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

CONTENTS

SECTION A. General description of project activity

A.1 Title of the project activity:

>>
Inner Mongolia Keshiketeng County Wutaohai South Wind Farm 49.5 MW Project
Version: 7.0
Date: 11/02/2009

A.2. Description of the project activity:

>>
Inner Mongolia Keshiketeng County Wutaohai South Wind Farm 49.5 MW Project (hereafter referred as the proposed project) is a grid connected renewable energy project. The objective of the proposed project is to generate electricity and to deliver into the Northeast China Power Grid (NeCPG). NeCPG is the baseline scenario of the proposed project.

The proposed project is a new wind farm project. The scenario prior to the implementation of the proposed project is the same as the baseline scenario, i.e. NeCPG as the provider of the same amount of electricity.

The proposed project is located in Nandian Town Shangtoudi of Keshiketeng County of Inner Mongolia Autonomous Region. Totally 66 wind turbines with a nominal capacity of 750kW will be installed, providing a total capacity of 49.5 MW. The wind power generation technology adopted in the proposed project is zero emission generation technology. Therefore, the purpose of the project activity is to generate electricity by using the renewable wind resources instead of the fossil fuel consumptions. With an average annual 132,500 MWh supplied to NeCPG which is predominantly supported by coal-fired power plants, the proposed project is estimated to deliver 151,858 tonnes CO_2 emission reduction annually.

The contributions of the proposed project to sustainable development goal are summarized as follows:

- The implementation of the proposed project will reduce GHG emissions and reduce the dependence of fossil fuels.
- The proposed project could be helpful to diversify power mix of the power grid and increase the supply mix of renewable energy in Keshiketeng County of Inner Mongolia Autonomous Region.
- During the construction and operation period the proposed project will provide at least 15 new employee opportunities.
- Wind power development is at beginning stage both in local area and China. The successful implementation of the proposed project will be serving as a demonstration for wider deployment of wind power technology in local and national level.

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)
China (host)	Keshiketeng County Huifeng New Energy Co., Ltd.	No
Japan	New Energy and Industrial Technology Development Organization (NEDO)	No

For detailed contact information of the project participants, please refer to Annex 1.

A.4. Technical description of the project activity:

A.4.1. Location of the project activity:

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A.4.1.1. Host Party(ies):

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China

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

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Inner Mongolia Autonomous Region

A.4.1.3. City/Town/Community etc:

>>
Keshiketeng County Nandian Town

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 wind power project is located in the northwest of Chifeng City and south of Wulanbutong develop park Nandian Town. The altitude of the proposed project site is 1,500~1,960m and the site is open and plain with abundant wind resource. The geographical coordinates of the centre of the wind farm is N117º 48´ , E42º 39´ , 90 km^2 area of total wind farm , as shown in Figure A.4.1.4-1.

Figure A.4.1.4-1 Location of Wutaohai South Wind Farm Project

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

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Sectoral scope 1: Energy industries (renewable -/ non-renewable sources)

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

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The total installed capacity of the proposed project will be 49.5 MW, composed by 66 wind turbines with 750kW per unit. The type of the wind turbines will be asynchronous generator made by Goldwind Science & Technology Co., Ltd., model Wind turbine 48/750. The installation height of wind turbines will be 50m. The technical characteristics of wind turbines for the proposed project are shown in Table A.4.3-1, quoting from manufacturer's brochure.

Table A.4.3-1 Technical Characteristics of Wind Turbines for the Proposed Project

No.	Items	Specifications
1	Manufacturer	Goldwind Science & Technology Co., Ltd.
2	Type	Wind turbine 48/750
3	Rated power	750 kW
4	Cut-in wind speed	4 m/s
5	Rated wind speed	14 m/s
6	Cut-out wind speed	25 m/s (10 minute average)
7	Survival wind speed	70 m/s (3 second average)
8	Rotor diameter	48 m
9	Hub height	50 m
10	Weight(Nacelle)	22 Ton

According to the feasible research report prepared by Beijing North China Power Engineering Co., the expected annual net electricity supplied to the grid will be 132,500 MWh, at 2,677 operation hours. The wind resource in the area is plentiful, and average wind speed is 8.06m/s which is relatively high. The project owner considered the type of the wind turbines, and adopted the model Wind turbine 48/750 used mature technology and widely introduced in China.

In the baseline scenario, the same amount of electricity will be imported from NeCPG, which is dominated by fossil-fired power plants, as well as the scenario prior to the implementation of the proposed project.

The development of the project will contribute to promoting application of such type of wind turbine, acceleration the accumulation of experiences and expansion of the field of domestic wind power technology.

A new 63MVA220/35kV transformer station will be constructed within the wind farm. The wind power system will be incorporated into the power grid through one circle of 220kV line.

The proposed project only adopts domestic technology and equipment, therefore no technology transfer.

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

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The project activity will select a renewable crediting period of the first 7-year which is from 01/07/2009 to 30/06/2016. In the crediting period, it will add up to make a GHG emission reduction about 1,063,006 tCO_2.

Years	Annual estimation of emission reductions in tonnes of CO_2e
01/07/2009 ~ 31/12/2009	75,929
Year 2010	151,858
Year 2011	151,858
Year 2012	151,858
Year 2013	151,858
Year 2014	151,858
Year 2015	151,858
01/01/2016 ~ 30/06/2016	75,929
Total estimated reductions of first crediting period (tonnes of CO_2e)	1,063,006
Total number of first crediting period	**7**
Annual average over the first crediting period of estimated reductions (tonnes of CO_2e)	151,858

A.4.5. Public funding of the project activity:

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Neither Public Funding nor Official Development Assistances from Annex I countries are involved in implementation of the proposed 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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ACM0002 (Ver 07): Consolidated baseline methodology for grid-connected electricity generation from renewable sources. More information about the methodology can be found on the website: http://cdm.unfccc.int/methodologies/approved.

"Tool for the Demonstration and Assessment of Additionality (Ver 05.2)". More information about the methodology can be found on the website:
http://cdm.unfccc.int/Reference/tools/ls/meth_tool01.pdf .

"Tool to calculate the emission factor for an electricity system (Ver 01)". More information about the methodology can be found on the website:
http://cdm.unfccc.int/Reference/tools/ls/meth_tool07_v01_1.pdf .

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 can meet the applicability criteria of the methodology ACM0002 (Ver 07), therefore, the methodology is applicable to the proposed project.

- The project activity is the installation of wind power plant.
- The geographic and system boundaries for the relevant electricity grid can be clearly idenfied and information on the characteristics of the grid is available.
- The project activity is not involve switching from fossil fuels to renewable energy sources at the site of the project activity.
- The type of project activities is neither biomass fired power plants nor hydro power plants.

And the additionality of the proposed project can be verified using "Tools for the demonstration and assessment of additionality" requested by the baseline methodology ACM0002 (Ver 07).

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

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The following table summaries the gases and sources within the project boundary.

Table B.3-1 Summary of gases and sources included in the project boundary

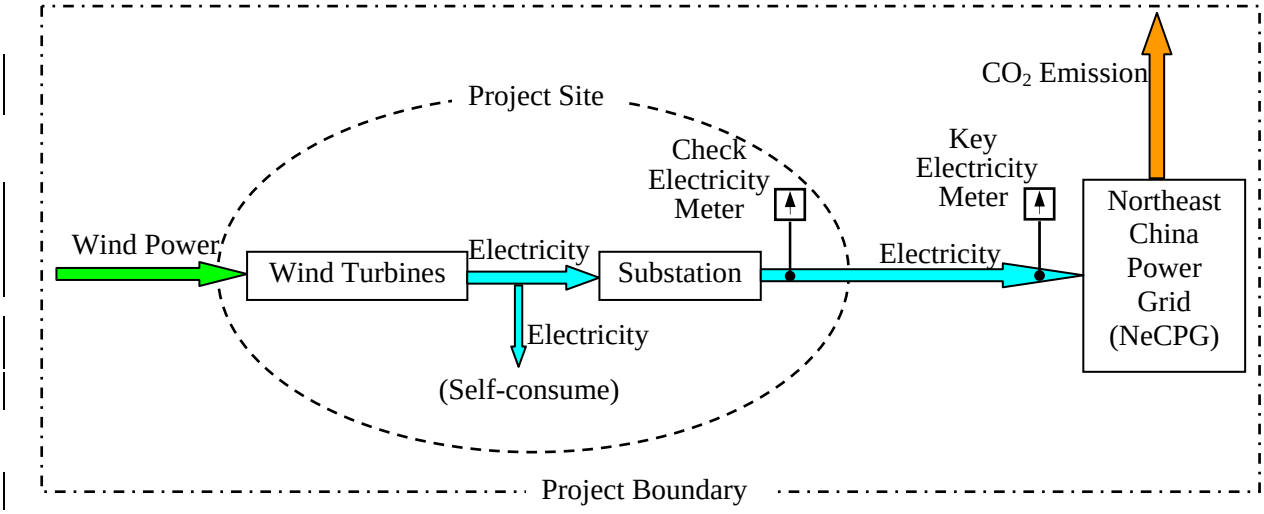
	Source	Gas	Included?	Justification / Explanation
Baseline	Fossil fuels fired power plants	CO_2	Yes	Major emission sources
		CH_4	No	According to ACM0002 it is excluded for simplification. This is conservative
		N_2O	No	According to ACM0002 it is excluded for simplification. This is conservative
Project Activity	Not applicable – the project is zero-emissions renewable power source	CO_2	No	Excluded. The project activity is a zero-emission project activity
		CH_4	No	Excluded. The project activity is a zero-emission project activity

		N_2O	No	Excluded. The project activity is a zero-emission project activity

The proposed wind power project will be connected to the Northeast China Power Grid, and the Northeast China Power Grid including all power plants connected is selected as the project boundary.
According to the definition of power grid of DNA[1], the Northeast China Power Grid consists of Heilongjiang power grid, Jilin power grid, Liaoning power grid. The electricity transmission between different provinces in the Northeast China Power Grid is very large and it is reasonable for the proposed project to regard the Northeast China Power Grid as the project boundary.

