculate the CO_2 emission factor for net electricity imports ($EF_{grid,import,y}$) from CCPG and Northeast China Power Grid.

Step 2. Choose whether to include off-grid power plants in the project electricity system (optional)

According to the Approval of electricity connection to North China Power Grid, all the power generated by the project activity will be supplied to the power grid company. Thus, the proposed project does not include off-grid power plants in the project electricity system referred in apply to "Tool to calculate the emission factor for an electricity system" (version 02.1.0).

Step 3. Select an operating margin (OM) method

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods:

(a) Simple OM, or
(b) Simple adjusted OM, or
(c) Dispatch Data Analysis OM, or
(d) Average OM.

Detailed information to carry out a dispatch data analysis is not publicly available; therefore, method (b) and method (c) is not suitable for the proposed project.

The Simple OM method is applicable to the project if the low-cost resources constitute less than 50% of total grid generation on average in the five most recent years or based on long-term normals for hydroelectric production.

Without any nuclear source, the North China Power Grid only possesses 0.903% of its total electricity generation that comes from renewable energy sources in 2007, 0.745% in 2006, 0.749% in 2005, 0.708% in 2004, 0.862% in 2003[28]. The Simple OM method, therefore, is selected to calculate the Operating Margin emission factor of the proposed project.

The Simple OM can be calculated using either of the two following data vintages for years(s) y:

• (Ex-ante option) A 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation, without requirement to monitor and recalculate the emissions factor during the crediting period, or

• (Ex-post option) The year in which the project activity displaces grid electricity, requiring the emission

[28] China Electric Power Yearbook *2002-2008*

factor to be updated annually during monitoring.

Here ex-ante vintage is chosen, and the $EF_{grid,OM}$ is fixed during the first crediting period.

Step 4. Calculate the operating margin emission factor according to the selected method

The Simple OM emission factor is calculated as the generation-weighted average CO_2 emissions per unit net electricity generation (tCO_2e/MWh) of all generating power plants serving the system, not including low-cost / must-run power plants / units. The data adopted in the proposed project comes from DNA of China. It may be calculated:

- Option A: Based on the net electricity generation and a CO_2 emission factor of each power unit, or
- Option B: Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system..

For the proposed project activity, the required data for the exercise of Option A is not available and those of Option B can be obtained from official sources, and off-grid power plants are not included in the calculation, therefore, Option B is chosen to calculate the operating margin emission factor:

For Option B, the Simple OM emission factor is calculated based on the net electricity supplied to the grid by all power plants serving the system, not including low-cost / must-run power plants / units, and based on the fuel type(s) and total fuel consumption of the project electricity system, as follows:

$$EF_{grid,OMsimple,y} = \frac{\sum_i FC_{i,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_y} \quad (2)$$

Where:

$EF_{grid,OMsimple,y}$	=	Simple operating margin CO_2 emission factor in year *y* (tCO_2e/MWh)
$FC_{i,y}$	=	Amount of fossil fuel type *i* consumed in the project electricity system in year *y* (mass or volume unit)
$NCV_{i,y}$	=	Net calorific value (energy content) of fossil fuel type *i* in year *y* (GJ / mass or volume unit)
$EF_{CO2,i,y}$	=	CO_2 emission factor of fossil fuel type *i* in year *y* (tCO_2e/GJ)
EG_y	=	Net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost / must-run power plants / units, in year *y* (MWh)
i	=	All fossil fuel types combusted in power sources in the project electricity system in year *y*
y	=	The three most recent years for which data is available at the time of submission of the CDM-PDD to the DOE for validation

For this approach (simple OM) to calculate the operating margin, the simple OM emission factor is calculated based on the net electricity supplied to the grid by all power plants serving the system, not including low-cost / must-run power plants / units, and including electricity imports to the grid. Electricity imports should be treated as one power plant source.

Regarding parameter selection, local values of $NCV_{i,y}$ and $EF_{CO2,i,y}$ should be used where available. If no such values are available, IPCC world-wide default values are preferable. The Net Calorific Value ($NCV_{i,y}$) of each type of fossil fuel used in the calculation comes from China Energy Statistic Yearbook 2007. Emission factors ($EF_{CO2,i,y}$) of each type of fossil fuel come from IPCC 2006 default values.

On the basis of the data available, the three-year average operating margin emission factor is calculated by the DNA as a full-generation-weighted average of the emission factors:

$EF_{grid,OMsimlpe}$ = 1.0069 tCO_2e/MWh

Step 5. Identify the cohort of power units to be included in the build margin

The sample group of power units *m* used to calculate the build margin consists of either:

(a) The set of five power units that have been built most recently, or

(b) The set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently.

The set of power units that comprises the larger annual generation should be used.

As a general guidance, a power unit is considered to have been built at the date when it started to supply electricity to the grid.

Power plants registered as CDM project activities should be excluded from the sample group m. However, if the group of power units, not registered as CDM project activity, identified for estimating the build margin emission factor includes power unit(s) that is(are) built more than 10 years ago then:

(i) exclude power unit(s) that is (are) built more than 10 years ago from the group; and

(ii) include grid connected power projects registered as CDM project activities, which are dispatched by dispatching authority to the electricity system.

Capacity additions from retrofits of power plants should not be included in the calculation of the build margin emission factor.

However, it is very difficult to obtain the data of the five power plants built most recently because these data are considered as confidential information by the company itself and the Grid in China. Therefore, a deviation[19] approved by the EB is applied here in the calculation that is to calculate the new capacity additions and the proportion of each technology of power generation. Then the weighing of capacity additions of different technologies will be worked out. Finally the emission factor will be calculated by employing the efficiency factor representing the best technology commercially available.

In terms of vintage of data, project participants can choose between one of the following two options:

[19] Source:
http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_QEJWJEF3CFBP1OZAK6V5YXPQKK7WYJ

Option 1: For the first crediting period, calculate the build margin emission factor ex-ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.
Option 2: For the first crediting period, the build margin emission factor shall be updated annually, ex-post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated ex-ante, as described in option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

According to the delineation published by DNA of the host country, the Option 1 was chosen as the data vintage of BM.

Step 6. Calculate the build margin emission factor

The build margin emission factor is the generation-weighted average emission factor (tCO_2e/MWh) of all power units *m* during the most recent year *y* for which power generation data is available, calculated as follows:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} \quad (3)$$

Where:

$EF_{grid,BM,y}$	=	Build margin CO_2 emission factor in year *y* (tCO_2e/MWh)
$EG_{m,y}$	=	Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)
$EF_{EL,m,y}$	=	CO_2 emission factor of power unit *m* in year *y* (tCO_2e/MWh)
m	=	Power units included in the build margin
y	=	Most recent historical year for which power generation data is available

Currently, it is very difficult to get the capacity margin data of power plants in China, since these data as well as net quantity of electricity generated and delivered to the grid and fuel consumption data in power unit *m* are regarded as commercial secrets or only for internal usage. Then the following deviation[10] approved by the EB was adopted to calculate the Build Margin emission factor.

