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:

>>
CGN Inner Mongolia Duerbote Wind farm Project
PDD version 3.0
Completed on 04/12/2008

A.2. Description of the project activity:

>>
CGN Inner Mongolia Duerbote Wind farm Project (hereinafter referred to as the proposed project) is located in Wulanhua Town, Siziwangqi County, Wulanchabu City, Inner Mongolia Autonomous Region. The project is developed by CGN Wind Power Co., Ltd. Based on the condition of the project site, the proposed project is to install and operate 33 wind turbines, each of which has a capacity of 1500kW; therefore, the total installed capacity of Inner Mongolia Duerbote Wind farm is 49.5MW. The full load hours estimated is 2305 hours per year and the expected net supplied power to the grid is 114,110 MWh per year to the North China Power Grid (NCPG) on the basis of a Power Purchase Agreement (PPA).

The baseline scenario, therefore, is the same as the scenario existing prior to the implementation of the project activity, i.e. generation of electricity by grid connected power plants.

As the NCPG is dominated by the thermal power generation, the establishment of the proposed project will lead to greenhouse gas (GHG) emission reductions, which is estimated to be approximately 120,363 tons of CO_2e per year. Furthermore, the proposed project will therefore help local government to promote the economy development and improve the air quality.

The proposed project promotes local sustainable development through the following aspects:

- reducing CO_2, SO_2 and NOx emissions;
- creating local employment opportunity during the assembly and installation of wind turbines, and for operation of the Inner Mongolia Duerbote Wind farm;
- reducing other particulate pollutants resulting from the fossil fuel fired power plants compared with a business-as-usual scenario.

A.3. Project participants:

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Name of Party involved	Private and/or public entity(ies) project participants (as applicable)	Party involved wishes to be considered as project participant (Yes/No)
P.R. China (host)	CGN Wind Power Co., Ltd.	No
United Kingdom of Great Britain and Northern Ireland	Carbon Resource Management Ltd.	No

Please see Annex 1 for detailed contact information.

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):

>>
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:

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Wulanchabu City/Siziwangqi County/Wulanhua 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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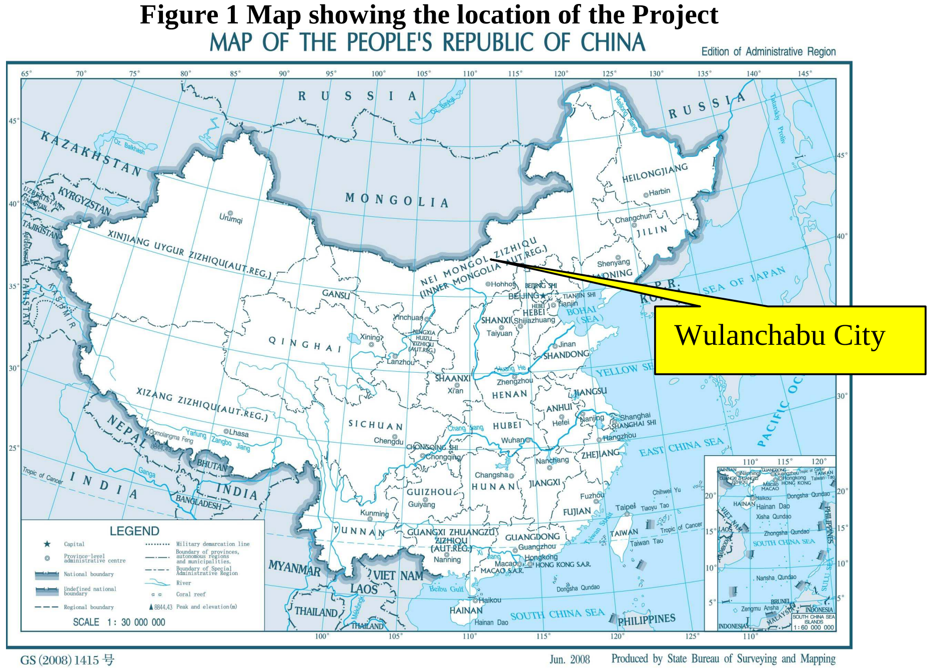
The CGN Inner Mongolia Duerbote Wind Farm lies northwest to Wulanhua Town, Siziwangqi County, Wulanchabu City of Inner Mongolia in the People's Republic of China. The center of the project is located at longitude 111°34′ East and latitude 41°31′ North. The average altitude of the project site is 1490~1580m above sea level. Figure 1 shows the location of the Inner Mongolia Duerbote Wind Farm in Inner Mongolia.

Figure 1 Map showing the location of the Project



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

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Category: Renewable electricity in grid connected applications
Sector scope (1): Energy industries

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

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The proposed project activity will have an installed capacity of 49.5 MW. Total net annual generation of electricity is expected to be 114,110 MWh once fully operational, with an average load factor of 26.32%. A total of 33 wind turbines of 1500kW will be installed in the project site. The electricity generated from the project will be transmitted to Duerbote substation of NCPG via 220kV transmission line.

The turbines will be supplied by Goldwind Science & Technology Ltd. The turbine technology is introduced from Germany; and therefore, the establishment and operation of the proposed project activity will promote the technology transfer and utilization in China. The main turbine parameters are shown in table 1.

Table 1. Key Technology to be employed at the Project Wind Farm

Key Technology Parameter	Value
Type	**Goldwind 82/1500**
Power Rating (kW)	**1500**
Rotor diameter (m)	82

Swept area (m^2)	5375
Rated Rotate speed (rpm)	9~17.3
Cut-in wind speed (m/s)	3
Rated wind speed (m/s)	10.3
Cut-out wind speed (m/s)	22
Rated voltage (V)	690

Prior to the implementation of the project activity, the electricity was generated by grid-connected power plants. Without the implementation of the project, this scenario would have continued and is considered the baseline scenario.

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

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The project participants chose renewable crediting period. The ex-ante estimated average annual emission reductions over the first seven-year crediting period of the project are as follows:

Table 2. Estimated amount of emission reductions over the chosen crediting period

Years*	**Annual estimation of emission reductions in tonnes of CO_2e**
May 2009	120,363
2010	120,363
2011	120,363
2012	120,363
2013	120,363
2014	120,363
2015	120,363
April 2016	120,363
Total estimated reductions(tonnes of CO_2e)	**842,541**
Total number of first crediting years	*7*
Annual average over the crediting period of estimated reductions (tonnes of CO_2e)	120,363

*Note: * Using 12-monthly periods, not calendar years, from the start of the crediting period.*

The baseline emissions factor has been fixed in the first 7-year crediting period. The amount of CERs actually generated by the project will vary based on the metered power supply of the project.

A.4.5. Public funding of the project activity:

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There is no pubic funding from Annex 1 Parties for 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 methodology applied in the proposed project is the approved baseline and monitoring methodology ACM0002 (version 07, valid from 14 Dec 07) -"Consolidated methodology for grid-connected electricity generation from renewable sources".

Approved methodology ACM0002 prescribes the use of the latest version of the "Tool for the demonstration and assessment of additionality (version 05.2, 26 August, 2008)" and the "Tool to calculate the emission factor for an electricity system" (version 01.1, 29 July, 2008).

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

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The approved methodology ACM0002 is applicable to the proposed project activity, because:

- The proposed project involves electricity capacity addition from wind sources; and
- The project is connected to the grid; and
- The proposed project does not involve switching from fossil fuels to renewable energy at the site of the project activity; and
- The geographic and system boundaries for the North China Power Grid (NCPG) can be clearly identified and information on the characteristics of the grid is available.