Figure B.3-1 illustrates a flow diagram of the project boundary including all the equipments, systems and flows of mass and energy.

Figure B.3-1 Flow diagram of the project boundary



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

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To provide the same output or services comparable with the proposed CDM project activity, these alternatives are to include:

Scenario 1: The proposed project not undertaken as a CDM project activity.

Scenario 2: The fossil-fired plant with the same annual electricity supply as the proposed project.

[1]NDRC 09/08/2007, Baseline Emission Factors for Regional Power Grids in China 2007, available at: http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1364.pdf

Scenario 3: Other renewable energy project such as small hydro power station with the same annual electricity supply as the proposed project.

Scenario 4: No construction of the proposed project, and the Northeast China Power Grid as the provider for the same electricity supply.

Scenario 1 developing the proposed project not as a CDM project meets China current regulations and laws. But it should be eliminated from the following consideration because the investment analysis in section B.5 will show that the proposed project not undertaken as a CDM project and without CERs income is lack of the attraction for the potential investors.

Scenario 2 is also unrealistic and should be eliminated from the following consideration because the analysis in Step 1b of section B.5 will show that the fossil fired plant with the same annual electricity output as the proposed project does not comply with Chinese legal and regulatory requirements. Scenario 2 will not become the baseline scenario and should be deleted.

At present, compared with other renewable energy technology in China, only small hydro power might have better benefits than wind power. While in the season of Spring and Winter in Keshiketeng County, there will be very short of water. The output of scenario 3 will decrease and cause short of electricity supply. Scenario 3 will not become the baseline scenario and should be deleted.

To summarize, Scenario 4 remains as an alternative of the baseline scenario.

According to the description in the approved baseline methodology ACM0002 (Version 07), if the project activity is the installation of a new grid-connected renewable power plant/unit, not modify or retrofit an existing electricity generation facility, the baseline scenario 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".

The electricity generated by the proposed project will be supplied to NeCPG, so the power grid is regarded as the connected system which is defined as the "Project Boundary" of the proposed project in Figure B.3-1.

Therefore, the baseline scenario of the proposed project can be identified as NeCPG. Furthermore, the Combined Margin (CM) of NeCPG is calculated as the weighted average of Operating Margin (OM) and Build Margin (BM) emission factors.

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): >>

The incentive from the CDM was seriously considered in the decision to project activity. The following is a combined timeline of implementation of the proposed project and of events and actions related to prior CDM consideration.

In 12/2004 when initial FSR was issued, due to CDM for wind power project in China was not general yet (Reference: the first project for wind power in China was registered on 26/06/2005), the FSR didn't consider CDM. Moreover the project owner could not expect a high price such as the electricity tariff used in the FSR, because official announcement: "The Renewable Energy Law [2] (notified on 28/02/2005)" from the National Chairman in China was not promulgated yet.

Therefore, the project owner had to consider profit from CDM.

Table B.5-1 Timeline of the Proposed Project

Date	"Implementation of the Proposed Project" and "Events and Actions"
Before 12/2004	A main shareholder company of the project owner started to investigate wind power project in Inner Mongolia.
12/2004	FSR was issued, but the electricity tariff used in the FSR was relatively higher compared with other sales price of electricity.
After 12/2004	The project owner considered CDM carefully in order to improve the financial attractiveness.
09/04/2005	EIA Table was completed.
30/06/2005	EIA Approval was issued by Inner Mongolia Environmental Protection Administration.
25/07/2005	Business License of the project owner company was issued.
14/09/2005	Project Approval of the FSR as CDM was issued by Inner Mongolia Development & Reform Committee (No.1341[2005]).
18/08/2006	Land-Use Approval was issued by Local Government of Keshiketeng County (No.9[2006]).
11/10/2006	To make a PDD of the project activity was started by Tsinghua University.
15/11/2006	Stakeholder meeting was held by the project owner in Keshiketeng County Jingpeng Town.
06/12/2006	Letter of Intent for the purchase of CER was signed between the project owner company and NEDO.
Beginning /12/2006	The FSR was required to revise, due to modification on specs of wind turbines. Reasons of the modification were ratification of a notice [3] (NDRC[2005]No.1204) from NDRC regarding the domestic products rate (more than 70%) and mismatch the project owner's schedule between the appointed date of delivery of wind turbines which were mentioned in the FSR.
31/12/2006	Announcement of project approval by NDRC on their web-site.
01/2007	・Revised FSR was completed. ・In the FSR, CDM revenue was recommended to be considered in order to improve the financial attractiveness.
04/01/2007	・The project owner considered CDM revenue deeply in order to minimize the risks of unknown factors which may exist in wind power project. ・To start on investment in the proposed project was approved by the 7th Board Meeting, in order to advance the appointed date of delivery of main devices (wind turbines and pillars).
04/01/2007	Placement of order for the wind turbines was signed.
20/01/2007	Placement of order for the pillars was signed.

[2] http://www.people.com.cn/GB/14576/14957/3208744.html

[3] http://www.ndrc.gov.cn/zcfb/zcfbtz/zcfbtz2005/t20050810_39031.htm

05/02/2007	In the extraordinary Board Meeting, to start on construction work was approved.
13/02/2007	Construction work Contract was signed.
05/03/2007	Letter of Approval for the proposed project was issued by NDRC.
01/04/2007	Construction work started.
07/12/2007	Emission Reduction Purchase Agreement (ERPA) was signed between the project owner company and NEDO.
12/12/2007	Agreement with DOE was signed by NEDO.
08/01/2008	UNFCCC Procedure for Validation was started.
29/05/2008	Power Purchase Agreement (PPA) was signed between the project owner company and Grid company.

As Table B.5-1 above, the proposed project is additional and not the baseline scenario.

The following steps are used to demonstrate the additionality of the proposed project according to "Tools for the demonstration and assessment of additionality (Ver 05.2)" agreed by Executive Board and requested by the baseline methodology (ACM0002 Ver 07).

Step1. Identification of alternatives to the project activity consistent with current laws and regulations.

The objective of this step is to identify realistic and credible alternatives to the proposed project that can be the baseline scenario through the following sub-steps:

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

To provide the same output or services comparable with the proposed CDM project activity, these alternatives are to include:

Scenario 1: The proposed project not undertaken as a CDM project activity.

Scenario 2: The fossil-fired plant with the same annual electricity supply as the proposed project.

Scenario 3: Other renewable energy project such as small hydro power station with the same annual electricity supply as the proposed project.

Scenario 4: No construction of the proposed project, and the Northeast China Power Grid as the provider for the same electricity supply.

At present, compared with other renewable energy technology in China, only small hydro power might have better benefits than wind power. While in the season of Spring and Winter in Keshiketeng County, there will be very short of water. The output of scenario 3 will decrease and cause short of electricity supply. Scenario 3 will not become the baseline scenario and should be deleted first.

Step1b. Consistency with mandatory laws and regulations:.

The applicable legal and regulatory requirement for the proposed project include laws, central government regulations, local regulations, departmental rules and disciplines related to electricity and environment protection.

The related laws and regulations can be found and downloaded on the website of State Electricity Regulatory Commission (SERC) and National Development and Reform Commission (NDRC): http://www.serc.gov.cn/flfg/index.htm and http://nyj.ndrc.gov.cn/ .

Since the fossil fired power plant operation hours are 2-3 times of wind farm operation hours, to provide the same output as the proposed project, the capacity of the above alternative scenario 2 will be less than 50MW. According to the General office of State Council of the People's Republic of China, it is forbidden to the construction of fossil fired power plant under 135 MW which will be within the connected area[4]. Scenario 2 should be deleted and couldn't become baseline scenario.

Based on the analysis of 1a and 1b, Scenario 1 and 4 both meet national regulations and laws in China and become the realistic and credible alternative scenario of the proposed project.

Step2. Investment analysis.

This step will determine whether the proposed project is the economically or financially less attractive than other alternatives without the revenue from the sale of CERs.

Sub-step 2a. Determine appropriate analysis method.

Three options can be applied for the investment analysis: the simple cost analysis, the investment comparison analysis and the benchmark analysis.

The simple cost analysis is not applicable for the proposed project because the project activity will produce economic benefit (from electricity sale) other than CDM related income. The investment comparison analysis is also not applicable for the proposed project because there are only two selections of construction and not-construction.

To conclude, the benchmark analysis will be used to identify whether the financial indicators (such as IRR or NPV) of the proposed project is better than relevant benchmark value.

Sub-step 2b-option Ⅲ. Apply benchmark analysis.

According to the "Measures for Economic Evaluation on Electric Power Technical Reconstruction Project, issued by State Power Corporation[5] in September, 2002", a project will be financially acceptable when the Financial Internal Return Rate (FIRR) is better than the sectoral benchmark FIRR.
The sectoral benchmark FIRR on total investment for power industry is 8%. The FIRR of the proposed project is calculated and compared as follows.

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

[4] "Station department on forbiddance construction of the fossil fuel-fired power plant with capacity below 135MW" [2002] No. 6 （General office of State Council of the People's Republic of China, 2002）

[5] http://www.cgdc.com.cn/

The financial indicators of proposed project should show its investment attraction. The Power Purchase Agreement (PPA) was under negotiation, when FSR was revised in January, 2007. The main financial indicators are listed in Table B.5.2c-1.