According to the guidance from the CDM Executive Board for a deviation of the baseline methodology of AM0005, which had combined into the baseline methodology of ACM0002 (version 12.1.0), the

[10] Source: http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_QEJWJEF3CFBP1OZAK6V5YXPQKK7WYJ

following deviation was adopted to calculate the Build Margin emission factor.

1) Use the efficiency level of the best technologies commercially available in the provincial/regional or national grid of China, as a conservative proxy, for fuel *i* consumption estimation to estimate the $EF_{grid,BM,y}$.

2) Use capacity additions during last several years for estimating the $EF_{grid,BM,y}$, i.e. the capacity addition over last several years, whichever results in a capacity addition that is closest to 20% of total installed capacity. For the proposed project, the data from Year 2004 to 2006 is used to calculate $EF_{grid,BM,y}$

3) Use installed capacity to replace annual power generation to estimate weights.

The BM emission factor in this PDD is calculated as following sub-steps.

Sub-step 1. Calculation of weights of CO_2 emissions of solid, liquid and gaseous fossil fuels in total emissions for power generation

$$\lambda_{Coal,y} = \frac{\sum_{i \in COAL,j} FC_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}{\sum_{i,j} FC_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,y}} \quad (4)$$

$$\lambda_{Oil,y} = \frac{\sum_{i \in OIL,j} FC_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}{\sum_{i,j} FC_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,y}} \quad (5)$$

$$\lambda_{Gas,y} = \frac{\sum_{i \in GAS,j} FC_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}{\sum_{i,j} FC_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,y}} \quad (6)$$

Where:

$FC_{i,j,y}$	=	Amount of fossil fuel type *i* consumed in province *j* in year *y* (mass or volume unit)
$NCV_{i,y}$	=	Net calorific value (energy content) of fossil fuel type *i* in year *y* (GJ/t or GJ/m^3)
$EF_{CO2,i,y}$	=	CO_2 emission factor of fossil fuel type *i* in year *y* (tCO_2e/GJ)

Coal, *Oil* and *Gas* refer to the group of solid, liquid, and gaseous fossil fuels, respectively.

Sub-step 2: Calculation of Emission Factor of Relevant Thermal Power

$$EF_{Thermal,y} = \lambda_{Coal,y} \times EF_{Coal,Adv,y} + \lambda_{Oil,y} \times EF_{Oil,Adv,y} + \lambda_{Gas,y} \times EF_{Gas,Adv,y} \quad (7)$$

Where:
$EF_{Coal,Adv}$, $EF_{Oil,Adv}$ and $EF_{Gas,Adv}$ refer to the emission factors representing best technologies commercially available for coal, oil and gas fired power plants, respectively.

Sub-step 3: Calculation of BM of the Grid
Using the share of different type of capacity in total capacity addition as weight, the weighted average of emission factors of different type capacity is calculated as the Build Margin emission factor $EF_{grid,BM,y}$ of North China Power Grid.

$$EF_{grid,BM,y} = \frac{CAP_{Thermal,y}}{CAP_{Total,y}} \times EF_{Thermal,y} \quad (8)$$

Where:
CAP_{Total} = The total newly added electricity generation capacity (MW)
$CAP_{Thermal}$ = The newly added electricity generation capacity of thermal power (MW)

Following the four steps above, the build margin emission factor $EF_{grid,BM,y}$ of the North China Power Grid is calculated to be: 0.7802 tCO_2e/MWh (see Annex 3 for more details).

Step 7. Calculate the combined margin emission factor

The baseline emissions factor (EF_{CM}) is calculated as the weighted average of the Operating Margin emission factor and Build Margin emission factors following ACM0002 (version 12.1.0). For wind projects, the default weights are as follows: w_{OM} = 0.75 and w_{BM} = 0.25:

$$EF_{grid,CM,y} = w_{OM} \times EF_{grid,OM,y} + w_{BM} \times EF_{grid,BM,y} \quad (9)$$

Where:

$EF_{grid,BM,y}$	=	Build margin CO_2 emission factor in year *y* (tCO_2e/MWh)
$EF_{grid,OM,y}$	=	Operating margin CO_2 emission factor in year *y* (tCO_2e/MWh)
w_{OM}	=	Weighting of operating margin emissions factor (%)
w_{BM}	=	Weighting of build margin emissions factor (%)

On the basis of these weights for the first crediting period, the combined margin emission factor is calculated, and fixed ex-ante:

$EF_{grid,CM,y}$ = 0.9502 tCO2e/MWh

1.2 Calculation of $EG_{PJ,y}$

The proposed project is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, then:

$$EG_{PJ,y} = EG_{facility,y} \quad (10)$$

where:

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid

		as a result of the implementation of the CDM project activity in year *y* (MWh/yr)
$EG_{facility,y}$	=	Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh/yr)

2 Calculating the Project Emission (PE_y)

According to ACM0002 (version 12.1.0), project emission of the proposed wind farm project is zero.

$PE_y = 0$

3 Calculating the Leakage Emission (LE_y)

According to ACM0002 (version 12.1.0), no leakage is considered for the proposed wind farm project.

4 Calculating the Emission Reduction (ER_y)

The annual emission reductions ER_y for the project activity are calculated as the baseline emissions minus the project emissions and minus the leakage emissions. Being the project of a renewable activity the final GHG emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y \quad (11)$$

Where:

ER_y = Emission reductions in year *y* (tCO_2e/year)

BE_y = Baseline emissions in year *y* (tCO_2e /year)

PE_y = Project emissions in year *y* (tCO_2e year)

B.6.2. Data and parameters that are available at validation:

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Data / Parameter:	$FC_{i,m,y}$
Data unit:	tonnes or m^3
Description:	Amount of fossil fuel type *i* consumed by power plant / unit *m* in year *y*
Source of data used:	China Energy Statistical Yearbook（2002~2008）
Value applied:	See Annex 3 for details
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official statistical data
Any comment:	Applied for calculating OM and BM

Data / Parameter:	$NCV_{i,y}$
Data unit:	kJ/kg or kJ/m^3
Description:	Net calorific value (energy content) of fossil fuel type *i* in year *y*
Source of data used:	China Energy Statistical Yearbook（2008）
Value applied:	See Annex 3 for details
Justification of the choice of data or description of measurement methods	Official statistical data

and procedures actually applied :	
Any comment:	Applied for calculating OM and BM

Data / Parameter:	***$EF_{CO2,i,y}$***
Data unit:	tCO_2e/GJ
Description:	CO_2 emission factor of fossil fuel type *i* in year *y*
Source of data used:	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value applied:	See Annex 3 for details
Justification of the choice of data or description of measurement methods and procedures actually applied :	IPCC default value
Any comment:	Applied for calculating OM and BM

Data / Parameter:	**Carbon Oxidation Factor**
Data unit:	%
Description:	Carbon Oxidation Factor of fossil fuel type *I* consumed by the power plants in the grid
Source of data used:	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value applied:	See Annex 3 for details
Justification of the choice of data or description of measurement methods and procedures actually applied :	IPCC default value
Any comment:	Applied for calculating OM and BM