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

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Emission sources:

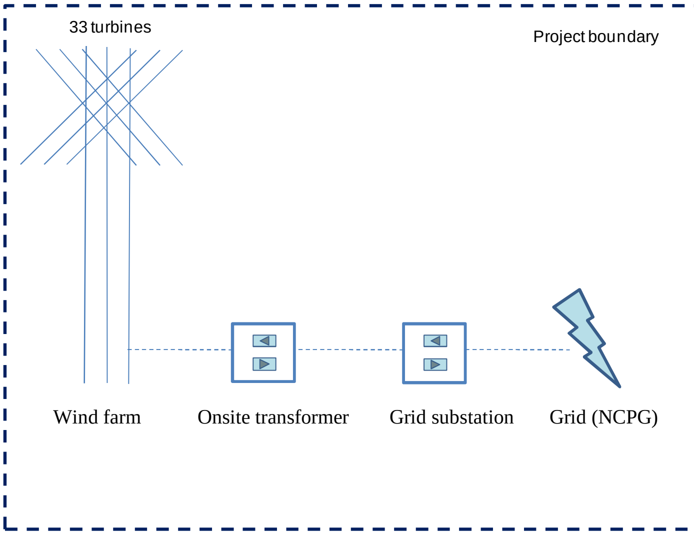
For the baseline determination only CO_2 emissions from electricity generation by fossil fuel fired power plant that is displaced due to the project activity are taken into account.

According to the approved methodology ACM0002, the emission sources and GHGs in the project boundary are listed in Table 3.

Spatial boundary:

The spatial extent of the proposed project boundary includes CGN Inner Mongolia Duerbote Wind Farm site and all power plants connected physically to the NCPG.

Figure 2 Flow diagram of the project boundary



According to the delineation of grid boundaries as provided by the DNA of China, the NCPG, including Beijing, Tianjin, Hebei, Shanxi, Inner Mongolia and Shandong[1], is the project electricity system, which is defined by the spatial extent of the power plants that can be dispatched without significant transmission constrains. The electricity transmission between different provinces in the NCPG is very large and it is unreasonable for the proposed project to regard the Provincial Power Grid as the project boundary.

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

Table 3. Emission sources and GHG included in the project boundary

	Source	Gas	Included?	Justification / Explanation
Baseline	Grid	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source.
		N_2O	No	Minor emission source.
Project Activity	None	CO_2	No	According to ACM0002, the project emission of renewable energy project activity is zero.
		CH_4		
		N_2O		

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

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[1] http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1364.pdf.

The project activity is the installation of a new grid-connected renewable power plant/unit, and is not a modification/retrofit of an existing plant/unit, thus, the baseline scenario, according to methodology ACM0002, is the following:

Electricity delivered to the NCPG by the proposed project would have otherwise been generated by the operation of grid-connected power plants in the NCPG and by the addition of new generation sources in the NCPG, as reflected in the combined margin (CM) calculation in Section B.6.

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 the CDM

The CDM was taken into account from the very beginning of the project, as found out in the feasibility study report (FSR) by Inner Mongolia Power Exploration & Design institute in October 2007, found that the project was not financially attractive, with an IRR below the benchmark, without obtaining additional income from the sale of certified emission reductions, and therefore the CDM income was taken into account in the FSR to improve the IRR above benchmark. Therefore, the developer held a board meeting on 8 November 2007, in which decision of applying for CDM registration and seeking of CERs buyers was made. On this basis, a CERs Purchase Contract was signed on 25 January 2008 and CDM project validation contract was signed on 13 March 2008, which were prior to the starting date of the project activity (purchase of the turbines). Then the construction was permitted on 8 May 2008. From the above description of the milestones, the incentive from the CDM, therefore, had been fully taken into account prior to the starting date of the project activity, aiming to obtain the additional funding to secure the project financially.

The timeline of CDM development is shown below:

Table 4 timeline of CDM development

Milestone	**Date**
Feasibility Study Report (FSR) finds that the project is not financially attractive without CDM, and CDM revenue is taken into account in the FSR to make the project attractive.	October 2007
CDM decision in boarding meeting	8 November 2007
Emission reduction purchase agreement signed (ERPA)	25 January 2008
FSR approval	11 March 2008
Validation contract signed with DOE	13 March 2008
PDD stakeholder comment period	25 April-24 May 2008
Purchase contract for turbines signed (defined as the project start date)	29 April 2008
Supervision contract for construction	April 2008
Construction start permission	8 May 2008
Construction contract signed	June 2008

Additionality

Approved methodology ACM0002 asks to use the latest version of the "Tool for the demonstration and assessment of additionality (Version 05.2)" agreed by the Executive Board to demonstrate and assess the additionality of the proposed project. The Tool consists of 4 steps as described below.

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

Realistic and credible alternatives to the project activity that can be part of the baseline scenario are defined through the following sub-steps:

Sub-step1a. Define alternatives to the project activity:

The demonstration about the alternative that provides outputs or services comparable with the proposed CDM project activity is as follows:

a) *The proposed project activity undertaken without being registered as a CDM project activity.*

- Alternative a) is in compliance with all applicable legal and regulatory requirements. But according to the detailed analysis in step 2, this scenario is less attractive with low IRR and is not realistic without CDM financing.

b) *A fossil fuel-fired power plant with the comparable capacity or electricity generation.*

- Taking into account the required capacity for the same annual generation, according to the current laws and regulations, it is not a realistic alternative (please refer to the analysis in sub-step 1b).

c) *A power plant using other source of renewable energy with the comparable capacity or electricity generation, such as PV, biomass and hydro, etc.*

- Besides wind energy, other kinds of renewable energy technologies, such as solar PV, geothermal, biomass and hydro are possible grid-connected sources that could be used in China. However, due to the technology development status and the high cost for power generation, solar PV, geothermal and biomass of similar installed capacity as the proposed project are not realistic alternatives in China[2]. Biomass power generation also faces barriers and is difficult to be operated without policies& financial support, only hydropower projects can have an investment return rate that competes with that of wind power projects in China[3]. However, due to dry climate and the lack of water resource recently years in project area, there is no commercially exploitable hydro power resource which can provide same electricity generation output of the proposed project activity[4]..

[2] The solar PV is hardly to be developed and applied due to its lack of policy-encouragement, poor technical innovation and experts, lack of financial support. http://www.newenergy.org.cn/html/0067/2006710_10767.html

Biomass is ruled out due to its lack of R&D competence, undeveloped market and bad management, etc. http://www.sdpc.gov.cn/zjgx/t20071123_174054.htm

[3] The new renewable energy is being blocked by high cost. http://www.chinaenergy.gov.cn/news.php?id=15688;

[4] There is no hydro energy resource available in the project site: http://www.shuidianzhan.net/snzy/250.html

Therefore, this alternative is not realistic.

d) *Continuation of the current situation: 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.*

- To meet the increase of the electricity demand, the power grid company can either increase the output generation from operating units or build some new power plants. Indeed, this is the current route followed by the industry to meet demand, as reflected in the baseline calculations data presented: more than 90% of recently added capacity is thermal power. Therefore, continuation of the current situation, with the electricity generated by the operation of grid-connected power plants and by the addition of new generation sources on North China Power Grid (NCPG) can be taken as a realistic alternative for the project activity and comply with the applicable laws and regulations..

From the above mentioned, alternative (d) is the baseline scenario of the project, in line with the methodology.

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

For the alternative (b) described in sub-step1a, if taking the capacity that can generate the same annual electricity generation and estimating annual utilization hours as 5633[5]which is the average utilization hours of the thermal units in China in 2006, the alternative baseline scenario for the proposed project should be a fuel-fired power plant with installed capacity of 20 MW or lower. Further, as the proposed project is a grid-connected wind power generation project, the alternative baseline scenario must be a grid-connected fuel-fired power generation project. However, according to Chinese regulations, coal-fired power plants of less than 135MW are prohibited to be built in the areas covered by the large grids such as provincial grids[6]. For these reasons, the possible alternative baseline scenario of building a 19 MW fuel-fired power plant conflicts with Chinese regulations. But the other scenarios are all compliant with the mandatory laws and regulations. So, scenario b) is not feasible as an alternative scenario, either.