Table B.5.2c-1 Main financial indicators of proposed project

Items	Unit	Amount	Data Source
Capacity	MW	49.5	FSR
Total Investment	Million Yuan	412.35	FSR
Annual operating cost	Million Yuan/year	14.69	FSR
Annual output	MWh/year	132,500	FSR
Electricity Tariff (including VAT)	Yuan/kWh	0.490	FSR
Value Added Tax (VAT)	%	8.5	FSR
Income tax	%	33	FSR
Education tax / value added tax	%	3	FSR
City tax / value added tax	%	5	FSR
Project operation life time	Year	20	FSR
Technical life time	Year	20	General Spec[6]

Comparison of financial indicators with and without income from CERs is shown in Table B.5.2c-2.

Table B.5.2c-2 Comparison of financial indicators with and without income from CERs

Items	Without income from CERs	Benchmark	With income from CERs
FIRR	7.27%	8%	10.61%[7]

From Table B.5.2c-2, without income from selling CERs, the FIRR of the proposed project is lower than the benchmark FIRR only 7.27% and the proposed project is financially unacceptable because of its low profitability. While considering such income, the financial acceptance will be changed higher, the FIRR of the proposed project is better than the benchmark then the proposed project is financially acceptable.

Afterwards, a notification[8] regarding a subsidy for wind power generation was issued by NDRC in 03/12/2007. In the notification, it was provided that the electricity tariff for the proposed project was 0.540yuan/kWh including the subsidy, and the subsidy period was until 30,000hrs from starting generation of electricity. Just after, in May 2008, the PPA was signed to Northeast China Power Grid Company. From the above information, the additional financial indicators are listed in Table B.5.2c-3.

Table B.5.2c-3 Additional financial indicators of proposed project

Items	Unit	Amount	Data Source
Subsidy period	hr	30,000	Notification
Electricity Tariff (including VAT)	Yuan/kWh	0.540	Notification
Base of Electricity Tariff (including VAT)	Yuan/kWh	0.267	PPA

[6] "Review of Historical and Modern Utilization of Wind Power", http://www.risoe.dtu.dk/rispubl/VEA/Review_Historical_Modern_Utilization_Wind_Power.pdf

[7] CERs estimated price: US 13 $/tCO$_2$, 1 US $=7.8 yuan at January, 2007

[8] http://www.sdpc.gov.cn/zcfb/zcfbtz/2007tongzhi/t20080218_193193.htm

Subsidy of Electricity Tariff (including VAT)	Yuan/kWh	0.273	PPA & Notification

Adopting the value of Table B.5.2c-3, the additional comparison of financial indicators with and without income from CERs is shown in Table B.5.2c-4.

Table B.5.2c-4 Additional comparison of financial indicators with and without income from CERs

Items	Without income from CERs	Benchmark	With income from CERs
FIRR	6.71%	8%	9.77%[9]

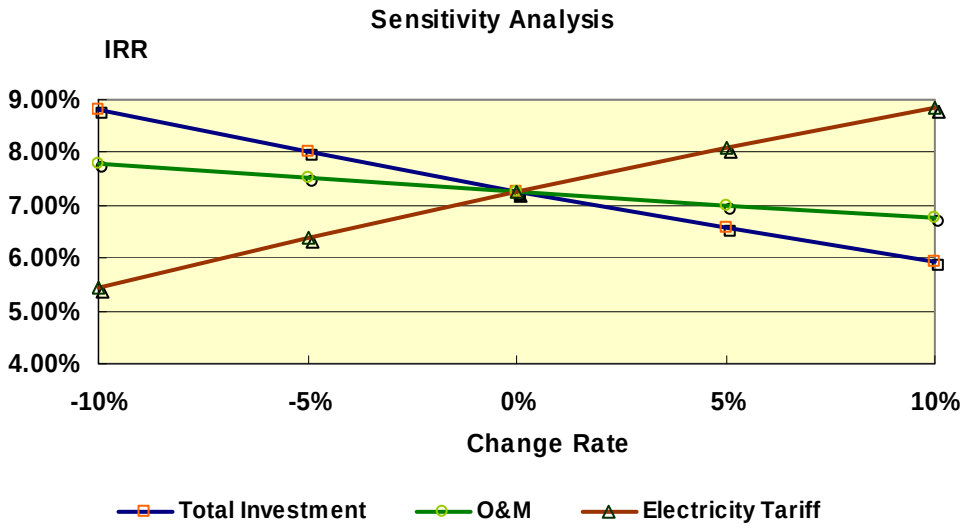
From Table B.5.2c-4, without income from selling CERs, the FIRR of the proposed project is more lower than the benchmark FIRR only 6.71% and the proposed project is financially unacceptable too because of its low profitability. While considering such income, the financial acceptance will be changed higher, the FIRR of the proposed project is better than the benchmark then the proposed project is financially acceptable too.

Sub-step 2d. Sensitivity analysis.

The objective of this sub step is to show the conclusion regarding the financial attractiveness is robust to reasonable variations of the critical assumptions.

Three factors are considered in following sensitivity analysis:

1) Total investment
2) Annual operation and maintenance cost
3) Electricity tariff



[9] CERs estimated price: US 13 $/tCO$_2$, 1 US $=6.9 yuan at May, 2008

Figure B.5.2d-1 Sensitivity analysis of the proposed project

Assuming the above factors vary in the range of -10% ~ +10%, the FIRR of the proposed project (without income from selling CERs) varies to different extent, as shown in Figure B.5.2d-1.

The changes of total investment and electricity tariff are the most important factors affecting the financial attractiveness of the proposed project. In the case that the total investment decreases by 5.0%, the FIRR of the proposed project will exceed the benchmark. However, the wind turbines will be purchased from domestic company, the price will not be decreased so much recently according to high CPI in China. There will be no possibility for large changes in the total investment. Therefore, the proposed project is always lack of financial attractiveness within the reasonable range of total investment.

When the electricity tariff increases by 5.0%, the FIRR of the proposed project begins to exceed the benchmark. Currently, the wind power tariff will be approved by Power Grid Company and local government according to Renewable Energy Law in China (Jan. 1, 2006), it will not be changed once confirmation. The financial analysis adopts the electricity tariff as 0.490 yuan/kWh which is continuous in the future and very high in the local area. It is impossible to expect to increase the price and improve the economic attraction.

The impact of the annual O&M cost is relatively slight. The FIRR will not exceed the benchmark if the annual O&M cost decreases or increased by less than 10%. Therefore, the proposed project is always lack of financial attractiveness within the reasonable range of annual O&M cost.

Without CDM CERs income, the financial analysis of the proposed project will be lack of financial attraction and couldn't become the baseline scenario.

Moreover, considering the notification of the Chinese Governments in December, 2007 and the PPA in May, 2008, the additional sensitivity analysis is become, as shown Figure B.5.2d-2.

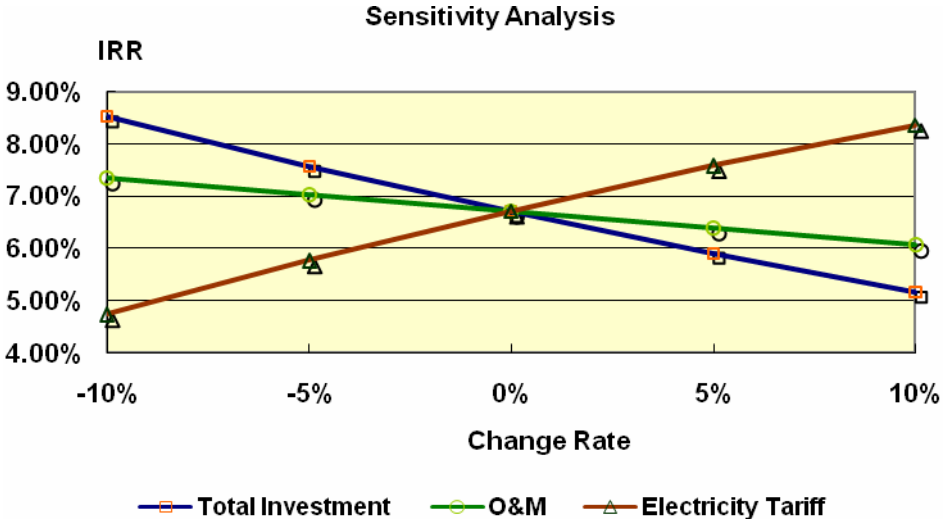


Figure B.5.2d-2 Additional sensitivity analysis of the proposed project

From Figure B.5.2d-2, the trend of above three factors is similar to it from previous analysis, but it is more definite that income from selling CERs is demanded.

Step 4. Common practice analysis

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

The total capacity of the proposed project is 49.5MW. For reference purposes, other wind projects of a similar scale (from20MW to 50 MW) that have been constructed, were in the process of being constructed, or were planed in the Inner Mongolia Autonomous Region as of 28/11/2008 are listed below in Table B.5.4a-1.