Data / Parameter:	**Installed Capacity**
Data unit:	MW
Description:	The Installed Capacity of the power plants in the grid in the year y
Source of data used:	China Electric Power Yearbook (2006,2007,2008)
Value applied:	See Annex 3 for details
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official statistical data
Any comment:	Applied for calculating BM

Data / Parameter:	***GEN_y***
Data unit:	MWh

Description:	The electricity generation of the power plants in the grid in the year y
Source of data used:	China Electric Power Yearbook（2006,2007,2008）
Value applied:	See Annex 3 for details
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official statistical data
Any comment:	Applied for calculating BM

Data / Parameter:	**Efficiency of the best technology commercially**
Data unit:	%
Description:	Best commercial available efficiency of coal, gas, oil fuel power plant
Source of data used:	Chinese DNA's Guideline of emission factors of Chinese grids
Value applied:	Best efficiency for coal plant is 38.10% Best efficiency for oil plant is 49.99% Best efficiency for gas plant is 49.99%
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official statistic value
Any comment:	Applied for calculating BM

B.6.3. Ex-ante calculation of emission reductions:

>>

As described in B.3., the emission reductions of the proposed project are calculated as follows:

Baseline emissions

The net electricity supplied to the Grid by the proposed project (net of auxiliary power i.e. the on-site electricity usage for the operation of the wind farm) is estimated to be 118,560MWh.

$EF_{grid,OM,y}$ = 1.0069 tCO_2e/MWh
$EF_{grid,BM,y}$ = 0.7802 tCO_2e/MWh
$EF_{grid,CM,y}$＝1.0069 × 0.75 + 0.7802 × 0.25 = 0.9502 tCO_2e/MWh
BE_y = 118,560×0.9502= 112,655tCO_2e

The ex-ante baseline emission factor: **0.9502 tCO_2e/MWh**
Annual baseline emissions: **112,655 tCO_2e** (details in Annex 3)

Project emissions

According to the baseline methodology ACM0002 (version 12.1.0), the GHG emission of the proposed project within the project boundary is zero, i.e.

$$PE_y = 0$$

Leakage

According to the baseline methodology ACM0002 (version 12.1.0), the leakage of the proposed project is not considered,

Project Emission Reductions

$ER_y = BE_y - PE_y$

The total annual baseline emissions are **112,655** tCO_2e.
The total annual project emissions are **0** tCO_2e.

$ER_y = BE_y - PE_y =$**112,655** – 0 = **112,655** tCO_2e

The annual emission reductions are estimated to be: **112,655**tCO_2e. The proposed project activity is expected to achieve 788,585 tCO_2e of net emission reductions during the first 7-year crediting period.

B.6.4. Summary of the ex-ante estimation of emission reductions:

>>

Year	Estimation of project activity emissions (tonnes of CO_2e)	Estimation of baseline emissions (tonnes of CO_2e)	Estimation of leakage (tonnes of CO_2e)	Estimation of overall emission reductions (tonnes of CO_2e)
01/09/2011-31/08/2012	0	112,655	0	112,655
01/09/2012-31/08/2013	0	112,655	0	112,655
01/09/2013-31/08/2014	0	112,655	0	112,655
01/09/2014-31/08/2015	0	112,655	0	112,655
01/09/2015-31/08/2016	0	112,655	0	112,655
01/09/2016-31/08/2017	0	112,655	0	112,655
01/09/2017-31/08/2018	0	112,655	0	112,655
Total (tonnes of CO_2e)	**0**	**788,585**	**0**	**788,585**

B.7. Application of the monitoring methodology and description of the monitoring plan:

B.7.1. Data and parameters monitored:

>>

Data / Parameter:	$EG_{facility,y}$
Data unit:	MWh
Description:	Quantity of net electricity generation supplied by the project to the Grid in year *y*.

Source of data to be used:	The net electricity supplied to the Grid by the proposed project will be measured based on electricity supplied by the proposed project ($EG_{output,y}$) to the grid and electricity imported from the Grid ($EG_{import,y}$) at the project substation.
Value of data applied for the purpose of calculating expected emission reductions in section B.5.	118,560
Description of measurement methods and procedures to be applied:	The readings of the electricity meters will be continuously measured and monthly recorded. Data will be archived for 2 years following the end of the last crediting period by means of electronic and paper backup. The accuracy of electricity meters is not lower than 0.5s. The calibration frequency is once a year. The net electricity supplied to the Grid by the proposed project will be measured based on electricity supplied by the project to the grid ($EG_{output,y}$) and electricity purchased from the Grid ($EG_{import,y}$)
QA/QC procedures to be applied:	Power supplied to the grid will be checked by internal verification procedure and electricity sales receipts.
Any comment:	

Data / Parameter:	$EG_{output,y}$
Data unit:	MWh
Description:	Electricity supplied to the grid by the proposed project in year y.
Source of data to be used:	The readings of the meters (MA1, MA2, MA3 and MA4) at the connection point between the proposed project and the 35kV/220kV substation.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	118,560
Description of measurement methods and procedures to be applied:	The data will be continuously measured and monthly recorded. Data will be archived for 2 years following the end of the last crediting period.
QA/QC procedures to be applied:	The meters (MA1, MA2, MA3 and MA4) will be calibrated once a year according to the management standard DL/T448-2000. Power supplied to the grid will be double checked according to electricity sales receipts as formula 12, and the more conservative data will be adopted.
Any comment:	

Data / Parameter:	$EG_{import,y}$
Data unit:	MWh
Description:	Total electricity imported from the grid by the proposed project and *Project B* in year *y*.

Source of data to be used:	The readings of the main meter (M1) at the connection point between the proposed project and the Grid
Value of data applied for the purpose of calculating expected emission reductions in section B.5	0
Description of measurement methods and procedures to be applied:	The data will be continuously measured and monthly recorded. Data will be archived for 2 years following the end of the crediting period.
QA/QC procedures to be applied:	The meters at the substation will be calibrated once a year according to the management standard DL/T448-2000. Power imported from the grid will be double checked according to electricity sales receipts.
Any comment:	

B.7.2. Description of the monitoring plan:

>>

The proposed project adopts the approved consolidated monitoring methodology ACM0002 (version 12.1.0) "Consolidated monitoring methodology for renewable grid-connected electricity generation from renewable sources" (version 12.1.0) to determine the emission reductions from the net electricity generation from the wind farm. This plan describes in more detail the process.

1. Monitoring Object

The monitoring is to justify the realistic amount of emission reduction from the CDM project. The monitoring plan will provide credible, accurate, transparent and conservative monitoring data and ensure the real, measurable, long-term GHG emission reduction from this project.

2. Management Structure

Inner Mongolia Jingneng Saihan Wind Power Co., Ltd. the owner of the proposed project, will use this document as guideline in monitoring of the project emission reduction performance and will adhere to the guidelines set out in this monitoring plan to ensure that the monitoring is credible, transparent and conservative.