According to the analysis in sub-step 1a and 1b, alternative (a) and alternative (d) are the realistic and feasible alternatives which comply with applicable 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, identified in step1, without the revenue from the sale of certified emission reductions (CERs). To conduct the investment analysis, use the following sub-steps:

Sub-step 2a. Determine appropriate analysis method

This step determines whether to apply the simple cost analysis, investment comparison analysis or benchmark analysis (sub-step 2b):

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[5]*China Electric Power Yearbook* (2007 Edition), China Electric Power Press

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

Following the EB guidance on the assessment of investment analysis[7], if the alternative to the project activity is the supply of electricity from the grid, this is not considered an investment and a benchmark approach is considered appropriate. As the baseline alternative involves the continuation of current practices, supply of electricity from the grid, a benchmark analysis is used to identify whether the project is economically attractive (Option III). The use of a benchmark analysis is also in line with Chinese practice and is followed in the FSR.

Therefore, the benchmark analysis (Option III) is adopted.

Sub-step 2b – Option III. Apply benchmark analysis

According to the *Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects* issued by former State Power Corporation of China in 2002, the benchmark of total investment financial internal rate of return (IRR) of electric power industry is 8%, and only if the total investment IRR of the project is higher than or equivalent to this benchmark, the proposed project is financially feasible.

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

The investment estimation in the Feasibility Study Report is based on national regulation, material and equipment price levels. The relevant data is listed in table 5:

Table 5. Relevant indicators for financial assessment

Item	Value
Net supplied power to the grid	114,110MWh
Static investment	498.14 million RMB Yuan
On-grid tariff (Including VAT)	0.51 RMB Yuan/kWh
Expected operational lifetime	20 years
Additional tax rate	8%
Value added tax rate	8.5%
Income tax rate	25%
Assumed CER price	9 €/t CO_2e

Table 6 shows the IRR of the project without and with CER revenue. It can be seen that IRR without CER revenue is below the benchmark 8% and with revenue from CDM at the assumed price level, the proposed project would be more financially attractive.

Table 6. Total investment analysis of the proposed project

IRR	
without CDM	**with CDM revenue**
5.48%	**8.52%**

[7] Paragraph 15, 'Guidance on the Assessment of Investment Analysis' (version 02), EB 41 Annex 45.

The revenue from the sale of CERs is expected to have a significant impact on the IRR. Although some uncertainties still exist, investors would gain reasonable financial return at such risk. The internal return rates, being 8.52 % for total investments would appear more financially attractive for prospective investors.

Sub-step 2d. Sensitivity analysis

A sensitivity analysis is included to show that the conclusion regarding the financial attractiveness is robust to reasonable variations in the critical assumptions. The investment analysis provides a valid argument in favour of additionality as this sensitivity analysis consistently supports (for a realistic range of assumptions) the conclusion that the project activity is unlikely to be economically or financially attractive.

According to EB Guidance, only variables that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation. The key variables in the sensitivity analysis therefore are:

1) Static investment;
2) Annual O&M cost;
3) On-grid tariff;
4) Power Supplied.

In terms of the guidance on the assessment of investment analysis from EB41, Annex 45, paragraph 17, as a general point of departure variations in the sensitivity analysis should cover a range of +10% and -10%,Past trend may be a guide to determine the reasonable range.

The outcome of the IRR analysis is presented in Table 7 below.

Table 7 IRR sensitivity analysis for the proposed project

RANGE	-94.69%	-17.56%	-10.00%	-5.00%	0.00%	5.00%	10.00%	18.25%
Static Investment		8.00%	6.82%	6.12%	5.48%	4.88%	4.33%	
O&M	8.00%		5.77%	5.63%	5.48%	5.35%	5.20%	
Tariff			3.96%	4.73%	5.48%	6.20%	6.90%	8.00%
Power supplied volume			3.96%	4.73%	5.48%	6.20%	6.90%	8.00%

The financial analysis shows that the project is not the most financially attractive alternative, and the sensitivity analysis shows that it is unlikely to be financially attractive compared to the benchmark under reasonable variations in the assumptions. However, the revenue from the CERs will greatly improve the financial feasibility of the proposed project, and it will also improve the ability to hedge risks.

Static Investment

Without CER revenue, the static investment would have to be decreased about 17.56% lower, to 410.67 million Yuan to reach the benchmark 8%. The investment costs in the approved feasibility study were derived from detailed discussions with turbine suppliers and quotes supplied by them to the developer. Therefore, it is highly unlikely that these costs will be much different from those quoted. As prices, including those of the requirement equipment and commodities, have been increasing in recent years, a

significant reduction in the level of investment is particularly unlikely[8] therefore, it's impossible to decrease the static investment to the level of 410.67 million Yuan.

O&M cost

The O&M costs would need to decrease by 94.69% before the project may reach the benchmark. However, such a scenario is not credible. As prices, including those of the requirement equipment and commodities, have been increasing in recent years, a significant reduction of over 90% of O&M cost is unlikely[8].

Tariff

Without CER revenue, the tariff should be increased by 18.25%, at 0.60 Yuan / kWh (including VAT) to reach the benchmark 8% and such a scenario is not credible.

In the FSR, the tariff is assumed to be 0.51 Yuan / kWh (incl. VAT) and according to the latest tariff approval, the highest tariff of wind power project in West Inner Mongolia is 0.51 Yuan / kWh (incl. VAT)[9]. The tariff policy is regulated by government, once approved it will be fixed for a long time. Also, as the Chinese government is trying to lower the on-grid tariff of the wind farm project[10], it is highly unlikely to increase this tariff. Therefore, it is not realistic for the PP to assume that the tariff would increase from the level quoted in the FSR, with an increase of 18.25% would be required to reach the benchmark.

Generation

In order to reach the benchmark 8%, the operating hours should be increased to 2725 hours to make the supplied power increased to 134,650MWh, 18.25% higher than the estimation in the power supplied of FSR. In the FSR, the supplied power of a wind farm project is estimated based on the analysis on the wind resource and turbine distribution. According to the wind resource analysis based on the one year on-site measurement (from August 1, 2006 to July 31, 2007) and the 30 years historical data (from 1977 to 2007) from local climate station, the most suitable wind turbine was selected. As the wind resource data is a historical average data, it can't be changed significantly during the life time of this proposed project. So the expected supplied power can not be expected to be significantly increased and it is impossible for supplied power to be increased to 134,650MWh to reach the benchmark.

In conclusion, the proposed project is not financially feasible without the revenue of CERs and thus is additional.

Step 4. Common practice analysis

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[8] http://energy.people.com.cn/GB/5720709.html
In the last 2 years, the demands for the turbines and its accessories exceeded the supply. Moreover the price of the raw material such as steel and cooper is increasing, which results in the price of wind turbines and equipments increasing, as demonstrated in *The Development of Wind Power*, published by People's Daily

[9] http://www.ndrc.gov.cn/zfdj/jggg/dian/t20080813_230724.htm

[10] http://www.eri.org.cn/manage/upload/uploadimages/eri200672795944.pdf.
Governmental policies have obvious impact on the development of wind farm projects and the tariff are lowered markedly.

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, access to financing, etc.

In China, the general environment of projects of this type of wind farm such as the wind resources[11], on-grid tariff, investment climate are only similar and comparable in the same province (Autonomous Region). On this basis, the common practice region and comparable framework is provincial and the project is compared to other projects in the Inner Mongolia Autonomous Region.

Taking note of that the proposed project is a large scale project, the small scale projects less than 15MW are excluded. Using the statistics of installed capacity of wind power in China in 2006, by Professor Shi Pengfei[12], the wind farm projects listed are in the same region (Inner Mongolia) and are of similar scale (large scale). CDM project activities are not included in this analysis. Only the non-CDM wind farms that have been commissioned with similar scale are listed in Table 6.