Table B.5.4a-1 Wind farms with installed capacity from 20 MW to 50 MW in Inner Mongolia Autonomous Region

Project Name	Commissioning Date	Installed Capacity（MW）	Emission Reductions (tons CO_2)	Remark
Huitengxile Wind Farm	10/1997	19.8	-	Supported as Shuangjia Demonstration Project and received financial support from government of China[10]
Dongdianmaolin wind power project[11]	04/2004	50.2	-	Electricity preferential project[12]
Inner Mongolia Sunjiaying 50.25MW Wind Power Project	10/2006	50.25	138,585	24/04/2008 Registration
Inner Mongolia Wudaogou 50.25MW Wind Power Project	10/2006	50.25	142,848	05/07/2008 Registration
Inner Mongolia Chifeng Dongshan 49.3MW Wind Power Project	01/2007	49.3	125,557	31/12/2006 Registration
Guohua Hulunbeier Xinbaerhu Youqi 49.5MW Wind Farm Project	04/2007	49.5	125,405	03/06/2007 Registration
Inner Mongolia Zhuozi 40MW Wind Power Project	08/2007	40.0	92,205	14/01/2008 Registration

[10] http://www.nwtc.cn/Article/ShowArticle.asp?ArticleID=814

[11] http://www.ccchina.gov.cn/cn/NewsInfo.asp?NewsId=578

[12] National Action Plan for China's Wind Power Industry Development, Research Report from NDRC/World Bank "China Renewable Scale-up Program", June 2005, http://www.cresp.org.cn/uploadfiles/89/252/NationalAction_CN.pdf

Guohua Inner Mongolia Huitengliang Wind Farm Project	10/2007	48.75	129,307	18/10/2007 Registration
Inner Mongolia Huitengliang 49.5MW Wind Power Project	11/2007	49.5	110,296	22/01/2007 Registration
Inner Mongolia Bayinhanggai 49.5MW Wind Farm Project	12/2007	49.5	115,079	23/11/2008 Registration
Inner Mongolia North Longyuan Zhurihe WindFarm Project	09/2008	49.5	126,185	28/11/2008 Registration
Inner Mongolia Dali Phase IV 49.5MW Wind Power Project	Under Construction	49.5	139,677	30/05/2008 Registration
Inner Mongolia Dali Phase V 49.5MW Wind Power Project	Under Construction	49.5	124,794	30/05/2008 Registration
Inner Mongolia Chifeng Dongshan Phase II 50MW Wind Power Project	Under Construction	50	136,657	04/11/2008 Registration
Inner Mongolia Bayannaoer Chuanjingsumu Wind Power Project	12/2007	49.3	128,117	Requesting Registration
Inner Mongolia Bayannaoer Chuanjingsumu Wind Power Project	12/2007	49.3	128,117	Requesting Registration
Sinohydro Inner Mongolia Ximeng Honggeer Wind Power Project	Under Construction	49.5	141,933	Requesting Registration
Inner-Mongolia Ximeng Abag 49.5MW Wind Power Project	Under Construction	49.5	126,704	Requesting Registration
Inner Mongolia Siziwangqi Bayin'aobao Wind Power Project	Under Construction	49.5	129,134	Requesting Registration
Inner Mongolia North Longyuan Huitengliang Windfarm Project	06/2007	49.5	127,316	Minor Corrections Requested
Guohua Inner Mongolia Huitengliang West Wind Farm Project	09/2007	49.5	129,013	Minor Corrections Requested
Inner Mongolia Mangniuhai Wind Farm Project	Under Construction	49.3	121,040	Applying for CDM project Validating Open date:06/01/2007
Inner Mongolia Bayin'aobao 49.5MW Wind Farm Project (Phase I)	Construction Not started	49.5	114,817	Applying for CDM project Validating Open date:22/05/2007
Inner Mongolia Wengniute Banner Wudaogou Wind Power Project (II)	Construction Not started	50.0	136,398	Applying for CDM project Validating Open date:25/08/2007

Inner Mongolia Chifeng Gaofeng Wind Power Project	Construction Not started	50.0	135,661	Applying for CDM project Validating Open date:25/08/2007
Chifeng Sunjiaying Wind Power Project	Construction Not started	49.5	136,306	Applying for CDM project Validating Open date:30/08/2007
Fuhui Inner Mongolia Tugurige Wind Farm Project	Construction Not started	49.5	126,319	Applying for CDM project Validating Open date:29/09/2007
Fuhui Inner Mongolia Narenbaolige Wind Farm Project	Construction Not started	49.5	122,495	Applying for CDM project Validating Open date:29/09/2007
Inner Mongolia Hangjin Yihewusu Wind Power Project	12/2007	49.5	113,411	Applying for CDM project Validating Open date:08/01/2008
Inner Mongolia Chifeng Yihegong Windfarm Project	Construction Not started	49.5	127,966	Applying for CDM project Validating Open date:06/02/2008
Inner Mongolia Keyouqianqi Wind Farm Project	Construction Not started	49.5	132,877	Applying for CDM project Validating Open date:06/02/2008
Beijing Energy Huitengxile 49.5MW Wind Power Project	Construction Not started	49.5	131,211	Applying for CDM project Validating Open date:31/03/2008
Beijing Energy Huolinhe B First Phase 49.5MW Wind Farm Project	Construction Not started	49.5	124,283	Applying for CDM project Validating Open date:31/03/2008
CGN Inner Mongolia Duerbote Windfarm Project	Construction Not started	49.5	122,668	Applying for CDM project Validating Open date:25/04/2008
Inner Mongolia Erlianhaote Phase I Wind Farm Project	Construction Not started	21.0	52,054	Applying for CDM project Validating Open date:18/07/2008
Maoniuhai wind power project	-	-	121,040	Approved by NDRC

Source:
http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1867.pdf
http://cdm.unfccc.int/Projects/Validation/index.html
http://cdm.unfccc.int/Projects/projsearch.html
http://www.cwea.org.cn/upload/20080324.pdf

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

The existing wind farm projects do not call into question the claim that the proposed project activity is financially unattractive as discussed in Step 2. While Dongdianmaolin wind power project enjoys a very favourable electricity tariff (e.g. 0.79 yuan/kWh). The tariff of renewable power is regulated by the regulating entities (NDRC) based on the standard power tariff plus a subside price of 0.25yuan/kWh, such

high tariff is impossible for wind farm developers[13]. There is essentially difference of investment and policy environment for the proposed project.

However, up to now, the other wind power projects listed in the above table are all facing the same financial barriers and applied for CDM projects, these projects were approved by NDRC and some have finished registration and became CDM project.

To conclude the existence of these projects in Table B.5.4a-1 does not contradict the claim that the proposed project activity is financially unattractive.

As described above, the proposed project activity passed all criteria of "Tool for the demonstration and assessment of additionality". In conclusion, the proposed project is additional.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

>>

The calculation of the GHG emission reductions by the proposed project is followed the baseline methodology ACM0002 (Ver 07) and "Tool to calculate the emission factor for an electricity system".

Step 1: Identify the relevant electric power system

This project is located in Inner Mongolia Autonomous Region. According to the delineation of grid boundaries as provided by DNA in china (http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1364.pdf), the project electricity system of the proposed project is defined as the Northeast China Power Grid practically. It includes Heilongjiang Province, Jilin Province and Liaoning Province.

Step 2: Select an operating margin (OM) method

According to The Methodology, four alternatives could be used to calculate the OM:

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

For this Project, the simple Operating Margin emission factor was chosen based on the following two reasons:

1. In China, the State Grid Corporation runs the interregional dispatch system and each regional grid corporation run the intraregional dispatch system. The dispatch information is regarded as business secrets and not available to the public.
2. For the most recent 5 years (2001-2005), the low-cost/must run resources constitute less than 50% of total: 7.13%, 5.41%, 4.71%, 6.45%, and 8.30% for 2001, 2002, 2003, 2004 and 2005 (detailed data are shown in Annex 3).

As a result, the simple OM method can be used.

[13] http://www.gov.cn/ziliao/flfg/2005-06/21/content_8275.htm

Step 3: Calculation the Operating Margin emission factor ($EF_{grid,OM,y}$) according to simple OM

The baseline emission factors OM and BM are both from the Announcement of Determine China Regional Power Grid Baseline Emission Factors, published by China National Development and Reform Commission.

The Simple OM emission factor is calculated as the generation-weighted average emissions per unit net electricity generation (tCO_2/MWh) of all generating sources serving the system, not including low-operating cost and must-run power plants. It is determined by option C, based on data on fuel consumption and net electricity generation of each power plant/unit. The simple OM emission factor is calculated as follows:

$$EF_{grid,OMsimple,y} = \frac{\sum_{i,j} F_{i,j,y} \times NCV_i \times EF_{CO_2,i}}{\sum_j GEN_{j,y}} \quad (1)$$

Where:

$F_{i,j,y}$ is the amount of fuel *i* consumed (ton for solid and liquid fuel, m^3 for gas fuel) by relevant power sources *j* in years *y*;

j refers to the power sources delivering electricity to the grid, not including low-operating cost and must-run power plants, and including imports to the grid;

NCV_i is the net calorific value per ton or m^3 of a fuel *i* (TJ/ ton for solid and liquid fuel, m^3 for gas fuel);

$EF_{CO_2,i}$ is the CO_2 emission factor per TJ of fuel type *i* (tCO_2/TJ).

$GEN_{j,y}$ is the electricity (MWh) delivered to the grid by source *j*. In the China Electric Power Year Book and other data resources, only generation data is available. The generation from source *j* can be translated into electricity delivered to the grid by source *j* by the following formulation:

$$GEN_{j,y} = G_{j,y} \times (1 - e_{j,y}) \quad (2)$$

Where:

$G_{j,y}$ is the amount of generation (in MWh) by source *j* in year *y*;

$e_{j,y}$ is the rate of plant self consumption of source *j* in year *y*.

The simple OM emission factor can be calculated using either of the two following data vintages for years(s) y : (1) (*ex-ante*) A 3-year average based on the most recent statistics available at the time of PDD submission, or (2) The year in which project generation occurs, if $EF_{grid,OM,y}$ is updated based on ex post monitoring.

The Simple OM emission factor of this proposed project is calculated as electricity-to-the-grid weighted average in the Northeast China Power Grid during the most recent 3-year (2003-2005), and will be fixed in the first crediting period. The baseline emission factors OM is from the Announcement of Determine China Regional Power Grid Baseline Emission Factors, published by China National Development and Reform Commission. The Operation Margin emission factor ($EF_{grid,OMSimple,y}$) of which the proposed project will serve is 1.2404 tCO_2/MWh.

Step 4: Identify the cohort of power units to be included in the build margin

This PDD choose Option 1 provided by the methodology ACM0002 (Ver 07) to calculate $EF_{grid,BM,y}$ ex-ante. There is no requirement on ex-post monitoring and updating.
To chose one of the following options which generates more electricity to form the sample group m:
(1) The set of five power units that have been built most recently, or
(2) 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.