The responsibilities of the project staff are as follow:

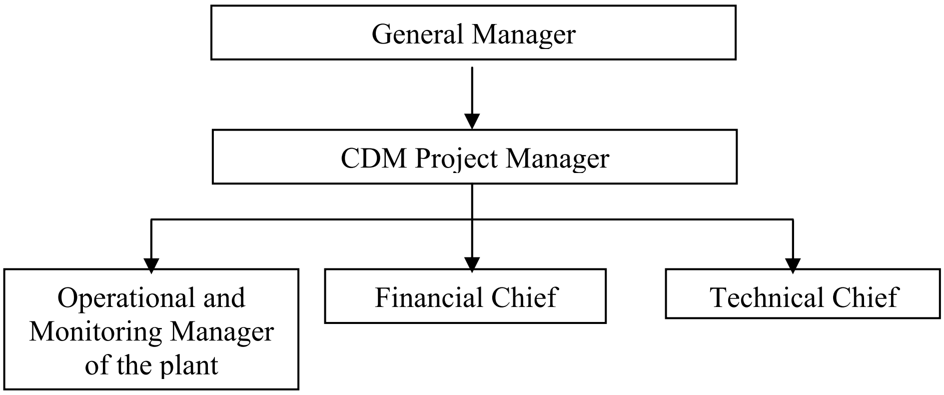
General Manager: To be responsible for supervising the whole monitoring procedure.

CDM Project Manager: To be responsible for data management and compiling monitoring report.

Operational and monitoring manager: To be responsible for collecting data and do internal audit.

Financial chief: To be responsible for collection of sales receipts.

Technical chief: To be responsible for preparing operational reports of the project activity, recording the daily operation of the wind farm, including operating periods, equipment defects, etc.



3. Monitoring Equipments

The proposed project will share the transformer and gateway meters with Inner Mongolia Jingneng Saihan Wind Farm Phase I Project (CDM ref 2567, hereafter referred to as *Project B*), the following monitoring equipments are employed to ensure the implement of the monitoring for the proposed project. The gateway meters (M1 and M2) are installed at the high voltage side of the 35kV/220kV transformer to monitor the electricity supplied to the grid by the project activity and *Project B*, and the electricity purchased from the grid by the project activity and *Project B*. Usually, the main meter (hereafter referred as the meter M1) will be used to monitor the grid-connected electricity supplied to the grid by the proposed project and *Project B*, and when the wind farm is not in operation and electricity purchased from the grid will be used to ensure the minimum requirement of running the wind farm, the meter can also be used to monitor the electricity purchased from the grid. M2 refers to the back-up meter. At the same time, the data can be monitored and recorded at the on-site control centre using a computer system. The meter reading will be readily accessible for DOE. The precision of the gateway meters (M1 and M2) are not lower than 0.5s.

The 24 sets of wind turbines were divided into 4 groups, and each group is connected with a 35kV transmission line and installed with a meter at the low voltage side of 35kV/220kV transformer. These meters (MA1, MA2, MA3 and MA4) are installed to monitor the electricity supplied to the grid by the proposed project activity. Similar situation is also occurred in the other wind farm project. The precision of the meters are not lower than 0.5s.

In order to cross-check the electricity supplied by the project to the grid ($EG_{output,y}$), the project owner set up the procedure and calculation method to determine the net electricity supplied to the grid by the proposed project, which is calculated as follows formula, the more conservative data will be adopted:

$$EG_{output,y} = \frac{\sum_{i=1,2,3,4} EG_{A-i,y}}{\sum_{i=1,2,3,4} EG_{A-i,y} + \sum_{i=1,2,3,4} EG_{B-i,y}} \times EG_{total\_output,y} \qquad (12)$$

Where:

$EG_{output,y}$ = Electricity supplied to the grid by the proposed project in the year *y*.

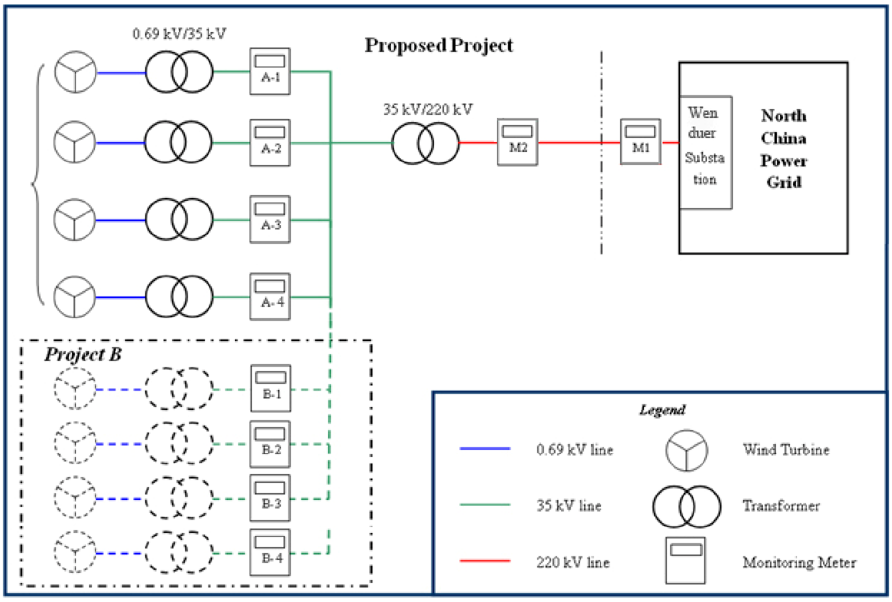
$EG_{A-i,y}$ = Electricity measured by meters installed at the 35kV transmission line of the proposed project site, i=1, 2, 3 and 4.

$EG_{B\text{-}i,y}$ = Electricity measured by meters installed at the 35kV transmission line of *Project B* site, i=1, 2, 3 and 4.

$EG_{total\text{-}output,y}$ = Total electricity supplied to the grid by the proposed project and *Project B* in the year *y* (measured by M1).

Before the project is in operation, both the project owner and the grid company will check the equipments to ensure their work properly.

A diagram shows how parameters are monitored is presented as follows:



The metering equipment are calibrated and checked for accuracy so that the metering equipment shall have sufficient accuracy within the agreed limits. The metering equipments are calibrated and checked annually by qualified third party for accuracy. The records will be supplied to the wind farm operator, and maintained by the operator.

If any error is 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.

4. Monitoring procedure

The electricity supplied to the gird will base on the meters installed at 4 groups of 35kV transmission lines of the proposed project, and the electricity imported from the grid will base on the main meter installed in 220kV substation. The receipts of the electricity supplied to the power grid by this proposed project and the electricity imported from the power grid will be issued based on the meter readings from metering equipment.

The net generation is calculated as exports minus imports. The electricity exchanged between the proposed project and North China Power Grid via the Wenduer 220kV substation is cross-checked by the project owner and the grid company, the metered values of electricity exported and imported will confirmed by the two sides.

5. Quality Assurance and Quality Control

The workers are trained to be competent and the metering equipments are calibrated and sealed as per the industry practices at regular intervals, with the purpose to provide credible, accurate, transparent and conservative monitoring data and ensure the real, measurable, long-term GHG emission reduction from this project.