Table 6. Similar-scale wind farm projects located in Inner Mongolia

Name	Commissioning date	Capacity (MW)	Note
Huitengxile	Oct, 1997	19.8	Supported as Shuangjia Demonstration Project and received financial support from government of China and developed countries[13].
Dali phase III	Mar, 2004	30.0	Demonstration Project Supported by national debt fund[14]

Sources:
http://www.cwea.org.cn/download/display_list.asp?cid=2

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

It can be shown from the table above that there are only two earliest projects constructed not under CDM. Huitengxile (19.8MW) wind project was supported as Shuangjia Demonstration Project by State Economic and Trade Commission and received financial support from government of China, and Dali phase III wind project was also Demonstration Project supported by national debt fund. However, such support is no longer given in Inner Mongolia.

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[11] http://cwera.cma.gov.cn/upload/b_2_left_02.jpg : Cumulative wind installation in China till 2006,

[12] http://www.cwea.org.cn/download/display_info.asp?cid=&sid=&id=19 : Cumulative wind installation in China till 2006,

[13] This project is supported by Shuangjia Demonstration and soft loan from developed countries: http://www.nwtc.cn/Article/ShowArticle.asp?ArticleID=814

[14] This project is supported by national debt fund: http://www.chifeng.gov.cn/article/ReadNews.asp?NewsID=4141&BigClassID=1&SmallClassID=2&SpecialID=0

In addition to the two earliest governmental-supporting projects listed in Table6, the other wind farms are all applying for or have already received CDM registration. Many project developers have been encouraged by the positive news on the CDM registration of the first projects, and are now taking the CDM revenue into account in their decisions before construction and are applying for CDM registration.

→ If Sub-steps 4a and 4b are satisfied, i.e. similar activities cannot be observed or similar activities are observed, but essential distinctions between the project activity and similar activities can reasonably be explained, then the proposed project activity is additional.

In conclusion, all the steps above are satisfied, the proposed CDM project is not the baseline scenario, and the project activity is additional.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

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1. Baseline Emission Calculation

According to ACM0002**,** the baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity, calculated as follows:

$$BE_y = (EG_y - EG_{baseline})EF_{grid,CM,y} \qquad (1)$$

Where:
BE_y = Baseline emissions in year y (tCO_2/yr).
EG_y = Electricity supplied by the project activity to the grid (MWh).
$EG_{baseline}$ = Baseline electricity supplied to the grid in the case of modified or retrofit facilities (MWh). For new power plants this value is taken as zero. The proposed project is a new power plant, so this value is 0.
$EF_{grid,CM,y}$ = Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system".

The baseline emission factor (EF_y) is calculated as a combined margin ($EF_{grid,CM,y}$), consisting of the combination of operating margin ($EF_{grid,OM,y}$) and build margin ($EF_{grid,BMy,}$) factors according to the following six steps defined in the "Tool to calculate the emission factor for an electricity system". The calculations follow the latest published data from the Chinese DNA [15]and are based on official national statistics books: China Energy Statistical Yearbook and China Electric Power Yearbook.

Step 1. Identify the relevant electric power system

The power generated from the proposed project activity will be supplied to the grid. As the DNA has published a delineation of the project electricity system and connected electricity systems, these delineations are used.

[15] http://cdm.ccchina.gov.cn/web/NewsInfo.asp?NewsId=2976

Following the DNA delineation, the project electricity system is the North China Power Grid (NCPG), consisting of six provincial grids: Beijing, Tianjin, Hebei, Shanxi, Inner Mongolia and Shandong.

The connected electricity systems are the Northeast Power Grid (NEPG), consisting of three provincial grids: Jilin, Liaoning and Heilongjiang and Central China Power Grid (CCPG), consisting of six provincial grids: Jiangxi, Henan, Hubei, Hunan, Chongqing, Sichuan. There are electricity transferring from the connected electricity systems to the project electricity system, so the CO_2 emission factor for net electricity imports ($EF_{grid,import,y}$) from the connected electricity system should be determined using one of the following options for the purpose of determining the operating margin emission factor:

(a) 0 tCO_2/MWh, or
(b) The weighted average operating margin (OM) emission rate of the exporting grid; or
(c) The simple operating margin emission rate of the exporting grid; or
(d) The simple adjusted operating margin emission rate of the exporting grid.

The option (b) is selected to calculated the CO_2 emission factor(s) for net electricity imports ($EF_{grid,import,y}$) according to the delineation.

The electricity imports from the Northeast Power Grid to the North China Power Grid has not changed significantly from 2003 to 2006 (see Annex 3), so for the purpose of determining the build margin emission factor, the spatial extent is limited to the project electricity system according to the tool.

Step 2. Select an operating margin (OM) method

According to the tool, four various methods are provided for calculating the operating margin emission factor ($EF_{grid,OM,y}$), including:

a) Simple OM;
b) Simple Adjusted OM;
c) Dispatch data analysis OM;
d) Average OM

According to the tool, the Simple OM method (a) is applicable to the project if the low-cost resources constitute less than 50% of total grid generation in: 1) average of the five most recent years, or 2) based on long-term averages for hydroelectricity production

Since generation from all sources (including hydro power) other than thermal plants were less than 1% of total generation in the North China Power Grid and this percentage has not changed significantly in recent years (see Annex 3), with the statistic data from China Electric Power Yearbook 2003-2007 listed in the table below, the Simple OM method is applicable to the proposed project.

Table 7 Power generation in the North China Power Grid from 2002 to 2006

Year	Low-cost/must-run generation (10^8 kWh)	Total Generation (10^8 kWh)	Share	Source* (edition/page)
2002	36.25	4,075.45	0.89%	2003/p585

2003	39.79	4,616.53	0.86%	2004/p709
2004	40.32	5,308.04	0.76%	2005/p474
2005	45.51	6,077.82	0.75%	2006/p568
2006	45.89	6,079.11	0.75%	2007/p638
Total	207.76	26,156.95		
Average	41.552	5231.39	0.80%	

The Simple OM emissions factor can be calculated using either ex-ante or ex-post data vintages. The project proponents have chosen to use the ex-ante option, and $EF_{grid,OM,y}$ is fixed for the duration of the first crediting period.

- 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.

Step 3. Calculate the operating margin emission factor according to the selected method

The Simple Operating Margin emission factor $EF_{grid,OM,y}$ is defined 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. Three options can be selected to calculate the simple OM:

- Based on data on fuel consumption and net electricity generation of each power plant / unit (Option A); or
- Based on data on net electricity generation, the average efficiency of each power unit and the fuel type(s) used in each power unit (Option B); or
- Based on data 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 (option C).

As data for options A and B are not available, the published DNA data uses option C for the calculation of the operating margin emission factor.

For Option C, 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:

$$EF_{grid,OMsimple,y} = \frac{\sum_i FC_{i,y} \times NCV_{i,y} \times EF_{co_2,i,y}}{EG_y} \qquad (2)$$

Where
$EF_{grid,OMsimple,y}$ is the simple operating margin CO_2 emission factor in year y (tCO_2/MWh)
$FC_{i,y}$ is the amount of fossil fuel type i consumed in the project electricity system in year y (mass or volume unit)

$NCV_{i,y}$ is the net calorific value (energy content) of fossil fuel type i in year y (GJ/mass or volume unit)
$EF_{CO2,i,y}$ is the CO_2 emission factor of fossil fuel type i in year y (tCO_2/GJ)
EG_y is the 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 is all fossil fuel types combusted in power sources in the project electricity system in year y
y, when using the ex-ante option, is the three most recent years for which data is available at the time of submission of the CDM-PDD to the DOE for validation

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:

$EF_{grid,OMsimlpe,y}$ = 1.1169 tCO_2/MWh

Step 4. 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 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.[16] This option is chosen as it comprises larger annual generation than the five units built most recently. Following the deviation[17], the latest statistical data available (from the China Power Yearbook) is used by the DNA to determine the most recent year from which the added generation capacity is equal to or just exceeds 20% of the latest statistic year 2006. The added generation capacity is the sample group of power units *m* used to calculate the build margin.

In terms of vintage of data, project participants can choose between option 1 ex-ante, and option 2 ex-post data vintages. The project proponents have chosen to use the ex-ante option, and $EF_{grid,BM,y}$ is fixed for the duration of the first crediting period.