According to ACM0002 (Ver 07), it is difficult to get abundant data of electricity generation of incremental power plants and fuel consumption results during Northeast China Power Grid. For the data availability, CDM EB guideline is adopted during calculation. First calculate the proportion of incremental installed capacity and electricity generation technology, secondly calculate the weights of new installed capacity of all electricity generation technology, finally calculate emission factors based on maximum energy efficiency level of new technology commercially

Currently, it is difficult to divide kinds of electricity generation technology of coal, oil and gas on the base of statistic data available, this project adopts following method:

First, based on the energy balance which has been published recently, calculate the emission weights of total CO_2 emissions which corresponds solid, liquid and gas fuels for electricity generation;

Secondly, based on the emission factors of maximum energy efficiency level of new technology commercially, calculate thermal power emission factors making use of emission weights;

Finally, BM can be calculated by thermal power emission factors multiply weights of thermal power of 20% installed capacity incremental.

Step 5: Calculation the Build Margin emission factor ($EF_{gird,BM,y}$)

The detailed calculation as following:

Substep 1. calculate the emission weights of total CO_2 emissions which corresponds solid, liquid and gas fuels for electricity generation

$$\lambda_{Coal} = \frac{\sum_{i \in COAL, j} F_{i,j,y} \times COEF_{i,j}}{\sum_{i,j} F_{i,j,y} \times COEF_{i,j}} \quad (3)$$

$$\lambda_{Oil} = \frac{\sum_{i \in OIL, j} F_{i,j,y} \times COEF_{i,j}}{\sum_{i,j} F_{i,j,y} \times COEF_{i,j}} \quad (4)$$

$$\lambda_{Gas} = \frac{\sum_{i \in GAS, j} F_{i,j,y} \times COEF_{i,j}}{\sum_{i,j} F_{i,j,y} \times COEF_{i,j}} \quad (5)$$

Where:

$F_{i,j,y}$: is the amount of fuel *i* (ton for solid and liquid fuel, m^3 for gas fuel) consumed by province j in year *y*;

$COEF_{i,j,y}$: the CO_2 emission coefficient (tCO_2/ ton for solid and liquid fuel, m^3 for gas fuel) of fuel *i*, taking into account the carbon content of the fuels used by province and the percent oxidation of the fuel in year *y*;

COAL, OIL and GAS are the foot label of solid, liquid and gas fuel.

Substep 2: calculate thermal power emission factors

$$EF_{Thermal} = \lambda_{Coal} \times EF_{Coal,Adv} + \lambda_{Oil} \times EF_{Oil,Adv} + \lambda_{Gas} \times EF_{Gas,Adv} \quad (6)$$

Where:

$EF_{Coal,Adv}$, $EF_{Oil,Adv}$ and $EF_{Gas,Adv}$ are emission factors of maximum energy efficiency level of new technology commercially coal, oil and gas.

Substep 3: calculate BM

$$EF_{grid,BM,y} = \frac{CAP_{Thermal}}{CAP_{Total}} \times EF_{Thermal} \quad (7)$$

Where:

CAP_{Total} : total installed capacity increment;

$CAP_{Thermal}$: total thermal power of installed capacity increment.

The baseline emission factors BM is from the Announcement of Determine China Regional Power Grid Baseline Emission Factors, published by China National Development and Reform Commission The Build Margin emission factor ($EF_{grid,BM,y}$) of which the proposed project will serve is 0.8631 tCO_2/MWh.

Step 6: Calculation the combined margin emission factor ($EF_{grid,CM,y}$)

According to the baseline methodology (ACM0002), the baseline emission factor EF_y is calculated as the weighted average of the Operating Margin emission factor ($EF_{grid,OMSimple,y}$) and the Build Margin emission factor ($EF_{grid,BM,y}$),

$$EF_{grid,CM,y} = \omega_{OM} \times EF_{grid,OMSimple,y} + \omega_{BM} \times EF_{grid,BM,y} \quad (8)$$

where the weights ω_{OM} and ω_{BM} are 0.75 and 0.25 by the default.

The baseline emission factor is: $EF_{grid,CM,y} = 0.75 \times EF_{grid,OMSimple,y} + 0.25 \times EF_{grid,BM,y}$ = 1.1461 tCO_2/MWh.

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

Data / Parameter:	$G_{j,y}$
Data unit:	MWh
Description:	The electricity generated by *j* in year *y* (Heilongjiang, Jilin, Liaoning 2003-2005)
Source of data used:	China Electric Power Yearbook 2004-2006
Value applied:	See Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied:	Official statistical data
Any comment:	-

Data / Parameter:	$GEN_{import,y}$
Data unit:	MWh
Description:	Electricity imported to Northeast China Power Grid in year *y* (2003-2005)
Source of data used:	China Electric Power Yearbook 2004-2006
Value applied:	See Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied:	Official statistical data
Any comment:	-

Data / Parameter:	$F_{i,j,y}$
Data unit:	10 kton /$10^8 m^3$
Description:	Fuel *i* consumed by *j* in year *y* (Heilongjiang, Jilin, Liaoning, 2003-2005)
Source of data used:	China Energy Statistical Yearbook 2004-2006
Value applied:	See Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied:	Official statistical data
Any comment:	-

Data / Parameter:	NCV_i
Data unit:	TJ per mass or volume unit
Description:	Net calorific value per mass or volume unit of fuel *i*
Source of data used:	China Energy Statistical Yearbook 2004-2006
Value applied:	See Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied:	National specific data
Any comment:	-

Data / Parameter:	$EF_{CO_2,i}$
Data unit:	t-C/TJ
Description:	Emission factor per energy unit of fuel *i*
Source of data used:	IPCC Guidelines for National Greenhouse Gas Inventories: Workbook, Revised 2006
Value applied:	See Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied:	IPCC default data
Any comment:	-

Data / Parameter:	$EF_{coal,Adv}$

Data unit:	%
Description:	Supply efficiency of coal-fired power plant (commercial best practice)
Source of data used:	China DNA：China's Regional Grid Baseline Emission Factors Renewed (09/08/2007) http://cdm.ccchina.gov.cn/web/NewsInfo.asp?NewsId=2193
Value applied:	35.82%
Justification of the choice of data or description of measurement methods and procedures actually applied:	National specific data
Any comment:	-

Data / Parameter:	$EF_{oil/gas,Adv}$
Data unit:	%
Description:	Supply efficiency of oil-fired/gas turbine power plant (commercial best practice)
Source of data used:	China DNA：China's Regional Grid Baseline Emission Factors Renewed (09/08/2007) http://cdm.ccchina.gov.cn/web/NewsInfo.asp?NewsId=2193
Value applied:	47.67 %
Justification of the choice of data or description of measurement methods and procedures actually applied:	National specific data
Any comment:	-

Data / Parameter:	$CAP_{y,j}$
Data unit:	MW
Description:	Installed capacity of *j* in year *y* (Heilongjiang, Jilin, Liaoning, 2001-2005)
Source of data used:	China Electric Power Yearbook 2001-2006
Value applied:	See Annex 3
Justification of the choice of data or description of measurement methods	Official statistical data

and procedures actually applied:	
Any comment:	-

B.6.3 Ex-ante calculation of emission reductions:

>>

Emission reductions are calculated as follows:

$$ERy = BEy - PEy - Ly$$

ERy = Emission reductions in year *y* (t CO2e/yr).
BEy = Baseline emissions in year *y* (t CO2e/yr).
PEy = Project emissions in year *y* (t CO2e/yr).
Ly = Leakage emissions in year *y* (t CO2e/yr).

According to the baseline methodology ACM0002 (Ver 07), the GHG emission of the proposed project within the project boundary is zero, i.e. $PE_y = 0$.

According to the baseline methodology ACM0002 (Ver 07), the leakage of the proposed project is not considered, i.e. $L_y = 0$.

Emission reductions from the project can now be direct from the baseline emissions (*BEy*) as the baseline emissions factor (*EFy*) multiplied by the annual net electricity supplied by the proposed wind farm project (*EGy*).

$$ERy = BEy = EGy * EFy$$

According to the descriptions and formulas in section B.6.1, the combined baseline emission factor of the Northeast China Power Grid is: $EF_{grid,CM,y}$ **=1.1461tCO$_2$e/MWh.**

According to the Feasibility Study Report of the proposed project, the estimated annual net electricity generation delivered to the power grid will be: EG_y **=132,500 MWh.**

The annual emission of baseline scenario is: $BE_y = EG_y \times EF_{grid,CM,y} =$ **151,858 tCO$_2$e.**

The annual emission reductions of the proposed project during the first crediting period are estimated to be: $ER_y = BE_y =$ **151,858 tCO$_2$e.**

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

>>

Table B.6.4-1 Estimation of emission reduction of the proposed project

Year	Estimation of Project	Estimation of baseline emission	Estimation of leakage	Estimation of Emission reductions

	activity Emission (tonnes of CO2e)	(tonnes of CO2 e)	(tonnes of CO2e)	(tonnes of CO2 e)
01/07/2009 ~ 31/12/2009	0	75,929	0	75,929
Year 2010	0	151,858	0	151,858
Year 2011	0	151,858	0	151,858
Year 2012	0	151,858	0	151,858
Year 2013	0	151,858	0	151,858
Year 2014	0	151,858	0	151,858
Year 2015	0	151,858	0	151,858
01/01/2016 ~ 30/06/2016	0	75,929	0	75,929
Total (t CO2e)	**0**	1,063,006	**0**	1,063,006

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

B.7.1 Data and parameters monitored:

Data / Parameter:	EG_y
Data unit:	MWh
Description:	Electricity supplied by proposed project in year *y*
Source of data to be used:	Measured by meters
Value of data applied for the purpose of calculating expected emission reductions in section B.5	It is estimated that 132,500MWh of electricity will be supplied by proposed project
Description of measurement methods and procedures to be applied:	The key electricity meter will be installed near the grid, and the check electricity meters will be installed at the substation. The key electricity meter will be hourly measured and monthly recorded. Data will be archived for 2 years following the end of the crediting period by means of electronic and paper backup.
QA/QC procedures to be applied:	A power meter of the grid company installed at the substation is to be double-checked by another power meter set by the company. At the grid connection point a second power meter is to be installed by the grid company, and this power meter is the main monitor for the electricity generation by the company. Both the power meters of the grid company are checked daily, and errors within 0.1% are confirmed. If the errors are observed to be more than 0.1%, the causes of the errors are to be investigated. The electricity meter will be calibrated according to the requirement from technical code for designing electric energy metering system (DL/T448-2000). The power meter is to be inspected monthly to assure the precision.
Any comment:	The power meter recently installed at the substation is one prescribed as DL/T614-2007 which is much higher in precision than as DL/T448-2000.