Monthly net on-grid electricity supplied data will be approved and signed off by the Manager before it is accepted and stored. This audit will check compliance with monitoring procedures in this monitoring plan. This internal audit will also identify potential improvements to procedures to improve monitoring and reporting in future years. The monitoring officers will also attend a training session organized by the CDM consultant. The purpose of training is to assure those staffs are competent to conduct the monitoring plan, thus to make the monitored data accurate.

Emergency Procedure:

In case metering equipment is damaged and no reliable readings can be recorded the project entity will estimate net supply by the proposed project activity according to the following procedure:

1. In case metering equipment operated by project entity is damaged: The metering data logged by the grid company will be used as record of net power supplied to the grid for the days for which no record could be recorded.
2. In case both metering equipment operated by project entity and grid company is damaged: The project entity and the grid company will jointly calculate a conservative estimate of power supplied to the grid. A statement will be prepared indicating

► the background to the damage to metering equipment

► the assumptions used to estimate net supply to the grid for the days for which no record could be recorded

► the estimation of power supplied to the grid. The statement will be signed by both a representative of the project entity as well as a representative of the grid company.

The project entity will furthermore document all efforts taken to restore normal monitoring procedures.

6. Data Management System

The CDM manual sets out the procedures for tracking information from the primary source to the end-data calculations in paper document format. Physical documentation such as paper-based maps, diagrams and environmental assessment will be collated in a central place, together with this monitoring plan. In order to facilitate auditors' reference of relevant literature relating to the proposed project activity, the project material and monitoring results will be made available.

At the end of each month, the monitoring data will be filed in a spreadsheet and stored electronically, and the paper-based printout should be also archived. Furthermore, the project owner collects the sales receipts for the electricity supplied to the grid as a cross-check, and compiled the monitoring report including the monitoring data and relevant evidence at the end of each crediting year.

All the data will be kept for two years following the end of the last crediting period.

7. Monitoring Report

The monitoring report is prepared by the CDM project manager alone or with designated third party. The project developer and/or the designated third party have to make sure that the format and content of the monitoring report are consistent with the monitoring methodology in the registered PDD.

B.8. Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies):

>>

Date of completion of Baseline Study: 01/04/2011

Name of person/entity determining the baseline:

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Above persons are not Project Participants.

SECTION C. Duration of the project activity / crediting period

C.1. Duration of the project activity:

C.1.1. Starting date of the project activity:

>>
06/02/2009 (Date of signing the wind turbine purchasing contract)

C.1.2. Expected operational lifetime of the project activity:

>>
20 years and 0 months

C.2. Choice of the crediting period and related information:

C.2.1. Renewable crediting period

C.2.1.1. Starting date of the first crediting period:

>>
01/09/2011 (or the registration date whichever is later)

C.2.1.2. Length of the first crediting period:

>>
7 years and 0 months

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

>>
Not applicable

C.2.2.2. Length:

>>
Not applicable

SECTION D. Environmental impacts

D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts:

>>

The environmental impact assessment for this project was carried out by Inner Mongolia Power Exploration & Design Institute in 22nd May 2008 and approved by Inner Mongolia Environmental Protection Bureau on 10 July 2008. A summary of conclusion of the report is illustrated as below:

Ambient air

The impact on ambient air quality of the proposed project is mainly from dust during construction stage, by sprinkling water frequently and timely clearing can reduce the dust pollution. When the project is in operational period, there will be no air pollutions. In conclusion, the proposed project will not pose any threat on the quality of ambient air.

Impact from noise

There is some noise caused by operation of equipments. However, the location arrangement of wind turbines is seriously considered to avoid adverse influence to the residents. The noise level is in accordance with the National Standard (Grade II of the Noise Standard for City Environment GB12348-90: below daytime 55 dB (A), night-time 45 dB (A)). Hence, the noise will not impact the work and daily life of local residents.

Electromagnetic impact

The electromagnetic pollution generated from operation of the wind blades has limited effect within about 200m around, whereas no wireless communication facilities exist within 300m nearby, so the electronic magnetic pollution to the surrounding environment is insignificant.

Impact from Solid waste

There is mainly some waste of stone, bricks or domestic waste in the construction stage and basically no solid waste in the operational period. Solid waste will be collected and handled properly. Hence, it will not result any environmental impact.

Impact from Wastewater

There is mainly domestic wastewater with fairly small quantities in construction stage, and primary treatment methods will be first applied, small-scale septic tanks should be built on the site, through which the wastewater can finally meet the standard of discharge after treatment. Therefore, the impact of wastewater is limited and mitigated.

Impact on ecological environment

The proposed project will both permanently and temporarily occupy some land (mostly farmland), the temporarily occupied land will be ecologically restored for original use. Such restoration measures will include land re-surfacing, re-vegetation, and etc. As for the permanently occupied land, ecological compensation measures will be applied to the adjacent area to offset the impact on ecosystem.

.

No migrating birds have been found in the project field till now. Therefore, the project is not located on the passage of migrating birds, and the project construction will not influence the migration of birds.

D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

>>

The Project use clean renewable energy to generate electricity whose environmental impact comply with relevant environmental laws and regulations in the host country. The environmental impacts of the proposed project are not considered significant.

SECTION E. Stakeholders' comments

E.1. Brief description how comments by local stakeholders have been invited and compiled:

>>

In 21 March 2009, staff from the project owner carried out a survey of the local residents around the project location. The staff introduced the background of the proposed project and then sent out 50 copies of questionnaire in a random way, 46 pieces of reply were received. Among the interviewees, 23 of them are governmental officials, 8 teachers, 3 workers, 1 student, 1 farmer and 10 others.

An invitation notice for stakeholder comments was later issued by the project developer, 23 representatives of local stakeholders, including governmental officials of local county and local residents, etc attended the meeting in 21 March 2009 to discuss the questionnaires collected and further introduce the project. No negative opinion on construction of the project is heard and environmental considerations expressed by stakeholders are discussed on the meeting.

The questions regarding the proposed project were mainly as follows:

How is the current environment quality?
Do you currently experience electromagnetic interference when watching TV at home?
Are there any negative impacts of the proposed project on the everyday life of local residents?
Is the proposed project going to help improve the local economy?
Does the proposed project impact on local sound/noise environment?
Which is the environmental topic that concerns you the most during the construction and operation of the proposed project?
Do you support the proposed project?

E.2. Summary of the comments received:

>>

The summary of questionnaire survey is listed as the following:

- 35 (76%) of them think the current environment quality is good, 10 (22%) think it is normal and 1 (2%) of them are unsure;
- 26 (57%) of them doesn't experience electromagnetic interference, 14 (30%) experiences and 6(13%) of them are not sure;
- 32 (70%) of them think there will not be any negative impacts on their everyday life, 7(15%) of them thinks there will be and 7(15%) of them are not sure;
- 42 (91%) of them think the proposed project will help to improve the local economy, none of them don't think so and 4(9%) of them are not sure;
- 22 (48%) of them think the proposed project doesn't impact on local sound/noise environment, 4 (9%) of them think it will, 20 (43%) of them are unsure;

- Regarding the construction and operation of the propose project, 20 (43%) of them are most concerned with electromagnetic interference, 3 (7%) of them are most concerned with the noise level and 23 (50%) of them are most concerned with wastewater;
- 45 (98%) of them support the implementation of the proposed project and 1 (2%) of them don't care.