- *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.

Step 5. Calculate the build margin emission factor

The build margin emissions factor is the generation-weighted average emission factor (tCO_2/MWh) of all power units *m* during the most recent year *y* for which power generation data is available, calculated as follows:

[17] Deviation for projects in China (DNV, 7 Oct 05), see http://cdm.unfccc.int/Projects/Deviations.

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

$EF_{grid,BM,y}$ is the Build margin CO_2 emission factor in year y(t CO_2/MWh);
$EG_{m,y}$ is the Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh);
$EF_{EL,m,y}$ is the CO_2 emission factor of power unit m in year y (tCO_2/MWh);
m is the power units included in the build margin;
y is the most recent historical year for which power generation data is available.

The CO_2 emission factor of each power unit m ($EF_{EL,m,y}$) should be determined as per the guidance in step 3 (a) for the simple OM. However, due to the limited availability of publicly available data, the DNA uses the accepted deviation mentioned in Step 4 to calculate $EF_{BM,y}$, as follows:

- Use of capacity additions for estimating the build margin emission factor for grid electricity.
- Use of weights estimated using installed capacity in place of annual electricity generation.
- Using the latest statistical data available from China Energy Statistical Yearbook 2007 to calculate the different CO_2 emission percentage (λ_i) of solid, liquid and gas fuel in the total emission from thermal generation in the North China Power Grid in 2006.
- Based the emission percentage (λ_i) of different kind fossil fuels and the corresponding emission factor (EF_i) according to the best technology commercially available in the China, the weighted emission factor of thermal power ($EF_{thermal}$)is calculated.
- Using the latest statistical data available (from the China Electric Power Yearbook) determine the year from which the added generation capacity is equal to or just exceeds 20% of the capacity of the latest statistic year 2006. Regarding the added generation capacity above 20%, calculate the Build Margin through multiply the weighted emission factor of thermal power ($EF_{thermal}$) by the capacity percentage of the thermal power among the about 20% new capacity of 2006.

And the $EF_{grid,BM,y}$ of North China Power Grid is 0.8687 tCO_2/MWh. (see Annex 3 for more details)

Step 6. Calculation of the combined margin emission factor

The combined margin emission factor is calculated as follows:

$$EF_{grid,CM,y} = w_{OM} \bullet EF_{grid,OM,y} + w_{BM} \bullet EF_{grid,BM,y} \quad (4)$$

Where
$EF_{grid,BM,y}$ is the build margin CO_2 emission factor in year y (tCO_2/MWh)
$EF_{grid,OM,y}$ is the operating margin CO_2 emission factor in year y (tCO_2/MWh)
w_{OM} is the weighting of operating margin emissions factor (%)
w_{BM} is the weighting of build margin emissions factor (%).

The default weights are used, i.e. for the wind farm projects in the first crediting period and the subsequent crediting period, $w_{OM} = 0.75$ and $w_{BM} = 0.25$.

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

$EF_{grid,CM,y}$ = 1.0548 tCO_2/MWh

Using Operating Margin and Build Margin emission factors that are fixed for the duration of the first crediting period, the baseline emissions factor is also fixed for the first crediting period. These parameters will be recalculated at any renewal of the crediting period using the same steps 1-6 in the tool and the latest data available at that time.

Table 8 Values obtained when calculating the baseline emission factor using ACM0002

Variable	**Value**
Operating Margin Emissions Factor ($EF_{grid,OM,y}$)in tCO_2/MWh)	1.1169
Build Margin Emissions Factor ($EF_{grid, BM,y}$ in tCO_2/MWh)	0.8687
Baseline Emissions Factor ($EF_{grid,CM,y}$ in tCO_2/MWh)	1.0548

Baseline emissions (BE_y) now can be calculated as the combined margin CO_2 emission factor ($EF_{grid,CM,y}$)multiplied by the annual net generation of the Proposed Project (EG_y):

2. Project emission

According to ACM0002, the proposed project is a wind farm, belongs to renewable energy activity, and PE_y of the proposed project is zero.

3. Leakage

According to ACM0002, no leakage is considered for the proposed project.

4. Calculate Emission Reduction

The emission reduction ER_y by the project activity during a given year *y* is the difference between baseline emission (BE_y), project emissions (PE_y) and emission due to leakage (LE_y), as follows:

$$ER_y = BE_y - PE_y - LE_y \qquad (5)$$

Where the baseline emissions (BE_y in tCO_2) are the product of the baseline emissions factor (EF_y in tCO_2/MWh) times the electricity supplied by the project activity to the grid (EG_y in MWh). The calculation formula is as follows:

$$BE_y = EG_y \times EF_{grid,CM,y} \qquad (6)$$

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

Data / Parameter:	$FC_{i,y}$
Data unit:	Mass or volume

Description:	the amount of the fossil fuel *i* consumed in the project electricity system in year *y*
Source of data used:	China Energy Statistical Yearbook
Value applied:	See Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied :	The aggregate amount of each fuel is applied because the amount of a fuel of each plant can not be acquired.
Any comment:	

Data / Parameter:	$EG_{grid,y}$ and $EG_{m,y}$
Data unit:	MWh
Description:	Electricity supplied to power grid by included sources in year y
Source of data used:	China Electric Power Yearbook
Value applied:	See Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied :	The aggregate amount of electricity is applied because the amount of each plant can not be obtained.
Any comment:	

Data / Parameter:	NCV_i
Data unit:	GJ/mass or volume unit
Description:	Net caloric value of fossil fuel type i consumed in the project electricity system in year y
Source of data used:	China Energy Statistic Yearbook
Value applied:	See Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied :	Best data available published by the Chinese authorities, and officially accepted by the Chinese DNA in their emission factor calculations.
Any comment:	

Data / Parameter:	$EF_{CO2,i,y}$ and $EF_{CO2,m,y}$
Data unit:	tCO_2/GJ
Description:	CO_2 emission factor of fossil fuel type i in year y
Source of data used:	Taken from DNA of China, see http://cdm.ccchina.gov.cn/web/NewsInfo.asp?NewsId=3239 Original data used are the IPCC default values from the 2006 IPCC Guidelines for National Greenhouse gas Inventories, Volume 2, Energy.

Value applied:	See Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied :	International default values, and officially accepted by the Chinese DNA in their emission factor calculations.
Any comment:	

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:	http://cdm.ccchina.gov.cn
Value applied:	Best efficiency for coal plant is 37.28%; Best efficiency for oil plant is 48.81% Best efficiency for gas plant is 48.81%
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	

Data / Parameter:	Installed Capacity
Data unit:	MW
Description:	Installed capacity of the NCPG in year *y*
Source of data used:	China Electric Power Yearbook(2005,2006 and 2007)
Value applied:	See Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	

Data / Parameter:	Import Electricity
Data unit:	MWh
Description:	Net import electricity from NEPG and CCPG to the NCPG
Source of data used:	China Electric Power Yearbook
Value applied:	See Annex 3
Justification of the choice of data or description of measurement methods	

and procedures actually applied :	
Any comment:	

Data / Parameter:	EF_{CM}
Data unit:	tCO_2/MWh
Description:	Combined margin emission factor of the grid
Source of data used:	Calculated & Chinese DNA
Value applied:	1.0548
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data used from Chinese DNA, http://cdm.ccchina.gov.cn/web/NewsInfo.asp?NewsId=3239
Any comment:	

Data / Parameter:	EF_{OM} (also $EF_{grid,OMsimple,y}$)
Data unit:	tCO_2/MWh
Description:	Operating Margin Emission Factor
Source of data used:	Calculated
Value applied:	1.1169
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data used from Chinese DNA, http://cdm.ccchina.gov.cn/web/NewsInfo.asp?NewsId=3239
Any comment:	

Data / Parameter:	EF_{BM}
Data unit:	tCO_2/MWh
Description:	Build Margin Emission Factor
Source of data used:	Calculated
Value applied:	0.8687
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data used from Chinese DNA, http://cdm.ccchina.gov.cn/web/NewsInfo.asp?NewsId=3239
Any comment:	

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

>>

Based on the Feasible Study Report, the proposed project will generate 114,110MWh electricity to the NCPG annually. The emission reduction ER_y by the project activity during a giving year y is calculated as follows:

$$BE_y = EG_y \times EF_{grid,CM,y} = 114{,}110\text{MWh} \times 1.0548\ tCO_2/\text{MWh} = 120{,}363\ tCO_2$$

$$ER_y = BE_y - PE_y - LE_y = 120{,}363 - 0 - 0 = 120{,}363\ tCO_2$$

The emission reduction ER_y by the project activity during a giving year y is 120,363 tCO_2 and the total emission reduction in the first crediting period is 842,541 tCO_2.