	Doublecheck by receipt of sales.

B.7.2 Description of the monitoring plan:

>>

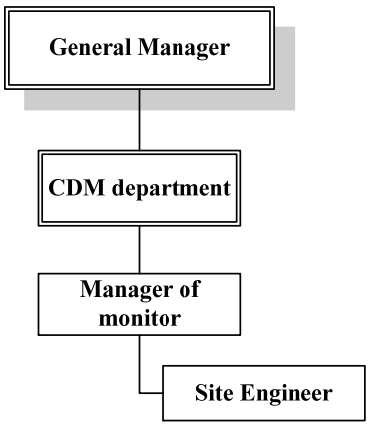
This monitoring plan will assure the completeness, consistency, clear and accurate of monitor and calculation of emission reductions of project activity during the crediting period. There will be a special person of host responsible for this action and Power Grid Company implement together with project owner.

1 Data monitored

For the emission factor of baseline is based on *ex-ante* calculation, the main data monitored will be electricity supplied to the grid by this project.

2 Monitor Mechanism

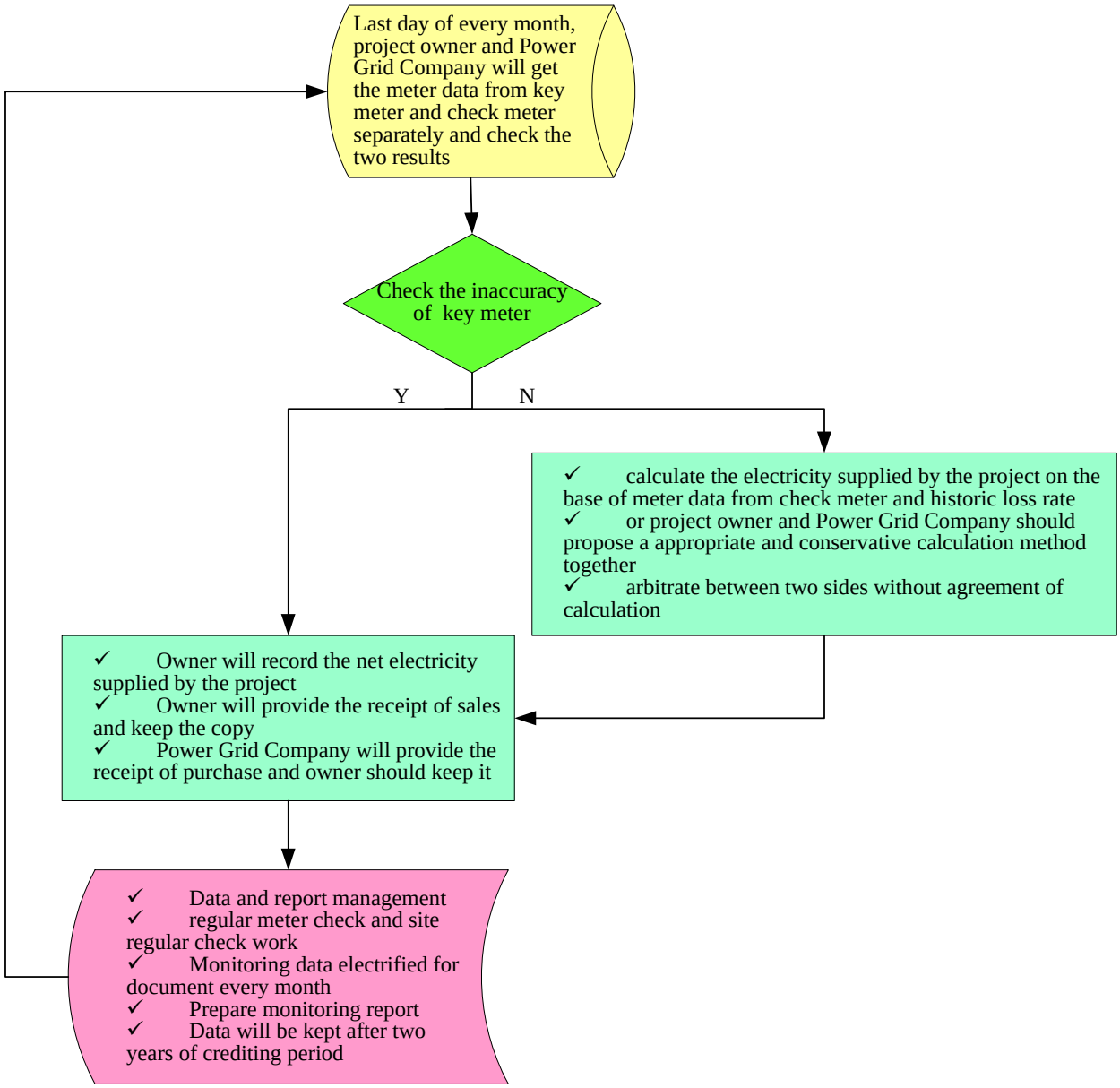
A manager of monitor and check who will be nominated by project owner is responsible for supervising and checking data and whole data record process. Meanwhile, a site engineer will work together with the manager and will collect data (such like electric meter data, keep receipt of sales), calculate emission reduction and prepare the monitor report.



3 Monitor Device and Installation

Two meters will be installed in this project. One will be in the end of output in the electric substation (check meter) to measure the station output. The other will be installed in the input end of Power Grid to measure the net electricity supplied by this project (key meter). The electricity supplied by the project will adopt the data of key meter. When key meter has errors, the data of check meter will be adopted. Before project operation, the electricity calculation device should be checked by project owner and Power Grid Company.

4 Monitoring plan



5 Meter Adjustment

Project owner will be responsible for the daily operation monitor work of check meter and Power Grid Company will be responsible the daily operation monitor work of key meter. They should both guarantee the meters in good condition and good seal. It is confirmed that verification should get real meter record and check report.

For ensuring the meter accuracy, yearly meter check and site yearly check work should be implemented according to the national power industry regulations and national standards. Meter should be sealed after check. Project owner and Power Gird Company should implement jointly. It is forbidden to open and modify meter when the other side are not in site.

The project site engineering is responsible for recording this set of data. Electricity sales invoices will also be obtained for double check.

6 Training

The company takes the technical training from the maker at the time of installation. The company carries out in-house training when the company employs people after the construction is completed.

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)

>>
The baseline study and monitoring methodology of the proposed project was completed on 20/11/2008.

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(The project participants listed in Annex 1)

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:

>>
04/01/2007
(Placement of order for main equipments (wind turbines) was signed at the above date.)

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

>>
20 years and 0 month[14]

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:

>>
01/07/2009 or the date of registration

[14] http://www.risoe.dtu.dk/rispubl/VEA/Review_Historical_Modern_Utilization_Wind_Power.pdf

C.2.1.2. Length of the first crediting period:

>>
7 years and 0 month

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 Chifeng Environment & Science Research Institute with certified license for EIA.
The environmental impacts analysis comes from the Environmental Impacts Assessment Table of the proposed project in 09/04/2005. The Environmental Impacts Assessment Table is required by Environmental Protection Administrative (Huanfa [1999]178)[15] according to the Article 7 of the Chapter 2 of the Environment Management for Construction Project of State Council of People's Republic of China (State Council, [253] 1998)[16] .

The main environmental impacts of the project construction lie on:

- ✧ The waste water and solid living waste released during the construction period will be little and have no impact on environment after treatment.
- ✧ The impacts on the sound environment and air quality are short-term during the construction period. After the completion of the construction, the impacts will disappear naturally.
- ✧ The dust during construction will have little impacts. Since the site of the proposed project is far enough, there will be no obvious impacts on local environment.
- ✧ The occupation of ground will destroy some surface vegetation during the construction period, but the vegetation destroyed by temporary ground occupation will be recovered after the completion of the construction. The impacts on local ecology system will then be minimized.

The main environmental impacts of the project operation lie on:

- ✧ There will be no air pollutant emissions during the operation period of the proposed project.
- ✧ There will be a little amount of living waste water released during the operation period of the proposed project, which will be treated in the leakage proof cesspool and then be taken down of the hill by truck. Therefore, the waste water will have little impact on the surface water.

[15] http://www.zhb.gov.cn/info/gw/huangfa/199910/t19991006_78672.htm

[16] http://www.sepa.gov.cn/law/fg/xzhg/199811/t19981118_81928.htm

✧ The noise source during the operation period of the proposed project will be mainly from the running of the wind power unit. After freely dissemination of 250m, it will be reduced about 45.0dB (A), which will not have impacts out 250m. The height of the wind power turbine is 80 m and doesn't have impacts on mitigating of birds.

In conclusion, being as a typical type of clean renewable energy, the proposed project has no significant impacts on local environment and will greatly contribute to achievement of sustainable development objective and promote local environmental protection.

The Environmental Impacts Assessment Table of the proposed project has been approved by the Environmental Protection Administration of Inner Mongolia Autonomous Region in 30/06/2005.