The summary of local stakeholders meeting:
The local community possesses basically positive comments on the effects of the proposed project. The interviewees considered that local social, economic and environmental development would be beneficial from the proposed project. The response was overall supportive to the project implementation.

E.3. Report on how due account was taken of any comments received:

>>
During the survey some people express their concerns about the environmental impacts of the project; local residents were most concerned with noise level as they showed in the questionnaires. For the benefit of local stakeholders, the requirements in the EIA report to mitigate noise influence will be strictly conducted by the project owner and be supervised by the municipal environmental protection bureau. Therefore, the proposed project can be carried out as planned.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

There is no public funding for the Inner Mongolia Jingneng Saihan Wind Farm Phase II Project.

Annex 3

BASELINE INFORMATION

All the tables related to the calculation of baseline emission reduction are presented below:

Calculation of Operating Margin (OM)

Table A1. Simple OM Emission Factor of North China Power Grid in 2005

Fuel types	Unit	Beijing	Tianjin	Hebei	Shanxi	Inner Mongolia	Shandong	Subtotal	Emission Factor (tc/TJ)	Fuel emission factor ($kgCO_2$/TJ)	Average low Caloric value (MJ/t,km3)	CO_2 emission (tCO_2e) L=G×J×K/100000 (unit of mass)
		A	B	C	D	E	F	G=A+B+C+D+E+F	H	J	K	L=G×J×K/10000 (unit of volume)
Raw coal	10000 ton	897.75	1675.2	6726.5	6176.45	6277.23	10405.4	**32158.53**	25.8	87,300	20,908	586,979,486
Cleaned coal	10000 ton						42.18	**42.18**	25.8	87,300	26,344	970,069
Other washed coal	10000 ton	6.57		167.45	373.65		108.69	**656.36**	25.8	87,300	8,363	4,792,018
Coke	10000 ton					0.21	0.11	**0.32**	29.2	95,700	28,435	8,708
Coke oven gas	108m3	0.64	0.75	0.62	21.08	0.39		**23.48**	12.1	37,300	16,726	1,464,870
Other coal gas	108m3	16.09	7.86	38.83	9.88	18.37		**91.03**	12.1	37,300	5,227	1,774,786
Crude oil	10000 ton					0.73		**0.73**	20	71,100	41,816	21,704

Gasoline	10000 ton			0.01				**0.01**	18.9	67,500	43,070	291
Diesel	10000 ton	0.48		3.54		0.12		**4.14**	20.2	72,600	42,652	128,197
Fuel oil	10000 ton	12.25		0.23		0.06		**12.54**	21.1	75,500	41,816	395,901
LPG	10000 ton							**0**	17.2	61,600	50,179	0
Refinery gas	10000 ton			9.02				**9.02**	15.7	48,200	46,055	200,231
Natural gas	10^8m3	0.28	0.08		2.76			**3.12**	15.3	54,300	38,931	659,553
Other oil product	10000 ton							**0**	20	75,500	41,816	0
Other coking product	10000 ton							**0**	25.8	95,700	28,435	0
Other fuel	10000 tce	8.58		32.35	69.31	7.27	118.9	**236.41**	0	0	0	0
											Subtotal	597,395,812

Source: China Energy Statistical Yearbook 2006

Table A2. Thermal Power Generation of North China Power Grid in 2005

Province	**Power Generation (MWh)**	**Ratio of Self Power Consumption of Plant (%)**	**Power Supply(MWh)**
Beijing	20,880,000	7.73	19,265,976
Tianjin	36,993,000	6.63	34,540,364
Hebei	134,348,000	6.57	125,521,336
Shanxi	128,785,000	7.42	119,229,153
Inner Mongolia	92,345,000	7.01	85,871,616
Shandong	189,880,000	7.14	176,322,568
Total	603,231,000		560,751,013

Source: China Electric Yearbook 2006

Table A3. Emission Factor of North China Power Grid in 2005

	Parameter	Unit	Value	Source
A	Net Import from Northeast China Power Grid to North China Power Grid	MWh	3,929,000	China Electric Power Yearbook 2006
B	Total Emissions of Northeast China Power Grid	tCO2e	191,234,218	Calculation based on data from China Electric Power Yearbook and China Energy Statistical Yearbook
C	Total Power Supply of Northeast China Power Grid	MWh	164,164,426	China Electric Power Yearbook 2006
D	Average Emission Factor of Northeast China Power Grid	tCO2e /MWh	1.16489	D=B/C
E	Total Power Supply of North China Power Grid	MWh	564,680,013	E=Total Power Generation of North China Power Grid＋A
F	Total Emissions of North China Power Grid	tCO2e	601,972,682	
G	Emission Factor of North China Power Grid	tCO2e /MWh	1.06604	G=F/E

Table A4. Simple OM Emission Factor of North China Power Grid in 2006

Fuel types	Unit	Beijing	Tianjin	Hebei	Shanxi	Inner Mongolia	Shandong	Subtotal	Emission Factor (tc/TJ)	Fuel emission factor ($kgCO_2/TJ$)	Average low Caloric value （MJ/t,km3）	CO_2 emission （tCO_2e） L=G×J×K/100000 （unit of mass）

		A	B	C	D	E	F	G=A+B+ C+D+E+F	H	J	K	L=G×J×K/10000 (unit of volume)
Raw coal	10000 ton	796.63	1639.2	6867.9 9	6968.8 8	8404.05	10930.66	**35607.41**	25.8	87,300	20,908	649,930,803
Cleaned coal	10000 ton						39.77	**39.77**	25.8	87,300	26,344	914,643
Other washed coal	10000 ton	6.36		214.13	371.14	61.77	544.6	**1198**	25.8	87,300	8,363	8,746,477
Briquette	10000 ton	7.97					27.77	**35.74**	26.6	87,300	20,908	652,351
Coke	10000 ton						3.23	**3.23**	29.2	95,700	28,435	87,896
Coke oven gas	108m3	0.38	0.63	5.8	22.32	0.64	5.79	**35.56**	12.1	37,300	16,726	2,218,517
Other coal gas	108m3	20.66	6.58	69.72	13.79	22.76	7.22	**140.73**	12.1	37,300	5,227	2,743,772
Crude oil	10000 ton					0.74		**0.74**	20	71,100	41,816	22,001
Gasoline	10000 ton			0.01				**0.01**	18.9	67,500	43,070	291
Diesel	10000 ton	0.21		3.01		0.07	6.32	**9.61**	20.2	72,600	42,652	297,577
Fuel oil	10000 ton	6.38		0.08			4.1	**10.56**	21.1	75,500	41,816	333,391
LPG	10000 ton						0.01	**0.01**	17.2	61,600	50,179	309
Refinery gas	10000 ton			2.43			2.32	**4.75**	15.7	48,200	46,055	105,443
Natural gas	10^8m3	3.41	0.73		0.53			**4.67**	15.3	54,300	38,931	987,216
Other oil product	10000 ton						0.28	**0.28**	20	75,500	41,816	8,840
Other coking	10000							**0**	25.8	95,700	28,435	0

product	ton											
Other fuel	10000 tce	6.83		47.11	230.76	12.51	132.29	**429.5**	0	0	0	0
											Subtotal	667,049,525