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

>>

Table 9. Emission reduction of the proposed project in the first crediting period

Year*	Estimated value of emission of the proposed project activity(tCO_2e)	Estimated value of emission of the baseline (tCO_2e)	Estimated value of emission of leakage (tCO_2e)	Estimated value of total emission reduction (tCO_2e)
May 2009	0	120363	0	120363
2010	0	120363	0	120363
2011	0	120363	0	120363
2012	0	120363	0	120363
2013	0	120363	0	120363
2014	0	120363	0	120363
2015	0	120363	0	120363
April 2016	0	120363	0	120363
Total (tCO_2e)	0	842541	0	842541

*Note: * Using 12-monthly periods, not calendar years.*

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

>>

Following approved methodology ACM0002, the data that is required to be monitored to establish the emission reductions, is the net electricity generation (EG_y).

B.7.1 Data and parameters monitored:

Data / Parameter:	EG_y
Data unit:	MWh
Description:	Net electricity supplied to the grid by the project in period y
Source of data to be used:	Electricity meter installed at the substation, monitoring electricity exported to the grid and imported from the grid by the project.
Value of data applied for the purpose of calculating expected	114,110 MWh/year once fully operational.

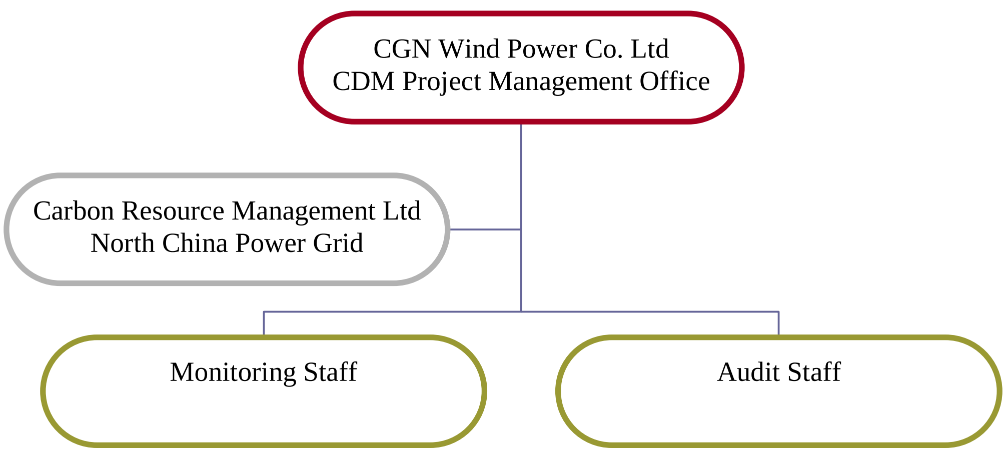
emission reductions in section B.5	
Description of measurement methods and procedures to be applied:	Net electricity generated by the proposed project activity will be continuously measured and monthly recorded through the metering equipments. Calculated from supply to the grid and imports from the grid.
QA/QC procedures to be applied:	The metering equipment are calibrated and checked for accuracy by the qualified third party periodically in accordance with industry standards (Chinese electric industry regulation DL/T448-2000). Monthly net generation data will be approved and signed off by CDM manager before it is accepted and stored. The metering data will be double-checked against sales receipts. The metering equipments shall have sufficient accuracy so that the specification of the meters should be 0.5s or more precise than 0.5s.
Any comment:	

B.7.2 Description of the monitoring plan:

>>
Overall responsibility for monitoring and carrying out the monitoring following this monitoring plan lies with CGN Wind Power Co., Ltd. The company will establish a CDM project management office and assign dedicated people responsible for the monitoring and reporting of the generation and emission reductions of the project activity.

The operating and management structure is illustrated as followed:

The detailed information about the monitoring plan is presented in Annex 4.



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 the baseline study and monitoring methodology: 08/12/2008

- Ms. Cheng Linglin, Mr. Shi Xiangfeng, Ms. Qian Yiwen, cll@carbonresource.com, Carbon Resource Management China Representative Office, Tel: +86 10 8447 5246/8.
- Mr. Christiaan Vrolijk, cv@carbonresource.com. Carbon Resource Management Ltd, Tel: +44 20 7016 1426.

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:

>>
29/04/2008 (date of the purchase contract of the turbine)

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

>>
20y

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:

>>
01/05/2009 (or the date of registration, whichever is later)

C.2.1.2. Length of the first crediting period:

>>
7y

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:

>>

Environmental Impact Assessment (EIA) for the Inner Mongolia Duerbote Wind farm has been completed in October 2007 by of Inner Mongolia Power Exploration & Design Institute assigned by the Project owner, and has been approved by the Environmental Protection Bureau of Inner Mongolia Autonomous Region in November 2007. Here is a summary of the EIA.

1 The analysis of the environment impact in the construction period

- Construction machinery and construction activity will generate noise. However, since the nearest local residential area is far away from the wind farm site and local atmosphere environment capacity is very large, the impact of construction noise to the local region is minimal.
- The waste water from construction is mainly sewage from construction workers. This small quantity of waste water will be treated by deposition in a septic tank near the wind farm, and therefore it will not have a significant impact on the environment. A new sewage system will be built for long term use during operations. All the waste water from construction work is used for eliminating dust. So the water during construction period will have no impact on the local environment.
- The air pollution from the proposed project is mainly dust emitted by the construction activity with emission source in a low position and the diameter of the particulate is relative large, so the impact by the dust emitted is limited within the construction site. Major measures for dust control are spreading water on the construction site and setting temporary covering on the construction materials.
- The project temporarily disturbs some grass cover for construction use. The occupied land will be restored after construction. Overall, land use impact on the local residents arising from the project is considered to be insignificant.

2 The analysis of the environment impact in operation period

- The noise from blades of wind power machine rotating during project construction is avoided mainly by selecting low noise equipment. Furthermore the residential regions are far away from the wind farm, so the noise does not influence the residential districts nearest to the site.
- Solid waste and liquid waste will be produced by operation staff during operation period. The emitted waste quantity is very small and will have no significant impact on the environment after treatment.
- The major concern of the impact to the ecological environment by the operation of the wind farm is the potential damage to birds, especially to the birds migrating during night time. From the research focused on this issue, it is stated that the chance of crashing by birds with wind generating sets are relative low. Moreover, the places with large number of night-migrating birds are excluded during project site selection process, which indicates minimal chance of collision between the birds and generators. The impact to local birds by the operation of the proposed project is very small.

3. Conclusion

The wind farm does not put much pressure on the local environment when generating renewable power. However it will bring great environmental benefit as well as the social benefit.

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:

>>
Environmental impacts are not considered significant. The Environmental Protection Bureau of Inner Mongolia Autonomous Region has approved the EIA.

SECTION E. Stakeholders' comments

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

>>
In March 2008, the staff from CGN Wind Power Co., Ltd. carried out a survey of the local villagers and residents in Wulanhua Town. 1 page questionnaire was designed to fill in and has the following sections:

- Project introduction
- Respondent's basic information and education level
- Questions on:

1. Do they agree with the development and construction of the project?
2. Will the project have a negative impact on your environment of living, studying and working?
3. Will the project have a negative impact on the environment, such as noise, water and electromagnetism?
4. Will the project have a negative impact on the ecosystem?
5. Do you think the proposed project will have promotion in local economic development?
6. Do you have some suggestion about the project?