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:

>>

Not applicable, since the construction and operation of the proposed project have no significant environmental impacts.

SECTION E. Stakeholders' comments

>>

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

>>

The project owner adopts three kinds of public methods for requiring suggestions and advices of people of all circle.

- The project owner had put the project information in the website of Inner Mongolia Autonomous Regions Development and Reform Commission, and declared time and venue of stakeholder meeting, provided the contact information. (http://www.nmgfgw.gov.cn/Content1.aspx?id=11502&columnid=15)
- The project owner had made project announcement in the local TV station.
- On 15/11/2006, under the support of the Keshiketeng County, the project owner successfully held a stakeholder meeting in Keshiketeng County Jingpeng Town. Totally 8 stakeholder representatives participated the meeting, respectively from the Government of Keshiketeng County, the Development and Reform Bureau of Keshiketeng County, the Environmental Protection Bureau of Keshiketeng County, the Wind Power Office of Huifeng New Energy Co. Ltd., the representatives of Dayuan Village.

The key topics lie on:

- The impacts on local production and living life of project construction and operation
- The benefits on local economic development of project construction and operation
- The impacts on local environment of project construction and operation
- Any advice and suggestions of project construction and operation

E.2. Summary of the comments received:

>>

Every stakeholder representative expressed the comments for the proposed project. No opposite comment was received. The summary of the comments is as follows:

Comments from the local government: The proposed project has been approved by the Development and Reform Commission of Inner Mongolia Autonomous Region and Environmental Protection Administration of Inner Mongolia Autonomous Region, which shows that the construction and operation of the proposed project will have little impacts on the local environment. There is fair good of wind energy in the proposed site. Both the county and town municipal governments highly support the proposed project, and expect the increase of local financial incoming and new employment opportunity through the implementation of the proposed project. The construction of the proposed project will contribute to promoting the total capacity of power grid, increasing end voltage and improving the system power quantity.

Comments from villager representatives: The proposed project site is degraded grassland. There are no residents and croplands in the area 1 km around the proposed project. Therefore, there is no issue on noise disturbance and residents movement. The villagers are satisfied with the compensation for field occupation. Since the field occupied are relative small, the villagers expressed that it will have little impacts on their future income.

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

>>

Since there is no negative comment received, it’s no need to make adjustment on design, construction and operation of the proposed project.

Annex 1

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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

Neither Public Funding nor Official Development Assistances from Annex I countries are involved in implementation of the proposed project.

Annex 3

BASELINE INFORMATION

Table A3-1 Electricity Generation Share of Northeast China Power Grid in 2001-2005

Year		Liaoning	Jilin	Heilongjiang	Total	Thermal share	Other share
	Unit	TWh	TWh	TWh	TWh	%	%
2001	Total electricity generation	66.4	30.6	44.7	141.7		
	Thermal	63.9	24.4	43.3	131.6	92.87%	7.13%
2002	Total electricity generation	72.1	30.9	46.6	149.6		
	Thermal	70.4	26	45.1	141.5	94.59%	5.41%
2003	Total electricity generation	82.3	33.8	49.5	165.6		
	Thermal	79.7	29.7	48.4	157.8	95.29%	4.71%
2004	Total electricity generation	88.7	39.4	54.8	182.9		
	Thermal	84.5	33.2	53.4	171.1	93.55%	6.45%
2005	Total electricity generation	89.6	43.3	59.9	192.8		
	Thermal	83.6	35.2	58	176.8	91.70%	8.30%

Source: China Electric Power Yearbook 2002-2006

Electricity generation, installed capacity and rate of electric plant consumption are all from China Electric Power Yearbook 2000-2006 for OM and BM calculation. The fuel consumptions and low thermal value are from China Energy Statistic Yearbook 2004-2006. Fuel potential emission factors and carbon oxidation rate are from "2006 IPCC Guidelines for National Greenhouse Gas Inventories" Volume 2 Energy Chapter 1.21-1.24, Table 1.3 and Table 1.4.

Fuel	Low thermal value	Emission factor tc/TJ
Raw coal	20,908 kJ/kg	25.80
Clean coal	26,344 kJ/kg	25.80

Other washed coal[17]	8,363 kJ/kg	25.80
Coke	28,435 kJ/kg	25.80
Crude oil	41,816 kJ/kg	20.00
Gasoline	43,070 kJ/kg	18.90
Kerosene	43,070 kJ/kg	19.60
Diesel	42,652 kJ/kg	20.20
Fuel oil	41,816 kJ/kg	21.10
Other petroleum[18]	38,369 kJ/kg	20.00
Natural gas	38,931 kJ/m^3	15.30
Coke oven gas[19]	16,726 kJ/m^3	12.10
Other gas[20]	5,227 kJ/m^3	12.10
LPG	50,179 kJ/kg	17.20
Refinery gas	46,055 kJ/kg	18.20

This calculation process considers the most efficiency technology of coal fired power generation as 600MW domestic sub-critical unit and net coal consumption rate is 343.33gce/kWh, which is equivalent to 35.82% of net electricity efficiency. The most efficiency technology of gas turbine power plant (including gas and oil) is considered as 200MW combined cycle (such like GE 9E unit), the net coal consumption rate (value calculation) is 258gce/kWh, which is equivalent to 47.67% of net electricity efficiency.

	Parameter	Net electricity efficiency	Emission factor (tc/TJ)	Emission factor (tCO_2/MWh)
		A	B	C=3.6/A/1000*B*44/12
Coal-fires power plant	$EF_{Coal,Adv}$	35.82%	25.8	0.9508
Gas-fired power	$EF_{Gas,Adv}$	47.67%	15.3	0.4237

[17] According to the China Energy Statistics Yearbook 2006 P287, the low thermal value of coal slurry is higher than middling, this calculation is conservative.

[18] Because China Energy Statistics Yearbook will not provide other petroleum products low thermal value, this calculation adopts low thermal value of 38,369kJ/kg based on the calculation between energy balance physical quality and standard quality, which is equivalent to 1.3108tce/t.

[19] According to China Energy Statistics Yearbook 2006 P287, this calculation adopts the lowest value of 16,726-17,981 kJ/m^3

[20] According to China Energy Statistics Yearbook 2006 P287, this calculation adopts the lowest value.

plant				
Oil-fires power plant	$EF_{Oil,Adv}$	47.67%	21.1	0.5843

Table A3-2 OM emission factor calculation of Northeast China Power Grid in 2003

Fuel	Unit	Liaoning	Jilin	Heilongjiang	subtotal	Carbon coefficient	NCV	CO2 Emissions
						(TC/TJ)	(TJ/unit)	(tCO2)
					A	B	C	D = A*B*C*44/12
Raw coal	10^4 Tons	3,556.51	2,006.66	2,763.62	**8,326.79**	25.8	20,908	**164,695,313.0**
Clean coal	10^4 Tons	70.83		3	**73.83**	25.8	26,344	**1,839,948.7**
Other washed coal	10^4 Tons	617.04	15.9	53.41	**686.35**	25.8	8,363	**5,429,988.0**
Coke	10^4 Tons				**0**	25.8	28,435	**0.0**
Coke oven gas	10^8 m^3	1.66			**1.66**	12.1	16,726	**123,184.8**
Other gas	10^8 m^3	5.31			**5.31**	12.1	5,227	**123,141.3**
Crude oil	10^4 Tons	3.39			**3.39**	20	41,816	**103,954.6**
Gasoline	10^4 Tons				**0**	18.9	43,070	**0.0**
Diesel	10^4 Tons	0.32	0.34		**0.66**	20.2	42,652	**20,850.0**
Fuel oil	10^4 Tons	14.87	0.7	4.32	**19.89**	21.1	41,816	**643,474.2**
LPG	10^4 Tons	1.55			**1.55**	17.2	50,179	**49,051.6**
Refinery gas	10^4 Tons	4.03		0.46	**4.49**	18.2	46,055	**137,995.8**
Natural gas	10^8 m^3		0.04	4.47	**4.51**	15.3	38,931	**984,997.1**
Other petroleum products	10^4 Tons				**0**	20	38,369	**0.0**
Other coking products	10^4 Tons				**0**	25.8	28,435	**0.0**
Other energy	10^4 Tce	29.38			**29.38**	0	0	**0.0**
SubTotal								**174,151,899.2**

Source: China Energy Statistics Yearbook 2004

Northeast China Power Grid Thermal Electricity generation in 2003

	Electricity generation （10^8**kWh)**	**Electricity generation** （**MWh)**	**rate of electric plant consumption** （**%**）	**Delivered electricity** （**MWh)**
Liaoning	797.51	79,751,000	7.17	74,032,853
Jilin	297.39	29,739,000	7.32	27,562,105
Heilongjiang	484.93	48,493,000	8.48	44,380,794
Total				145,975,752

China Electrical Power Yearbook 2004

Yr 2003

Total emissions（tCO_2）	174,151,899
Total delivered electricity (MWh)	145,975,752
Emission Factor (**tCO_2/MWh)**	1.193019