Source: China Energy Statistical Yearbook 2007

TableA5. Thermal Power Generation of North China Power Grid in 2006

Province	Power Generation (MWh)	Ratio of Self Power Consumption of Plant (%)	Power Supply(MWh)
Beijing	20,705,000	7.51	19,150,055
Tianjin	35,924,000	6.86	33,459,614
Hebei	143,888,000	6.63	134,348,226
Shanxi	150,250,000	7.45	139,056,375
Inner Mongolia	139,593,000	7.58	129,011,851
Shandong	230,922,000	7.12	214,480,354
Total	721,282,000		669,506,473

Source: China Electric Yearbook 2007

Table A6. Emission Factor of North China Power Grid in 2006

	Parameter	Unit	Value	Source
A	Net Import from Northeast China Power Grid to North China Power Grid (MWh)	MWh	2,618,060	China Power Industry Statistics 2007
B	Total Emissions of Northeast China Power Grid	tCO_2e	211,421,263	Calculation based on data from China Electric Power Yearbook and China Energy Statistical Yearbook
C	Total Power Supply of Northeast China Power Grid	MWh	183,890,005	China Electric Power Yearbook 2007

D	Average Emission Factor of Northeast China Power Grid	tCO_2e /MWh	1.14972	D=B/C
E	Net Import from Central China Power Grid to North China Power Grid (MWh)	MWh	497,060	China Power Industry Statistics 2007
F	Total Emissions of Central China Power Grid	tCO_2e	378,031,235	Calculation based on data from China Electric Power Yearbook and China Energy Statistical Yearbook
G	Total Power Supply of Central China Power Grid	MWh	337,056,176	China Electric Power Yearbook 2007
H	Average Emission Factor of Central China Power Grid	tCO_2e /MWh	1.12157	H=F/G
I	Total Power Supply of North China Power Grid	MWh	672,621,593	E=Total Power Generation of North China Power Grid＋A+E
J	Total Emissions of North China Power Grid	tCO_2e	670,617,037	
K	Emission Factor of North China Power Grid	tCO_2e /MWh	0.99702	G=J/I

China Energy Statistical Yearbook 2007

Table A7. Simple OM Emission Factor of North China Power Grid in 2007

Fuel types	Unit	Beijing	Tianji	Hebei	Shanxi	Inner	Shandong	Subtotal	Emission	Fuel	Average	CO_2 emission

			n			Mongolia			Factor (tc/TJ)	emission factor (kgCO_2/TJ)	low Caloric value (MJ/t,km3)	(tCO_2e) L=G×J×K/100000 (unit of mass)
		A	**B**	**C**	**D**	**E**	**F**	**G=A+B+C+D+E+F**	**H**	**J**	**K**	**L=G×J×K/10000 (unit of volume)**
Raw coal	10000 ton	816.17	1753.99	7716.13	7510.06	10434.25	11884.83	**40115.43**	25.8	87,300	20,908	732,214,267
Cleaned coal	10000 ton						18.43	**18.43**	25.8	87,300	26,344	423,859
Other washed coal	10000 ton	5.76		156.89	478.81	48.57	756.84	**1446.87**	25.8	87,300	8,363	10,563,452
Briquette	10000 ton	7.93					42.86	**50.79**	26.6	87,300	20,908	927,054
Coke	10000 ton			0.02			4.09	**4.11**	29.2	95,700	28,435	111,843
Coke oven gas	108m3	0.07	0.72	3.13	25.46	2.58	13.61	**45.57**	12.1	37,300	16,726	2,843,020
Other coal gas	108m3	11.8	7.6	88.38	72.8	28.17	29.64	**238.39**	12.1	37,300	5,227	4,647,821
Crude oil	10000 ton							**0**	20	71,100	41,816	0
Gasoline	10000 ton			0.01				**0.01**	18.9	67,500	43,070	291
Diesel	10000 ton	0.33		2.35		0.62	5.08	**8.38**	20.2	72,600	42,652	259,490
Fuel oil	10000 ton	4.74		0.18			2.35	**7.27**	21.1	75,500	41,816	229,522
LPG	10000 ton							**0**	17.2	61,600	50,179	0
Refinery gas	10000	0.06		2.85			1.65	**4.56**	15.7	48,200	46,055	101,225

	ton											
Natural gas	10^8m3	5.03	0.73		0.54	4.22	0.01	**10.53**	15.3	54,300	38,931	2,225,993
Other oil product	10000 ton	1.72						**1.72**	20	75,500	41,816	54,302
Other coking product	10000 ton	4.74						**4.74**	25.8	95,700	28,435	128,986
Other fuel	10000 tce	11.94		77.25	360.26	30.75	163.48	**643.68**	0	0	0	0
											Subtotal	754,731,124

Source: China Energy Statistical Yearbook 2008

Table A8. Thermal Power Generation of North China Power Grid in 2007

Province	**Power Generation (MWh)**	**Ratio of Self Power Consumption of Plant (%)**	**Power Supply(MWh)**
Beijing	22,300,000	7.51	20,625,270
Tianjin	39,900,000	6.53	37,294,530
Hebei	163,300,000	6.67	152,407,890
Shanxi	173,400,000	7.99	159,545,340
Inner Mongolia	180,100,000	7.77	166,106,230
Shandong	259,100,000	7.23	240,367,070
Total	838,100,000		776,346,330

Source: China Electric Yearbook 2008

Table A9. Emission Factor of North China Power Grid in 2007

	Parameter	**Unit**	**Value**	**Source**
A	Net Import from	MWh	1,789,750	China Power Industry Statistics 2006

	Northeast China Power Grid to North China Power Grid			
B	Total Emissions of Northeast China Power Grid	tCO_2e	219,122,791	Calculation based on data from China Electric Power Yearbook and China Energy Statistical Yearbook
C	Total Power Supply of Northeast China Power Grid	MWh	202,542,560	China Electric Power Yearbook 2007
D	Average Emission Factor of Northeast China Power Grid	tCO_2e /MWh	1.08186	D=B/C
E	Net Import from Central China Power Grid to North China Power Grid	MWh	803,000	China Power Industry Statistics 2006
F	Total Emissions of Central China Power Grid	tCO_2e	419,013,395	Calculation based on data from China Electric Power Yearbook and China Energy Statistical Yearbook
G	Total Power Supply of Central China Power Grid	MWh	380,239,080	China Electric Power Yearbook 2007
H	Average Emission Factor of Central China Power Grid	tCO_2e /MWh	1.10197	H=F/G
I	Total Power Supply of North China Power Grid	MWh	778,939,080	E=Total Power Generation of North China Power Grid＋A＋E
J	Total Emissions of North China Power Grid	tCO_2e	757,552,268	