E.2. Summary of the comments received:

>>
Following is a summary of the local survey. The survey forms are available from the project owner. The questionnaires were sent to 50 households and the survey had a 100% response rate. The result of the survey indicated the support to the project.

The statistic of opinion:

- Education level of the respondents: Elementary school (10%), Junior high school (26 %), high school (42 %), University level and above (22%).
- Gender of the respondents: male (36 %) and female (64 %).
- 100% of respondents agreed with the development of the project.
- 100% respondents believed that the project construction will not do harm to the environment.
- 98% believed that the project construction will do no harm to the ecosystem and 2% didn't make any suggestions.
- 100% believed that the project construction will have no impact to the environment of living, studying and working.
- 100% believed that the project construction will have positive impact on local economic development.

Conclusions from the survey:

The survey shows that the proposed project has strong local support among the local people. They all believe the proposed project will promote the local economic development and agree the project construction.

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

>>

The villagers and local government are all supportive of the proposed project and to date there has been no need to modify the project design according to the comments received.

The project owner has an overall environment-friendly plan to guarantee that the project has the minimum negative impact on the environment during the project construction and operation.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

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Represented by:	Mr. Chen Sui
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Middle Name:	A
First Name:	Nicholas
Department:	

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Direct FAX:	
Direct tel:	
Personal E-Mail:	nac@carbonresource.com

<u>Annex 2</u>

INFORMATION REGARDING PUBLIC FUNDING

There is no public funding for the proposed project.

Annex 3

BASELINE INFORMATION

The baseline emission factor calculations are taken from the Chinese DNA, see http://cdm.ccchina.gov.cn/web/NewsInfo.asp?NewsId=3239.

Step 1. Identify the relevant electric power system

Following the DNA delineation, the project electricity system is the North China Power Grid (NCPG), consisting of six provincial grids: Beijing, Tianjin, Hebei, Shanxi, Inner Mongolia and Shandong.

The connected electricity systems are the Northeast Power Grid (NEPG), consisting of three provincial grids: Jilin, Liaoning and Heilongjiang, and Central China Power Grid (CCPG), consisting of six provincial grids: Jiangxi, Henan, Hubei, Hunan, Chongqing, Sichuan.

Step 2. Select an operating margin (OM) method

According to Tool to calculate the emission factor for an electricity system, 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 average hydroelectric production. The Simple OM method, therefore, is applicable to the proposed project as the share of low-cost/must-run generation does not exceed 1% in the most recent last 5 years, with the average being 0.8% as presented below.

The most recent year for which data is available in the yearbook is the year 2006. Table A1 presents the shares of generation from all sources including hydro power, other than thermal plants. The table shows that over the last five years generation from these sources has been consistently less than 1%.

Table A1 Power generation in the North China Power Grid from 2002 to 2006

Year	Low-cost/must-run generation (10^8 kWh)	Total Generation (10^8 kWh)	Share	Source* (edition/page)
2002	36.25	4,075.45	0.89%	2003/p585
2003	39.79	4,616.53	0.86%	2004/p709
2004	40.32	5,308.04	0.76%	2005/p474
2005	45.51	6,077.82	0.75%	2006/p568
2006	45.89	6,079.11	0.75%	2007/p638
Total	207.76	26,156.95		
Average	41.552	5231.39	0.80%	

Step 3. Calculate the operating margin emission factor according to the selected method

$EF_{CO2,i,y}$, the CO_2 emission factor of fossil fuel type i in year y ,is calculated as follows:

$EF_{CO2,i,y}= EF_{CO2,i,y}$*44/12

Table A2 Emission Factors of Fuels

Fuel types	Carbon Emission Factor (tC/TJ)
Coal	25.80
Cleaned Coal	25.80
Other washed coal	25.80
Coke	29.20
Shaped Coal	26.6
Crude Oil	20.00
Gasoline	18.90
Diesel	20.20
Fuel Oil	21.10
Other Petro Product	20.00
Natural Gas	15.30
Coke Oven Gas	12.10
Other Coal Gas	12.10
LPG	17.20
Refinery Gas	15.70
Other Coking Products	25.8
Other Energy	0

Source: 1) 2006 IPCC Guidelines for National Greenhouse Gas Inventories， Volume 2 Energy；

2)China Power Year Book (2007)；

Fossil fuel consumption

Fuel consumption is taken from the latest China Energy Statistical Yearbook editions. The yearbooks present a range of more than 10 fuels for each province. Data is presented in Table A3 below. The share of emissions from coal consumption is also given in the table.

Table A3 Energy consumption and CO_2 emissions of NCPG in 2004-2006

2004

Fuel	Unit	Beijing	Tianjin	Hebei	Shanxi	Inner Mongolia	Shandong	North China Grid	CO2 emissions (tCO_2e)
Raw coal	10^4 t	823.09	1410	6299.8	5213.2	4932.2	8550	**27228.29**	538,547,477
Clean coal	10^4 t						40	**40**	996,857
Other washed coal	10^4 t	6.48		101.04	354.17		284.22	**745.91**	5,901,191
Coke	10^4 t					0.22		**0.22**	6,698
Coke oven gas	10^8 m^3	0.55		0.54	5.32	0.4	8.73	**15.54**	1,153,187
Other gas	10^8 m^3	17.74		24.25	8.2	16.47	1.41	**68.07**	1,578,574
Crude oil	10^4 t							**0**	0
Gasoline	10^4 t								0
Diesel	10^4 t	0.39	0.84	4.66				**5.89**	186,070
Fuel oil	10^4 t	14.66		0.16				**14.82**	479,451
LPG	10^4 t							**0**	0
Refinery gas	10^4 t		0.55	1.42				**1.97**	52,229
Natural gas	10^8 m^3		0.37		0.19			**0.56**	122,306
Other petroleum products	10^4 t							**0**	0
Other coking products	10^4 t							**0**	0
Other E (standard coal)	10^4 Tce	9.41		34.64	109.73	4.48		**158.26**	0
							CO_2 Emission		549,024,041

Source: China Energy Statistical Year Book (2005)

2005

Fuel	Unit	Beijing	Tianjin	Hebei	Shanxi	Inner Mongolia	Shandong	North China Grid	CO2 emissions (tCO_2e)
Raw coal	10^4 t	897.75	1675.2	6726.5	6176.45	6277.23	10405.4	**32158.53**	636,062,536
Clean coal	10^4 t						42.18	**42.18**	1,051,186
Other washed coal	10^4 t	6.57		167.45	373.65		108.69	**656.36**	5,192,725
Coke	10^4 t					0.21	0.11	**0.32**	9,742
Coke oven gas	10^8 m^3	0.64	0.75	0.62	21.08	0.39		**23.48**	1,742,396
Other gas	10^8 m^3	16.09	7.86	38.83	9.88	18.37		**91.03**	2,111,027
Crude oil	10^4 t					0.73		**0.73**	22,385
Gasoline	10^4 t			0.01				**0.01**	298
Diesel	10^4 t	0.48		3.54		0.12		**4.14**	130,786
Fuel oil	10^4 t	12.25		0.23		0.06		**12.54**	405,690
LPG	10^4 t							**0**	0
Refinery gas	10^4 t			9.02				**9.02**	239,141
Natural gas	10^8 m^3	0.28	0.08		2.76			**3.12**	681,417
Other petroleum products	10^4 t							**0**	0
Other coking products	10^4 t							**0**	0
Other E (standard coal)	10^4 Tce	8.58		32.35	69.31	7.27	118.9	**236.41**	0
							CO_2 Emission		647,649,331

Source: China Energy Statistical Year Book (2006)