Table A3-3 OM emission factor calculation of Northeast China Power Grid in 2004

Fuel	Unit	Liaoning	Jilin	Heilongjiang	subtotal	Carbon coefficient	NCV	CO2 Emissions
						(TC/TJ)	(TJ/unit)	(tCO2)
					A	B	C	D = A*B*C*44/12/100(mass unit) or D = A*B*C*44/12/10(volume unit)
Raw coal	10^4 Tons	4,144.2	2,310.9	3,084.8	**9,539.9**	25.8	20,908	**188,689,376.8**
Clean coal	10^4 Tons	84.75	1.09	4.88	**90.72**	25.8	26,344	**2,260,871.6**
Other washed coal	10^4 Tons	577.67	14.26	61	**652.93**	25.8	8,363	**5,165,589.1**
Coke	10^4 Tons				**0**	25.8	28,435	**0.0**
Coke oven gas	10^8 m^3	4.83	2.91		**7.74**	12.1	16,726	**574,367.5**
Other gas	10^8 m^3	57.33	4.19		**61.52**	12.1	5,227	**1,426,676.9**
Crude oil	10^4 Tons				**0**	20	41,816	**0.0**
Gasoline	10^4 Tons				**0**	18.9	43,070	**0.0**
Diesel	10^4 Tons	2.04	1.16	0.24	**3.44**	20.2	42,652	**108,672.7**
Fuel oil	10^4 Tons	12.81	1.78	2.86	**17.45**	21.1	41,816	**564,536.2**
LPG	10^4 Tons	2.19			**2.19**	17.2	50,179	**69,305.2**
Refinery gas	10^4 Tons	9.79		1.14	**10.93**	18.2	46,055	**335,923.0**
Natural gas	10^8 m^3		0.03	2.53	**2.56**	15.3	38,931	**559,111.4**
Other petroleum products	10^4 Tons				**0**	20	38,369	**0.0**
Other coking products	10^4 Tons				**0**	25.8	28,435	**0.0**
Other energy	10^4 Tce	26.97	5.07		**32.04**	0	0	**0.0**
Sub Total								**199,754,430.5**

Source: China Energy Statistics Yearbook 2005

Northeast China Power Grid Thermal Electricity generation in 2004

	Electricity generation (10^8kWh)	Electricity generation (MWh)	rate of electric plant consumption (%)	Delivered electricity (MWh)
Liaoning	845.43	84,543,000	7.21	78,447,450
Jilin	332.42	33,242,000	7.68	30,689,014
Heilongjiang	534.82	53,482,000	7.84	49,289,011
Total				158,425,475

China Electric Power Yearbook2005

	Yr 2004
Total emissions (tCO_2)	199,754,431
Total delivered electricity (MWh)	158,425,475
Emission Factor **(tCO_2/MWh)**	1.260873

Table A3-4 OM emission factor calculation of Northeast China Power Grid in 2005

Fuel	Unit	Liaoning	Jilin	Heilongjiang	subtotal	Carbon coefficient	NCV	CO2 Emissions
						(TC/TJ)	(TJ/unit)	(tCO2)
					A	B	C	D = A*B*C*44/12/100(mass unit) or D = A*B*C*44/12/10(volume unit)
Raw coal	10^4 Tons	4,305.41	2,446.13	3,383.21	**10,134.75**	25.8	20,908	**200,454,895.9**
Clean coal	10^4 Tons				**0**	25.8	26,344	**0.0**
Other washed coal	10^4 Tons	524.74	19.26	24.16	**568.16**	25.8	8,363	**4,494,939.9**
Coke	10^4 Tons				**0**	25.8	28,435	**0.0**
Coke oven gas	10^8 m^3	1.03	3.57	0.68	**5.28**	12.1	16,726	**391,816.6**
Other gas	10^8 m^3	12.62	8.37		**20.99**	12.1	5,227	**486,767.7**
Crude oil	10^4 Tons	1.16			**1.16**	20	41,816	**35,571.5**
Gasoline	10^4 Tons				**0**	18.9	43,070	**0.0**
Diesel	10^4 Tons	1.18	1.48	0.57	**3.23**	20.2	42,652	**102,038.7**
Fuel oil	10^4 Tons	9.32	2.46	1.55	**13.33**	21.1	41,816	**431,247.4**
LPG	10^4 Tons	0.12			**0.12**	17.2	50,179	**3,797.5**
Refinery gas	10^4 Tons	5.48		1.32	**6.8**	18.2	46,055	**208,991.4**
Natural gas	10^8 m^3		0.84	2.24	**3.08**	15.3	38,931	**672,681.0**
Other petroleum products	10^4 Tons				**0**	20	38,369	**0.0**
Other coking products	10^4 Tons				**0**	25.8	28,435	**0.0**
Other energy	10^4 Tce	16.18			**16.18**	0	0	**0.0**
Sub Total								**207,282,747.6**

Source: China Energy Statistics Yearbook 2006

Northeast China Power Grid Thermal Electricity generation in 2005

	Electricity generation (10^8kWh)	**Electricity generation (MWh)**	**rate of electric plant consumption (%)**	**Delivered electricity (MWh)**
Liaoning	836.97	83,697,000	7.03	77,813,101
Jilin	352.94	35,294,000	6.59	32,968,125
Heilongjiang	580	58,000,000	7.96	53,383,200
Total				164,164,426

China Electric Power Yearbook 2006

	Yr 2005
Total emissions (tCO_2)	207,282,748
Total delivered electricity (MWh)	164,164,426
Emission Factor **(tCO_2/MWh)**	1.262653

The average weighted emission factor of three year：1.240358 tCO_2/MWh

Northeast China Power Grid BM calculation

Step 1. The share of CO_2 emissions in the total emissions from solid, liquid and gas fuels fired for electricity generation

		Liaoning	Jilin	Heilongjiang	Total	Thermal value	Emission factor	Emissions
Fuel	Unit	A	B	C	D=A+B+C	E	F	G=D*E*F*44/12/100
Raw coal	10^4 Tons	4,305.41	2,446.13	3,383.21	10,134.75	20,908 kJ/kg	25.80	200,454,896
Clean coal	10^4 Tons	0	0	0	0	26,344 kJ/kg	25.80	0
Other washed coal	10^4 Tons	524.74	19.26	24.16	568.16	8,363 kJ/kg	25.80	4,494,940
Coke	10^4 Tons	0	0	0	0	28,435 kJ/kg	25.80	0
SubTotal								**204,949,836**
Crude oil	10^4 Tons	1.16	0	0	1.16	41,816 kJ/kg	20.00	35,571
Gasoline	10^4 Tons	0	0	0	0	43,070 kJ/kg	18.90	0
Kerosene	10^4 Tons	0	0	0	0	43,070 kJ/kg	19.60	0
Diesel	10^4 Tons	1.18	1.48	0.57	3.23	42,652 kJ/kg	20.20	102,039
Fuel oil	10^4 Tons	9.32	2.46	1.55	13.33	41,816 kJ/kg	21.10	431,247
Other petroleum products	10^4 Tons	0	0	0	0	38,369 kJ/kg	20.00	0
SubTotal								**568,858**
Natural gas	$10^7 m^3$	0	8.4	22.4	30.8	38,931 kJ/m^3	15.30	672,681
Coke oven gas	$10^7 m^3$	10.3	35.7	6.8	52.8	16,726 kJ/m3	12.10	391,817
Other gas	$10^7 m^3$	126.2	83.7	0	209.9	5,227 kJ/m^3	12.10	486,768
LPG	10^4 Tons	0.12	0	0	0.12	50,179 kJ/kg	17.20	3,798
Refinery gas	10^4 Tons	5.48	0	1.32	6.8	46,055 kJ/kg	18.20	208,991
SubTotal								**1,764,054**
Total								**207,282,748**

Source: China Energy Statistics Yearbook 2006

From above table and formulas (3)-(5) , λ_{Coal} =98.88%， λ_{Oil} =0.27%， λ_{Gas} =0.85%。

Step 2: Emission factor of thermal fired power

$EF_{Thermal} = \lambda_{Coal} \times EF_{Coal,Adv} + \lambda_{Oil} \times EF_{Oil,Adv} + \lambda_{Gas} \times EF_{Gas,Adv}$ =0.9453 (tCO_2/MWh)

Step 3: Power grid BM calculation

Northeast China Power Grid installed capacity in 2005

Installed capacity	Unit	Liaoning	Jilin	Heilongjiang	Total
Thermal	MW	15,999	6,359.4	11,575.6	33,934
Hydro	MW	1,403.9	3,720.8	846.7	5,971.4
Nuclear	MW	0	0	0	0
Others	MW	135.5	85.4	52.4	273.2
Total	MW	17,538.4	10,165.6	12,474.7	40,178.7

Source: China electrical power yearbook 2006

Northeast China Power Grid installed capacity in 1999

Installed capacity	Unit	Liaoning	Jilin	Heilongjiang	Total
Thermal	MW	12,425.7	4,583.1	10,128.1	27,136.9
Hydro	MW	1,240.0	3,508.2	774.5	5,522.7
Nuclear	MW	0	0	0	0
Others	MW	22.9	0	0	22.9
Total	MW	13,688.6	8,091.3	10,902.6	32,682.5

Source: China electrical power yearbook 2000

Northeast China Power Grid installed capacity in 1998

Installed capacity	Unit	Liaoning	Jilin	Heilongjiang	Total
Thermal	MW	12,560.3	4,428.6	9,116	26,104.9
Hydro	MW	1,223.1	3,474.7	784.5	5,482.3
Nuclear	MW	0	0	0	0
Others	MW	17	0	0	17
Total	MW	13,800.4	7,903.3	9,900.5	31,604.2

Source: China electrical power yearbook 1999

Table A3－5 Northeast China Power Grid BM calculation sheet

	Installed capacity in 1998	Installed capacity in 1999	Installed capacity in 2005	Incremental installed capacity between 1998-2005	Share on incremental installed capacity
	A	B	C	D=C-A	
Thermal（MW）	26,104.9	27,136.9	33,934.0	7,829.1	91.31%
Hydro（MW）	5,482.3	5,522.7	5,971.4	489.1	5.70%
Nuclear（MW）	0	0	0	0	0.00%
Wind Power（MW）	17	22.9	273.3	256.3	2.99%
Total（MW）	**31,604.2**	**32,682.5**	**40,178.7**	**8,574.5**	**100.00%**
Share of installed capacity in 2005	78.66%	81.34%	100%		

$EF_{grid, BM,y}$=0.9453×91.31%=0.8631 tCO_2/MWh.

OM	tCO_2/MWh	1.2404
BM	tCO_2/MWh	0.8631

Annex 4

MONITORING INFORMATION

No other information.