K	Emission Factor of North China Power Grid	tCO_2e /MWh	0.97254	K=J/I

Table A10. Operating Margin Emission Factor of North China Power Grid

		Year 2005	Year 2006	Year 2007	Total
A	Emissions (tCO2e /year)	601,972,682	670,617,037	757,552,268	2,030,141,988
B	Power Supply (MWh)	564,680,013	672,621,593	778,939,080	2,016,240,686
C	CO2 Emission Factor (tCO2e/MWh)	C = A/B			1.00689

Calculation of Build Margin (BM):

Step 1. Calculation of weights of CO2 emissions of solid, liquid and gas fuel in total emissions for power generation

$$\lambda_{Coal,y} = \frac{\sum_{i \in COAL,j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}{\sum_{i,j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}$$

$$\lambda_{Oil,y} = \frac{\sum_{i \in OIL,j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}{\sum_{i,j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}$$

$$\lambda_{Gas,y} = \frac{\sum_{i \in GAS,j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}{\sum_{i,j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}$$

Where:

$FC_{i,j,y}$: Amount of fossil fuel type *i* consumed in province *j* in year *y* (mass or volume unit);

$EF_{CO2,i,y}$: CO_2 emission factor of fossil fuel type *i* in year *y* (tCO_2 /GJ);
COAL,OIL and GAS respectively refers to the group of solid, liquid, and gas fuels.

Based on China Energy Statistical Yearbook 2007, the calculation of the weights of solid, liquid, and gas fuels in North China Power Grid are:

λ_{Coal} =98.63%， λ_{Oil} =0.07%， λ_{Gas} =1.30%

Step 2: Calculation of Emission Factor of Relevant Thermal Power

$$EF_{Thermal} = \lambda_{Coal} \times EF_{Coal,Adv} + \lambda_{Oil} \times EF_{Oil,Adv} + \lambda_{Gas} \times EF_{Gas,Adv}$$

Where: $EF_{Coal,Adv}$, $EF_{Oil,Adv}$ and $EF_{Gas，Adv}$ respectively refers to the emission factor representing best technology commercially available for fuel of coal, oil or gas fired power plants. For specific workings, see the following:

Table A11. Emission factor representing best technology commercially available for fuel of coal, oil or gas fired power plants

	Variable	**Efficiency of Power Supply(%)**	**Emission Coefficient of Fuel** ($kgCO_2$/TJ)	**Oxidation Rate**	**Emission Factor (tCO_2e/MWh)**
		A	B	C	D=3.6/A/1,000,000×B×C
Coal-fired Power Plant	$EF_{Coal,Adv}$	38.10	87,300	1	0.8249

Gas-fired Power Plant	$EF_{Gas,Adv}$	49.99	75,500	1	0.5437
Oil-fired Power Plant	$EF_{Oil,Adv}$	49.99	54,300	1	0.3910

$$EF_{Thermal} = \lambda_{Coal} \times EF_{Coal,Adv} + \lambda_{Oil} \times EF_{Oil,Adv} + \lambda_{Gas} \times EF_{Gas,Adv} = 0.8191\ (tCO_2/MWh)$$

Step 3: Calculation of BM of the Grid

$$EF_{grid,BM,y} = \frac{CAP_{Thermal,y}}{CAP_{Total,y}} \times EF_{Thermal,y} ,$$

Where: CAP_{Total} is the total of new capacity additions, and $CAP_{Thermal}$ is the new capacity addition of thermal power.

Table A12. Installed Capacity of North China Power Grid in 2007

Installed Capacity	Unit	Beijing	Tianjin	Hebei	Shanxi	Inner Mongolia	Shandong	Total
Thermal Power	MW	3,900	6,920	29,020	30,950	39,870	54,140	164,800
Hydropower	MW	1050	10	780	790	830	1,050	4,510
Nuclear Power	MW	0	0	0	0	0	0	0
Wind Power and Others	MW	2.7	0	410	0	1,096.5	210	1,719.2
Total		4,952.7	6,930	30,210	31,740	41,796.5	55,400	171,029.2

Source: China Power Yearbook 2008

Table A13. Installed Capacity of North China Power Grid in 2006

Installed Capacity	Unit	Beijing	Tianjin	Hebei	Shanxi	Inner Mongolia	Shandong	Total
Thermal Power	MW	3,984	6,512	26,087	26,661	28,899	49,395	141,538
Hydropower	MW	1,053	5	785	790	818	553	4,004
Nuclear Power	MW	0	0	0	0	0	0	0
Wind Power and Others	MW	24	24	218	0	565	106	937
Total	MW	5,061	6,541	27,090	27,451	30,282	50,054	146,479

Source: China Power Yearbook 2007

Table A14. Installed Capacity of North China Power Grid in 2005

Installed Capacity	Unit	Beijing	Tianjin	Hebei	Shanxi	Inner Mongolia	Shandong	Total
Thermal Power	MW	3,833.5	6,149.9	22,333.2	22,246.8	19,173.3	37,332	111,068.7
Hydropower	MW	1,025	5	784.5	783	567.9	50.8	3,216.2
Nuclear Power	MW	0	0	0	0	0	0	0
Wind Power and Others	MW	24	24	48	0	208.9	30.6	335.5
Total	MW	4,882.5	6,178.9	23,165.7	23,029.8	19,950.2	37,413.4	114,620.4

Source: China Power Yearbook 2006

Table A15. Calculation of BM of North China Power Grid (MW)

	Installation in year	Installation in year	Installation in year	New Additions from	Ratio in New

	2005	2006	2007	2005 to 2007	Additions
	A	B	C	D=C-A	
Thermal Power（MW）	111,068.7	141,538	164,800	53,731.3	95.25%
Hydro Power（MW）	3,216.2	4,004	4,510	1,293.8	2.29%
Nuclear Power（MW）	0	0	0	0	0.00%
Wind Power and Others（MW）	335.5	937	1,719.2	1,383.7	2.45%
Total（MW）	**114,620.4**	**146,479**	**171,029.2**	**56,408.8**	**100.00%**
Percentage compared with installation of 2007	67.02%	85.65%	100%		

$EF_{grid,BM,y}$ =0.8191×95.25%=0.7802tCO_2/MWh

Table A16. Baseline Emission Factor of North China Power Grid

	Parameter	**Unit**	**Amount**
A	Operating Margin Emission Factor	tCO_2/MWh	1.0069
B	Build Margin Emission Factor	tCO_2/MWh	0.7802
C	Combined Emission Factor (C=0.75*A+0.25*B)	tCO_2/MWh	**0.9502**

Table A17. Electricity Generation Baseline Emissions

	Parameter	Unit	Amount	Source or Equation
A	Project installed capacity	MW	48	Feasibility Study
B	Annual electricity supplied	MWh	118,560	Feasibility Study
C	Baseline Emissions Factor	tCO_2/MWh	0.9502	Table A16
D	Electricity generation baseline emissions	tCO_2/year	**112,655**	D= B * C

Annex 4

MONITORING PLAN

Please refer to B.7.2. in the PDD.