2006

Fuel	Unit	Beijing	Tianjin	Hebei	Shanxi	Inner Mongolia	Shandong	North China Grid	CO2 emissions (tCO_2e)
Raw coal	10^4 t	796.63	1639.2	6867.99	6968.88	8404.05	10930.66	35607.41	704,277,823
Clean coal	10^4 t						39.77	39.77	991,125
Other washed coal	10^4 t	6.36		214.13	371.14	61.77	544.6	1198	9,477,855
moulding coal	10^4 t	7.97					27.77	35.74	728,820
Coke	10^4 t						3.23	3.23	98,335
Coke oven gas	10^8 m^3	0.38	0.63	5.8	22.32	0.64	5.79	35.56	2,638,825
Other gas	10^8 m^3	20.66	6.58	69.72	13.79	22.76	7.22	140.73	3,263,593
Crude oil	10^4 t					0.74		0.74	22,692
Gasoline	10^4 t			0.01				0.01	298
Diesel	10^4 t	0.21		3.01		0.07	6.32	9.61	303,589
Fuel oil	10^4 t	6.38		0.08			4.1	10.56	341,633
LPG	10^4 t						0.01	0.01	316
Refinery gas	10^4 t			2.43			2.32	4.75	125,934
Natural gas	10^8 m^3	3.41	0.73		0.53			4.67	1,019,942
Other petroleum products	10^4 t						0.28	0.28	7,878
Other coking products	10^4 t							0	0
Other E (standard coal)	10^4 Tce	6.83		47.11	230.76	12.51	132.89	430.1	0
							CO_2 Emission		723,298,659

Source: China Energy Statistical Year Book (2007)

Calculation of net generation from included sources

Gross generation for each province is presented in the yearbooks. The data is also broken down into three categories: thermal, hydro and other sources. For the OM calculations, only thermal generation is included. Gross generation and own consumption are used to calculate net generation from included sources. The calculations are presented in Table A4 below.

Table A4 Thermal generation, own consumption rate, and net supply in NCPG

Province Grid	2004 Thermal Power generation (MWh)	2004 Losses (%)	2004 Thermal power supply (MWh)	2005 Thermal Power generation (MWh)	2005 Losses (%)	2005 Thermal power supply (MWh)	2006 Thermal Power generation (MWh)	2006 Losses (%)	2006 Thermal power supply (MWh)
Beijing	18579000	7.94	17,103,827	20880000	7.73	19,265,976	20705000	7.51	19,150,055
Tianjin	33952000	6.35	31,796,048	36993000	6.63	34,540,364	35924000	6.86	33,459,614
Hebei	124970000	6.5	116,846,950	134348000	6.57	125,521,336	143888000	6.63	134,348,226
Shanxi	104926000	7.7	96,846,698	128785000	7.42	119,229,153	150250000	7.45	139,056,375
Inner Mongolia	80427000	7.17	74,660,384	92345000	7.01	85,871,616	139593000	7.58	129,011,851
Shandong	163918000	7.32	151,919,202	189880000	7.14	176,322,568	230922000	7.12	214,480,354
Total			489,173,110			560,751,013			669,506,473

Source：China Power Year Book (2005, 2006, 2007)

Imports

The connected electricity systems are the Northeast Power Grid (NEPG), consisting of three provincial grids: Jilin, Liaoning and Heilongjiang and the Central China Power Grid (CCPG), consisting of six provincial grids: Jiangxi, Henan, Hubei, Hunan, Chongqing and Sichuan. According to the tool, there is electricity transferring from the connected electricity systems to the project electricity system, so the CO_2 emission factor for net electricity imports ($EF_{grid,import,y}$) from the connected electricity systems should be determined to use "The weighted average operating margin (OM) emission rate of the exporting grid".

The average emission rate is calculated using the same steps as above for NCPG, namely fuel consumption and net generation as indicated in Table A5 – A8 below. Fuel consumption in NEPG and CCPG is taken from the latest China Energy Statistical Yearbook editions. The yearbooks present a range of more than 10 fuels for each province.

Table A5 Fuel consumption and CO_2 emissions of NEPG in 2004-2006(connected system)
2004

Fuel	Unit	Liaoning	Jilin	Heinongjiang	Northeast China Grid	CO2 emissions (tCO2e)
Raw coal	10^4 t	4144.2	2310.9	3084.8	**9539.9**	188,689,377
Clean coal	10^4 t	84.75	1.09	4.88	**90.72**	2,260,872
Other washed coal	10^4 t	577.67	14.26	61	**652.93**	5,165,589
Coke	10^4 t				**0**	0
Coke oven gas	10^8 m^3	4.83	2.91		**7.74**	574,367
Other gas	10^8 m^3	57.33	4.19		**61.52**	1,426,677
Crude oil	10^4 t				**0**	0
Gasoline	10^4 t					0
Diesel	10^4 t	2.04	1.16	0.24	**3.44**	108,673
Fuel oil	10^4 t	12.81	1.78	2.86	**17.45**	564,536
LPG	10^4 t	2.19			**2.19**	69,305
Refinery gas	10^4 t	9.79		1.14	**10.93**	289,780
Natural gas	10^8 m^3		0.03	2.53	**2.56**	559,111
Other petroleum products	10^4 t				**0**	0
Other coking products	10^4 t				**0**	0
Other E (standard coal)	10^4 Tce	26.97	5.07		**32.04**	0
				CO_2 Emission		199,708,287

Source: China Energy Statistical Year Book (2005);

2005

Fuel	Unit	Liaoning	Jilin	Heinongjiang	Northeast China Grid	CO2 emissions (tCO2e)
Raw coal	10^4 t	4305.41	2446.13	3383.21	**10134.75**	200,454,896
Clean coal	10^4 t				**0**	0
Other washed coal	10^4 t	524.74	19.26	24.16	**568.16**	4,494,940
Coke	10^4 t				**0**	0
Coke oven gas	10^8 m^3	1.03	3.57	0.68	**5.28**	391,817
Other gas	10^8 m^3	12.62	8.37		**20.99**	486,768
Crude oil	10^4 t	1.16			**1.16**	35,571
Gasoline	10^4 t				**0**	0
Diesel	10^4 t	1.18	1.48	0.57	**3.23**	102,039
Fuel oil	10^4 t	9.32	2.46	1.55	**13.33**	431,247
LPG	10^4 t	0.12			**0.12**	3,798
Refinery gas	10^4 t	5.48		1.32	**6.8**	180,284
Natural gas	10^8 m^3		0.84	2.24	**3.08**	672,681
Other petroleum products	10^4 t				**0**	0
Other coking products	10^4 t				**0**	0
Other E (standard coal)	10^4 Tce	16.18			**16.18**	0
				CO_2 Emission		207,254,040

Source: China Energy Statistical Year Book (2006);

2006

Fuel	Unit	Liaoning	Jilin	Heinongjiang	Northeast China Grid	CO2 emissions (tCO2e)
Raw coal	10^4 t	4681.99	2738.24	3698.29	**11118.52**	219,912,851
Clean coal	10^4 t	0.03			**0.03**	748
Other washed coal	10^4 t	674.74	17.83	96	**788.57**	6,238,691
Coke	10^4 t	3.32			**3.32**	101,075
Coke oven gas	10^8 m^3	2.68	0.16	1.44	**4.28**	317,609
Other gas	10^8 m^3	55.26	1.43		**56.69**	1,314,667
Crude oil	10^4 t	0.49			**0.49**	15,026
Gasoline	10^4 t				**0**	0
Diesel	10^4 t	0.75	0.39	0.3	**1.44**	45,491
Fuel oil	10^4 t	11.73	0.45	1.44	**13.62**	440,629
LPG	10^4 t				**0**	0
Refinery gas	10^4 t	8.55		4.27	**12.82**	339,888
Natural gas	10^8 m^3		0.19	2.1	**2.29**	500,143
Other petroleum products	10^4 t				**0**	0
Other coking products	10^4 t				**0**	0
Other E (standard coal)	10^4 Tce	12.16	17.6	82.77	**112.53**	0
				CO_2 Emission		229,226,818

Source: China Energy Statistical Year Book (2007);

Net generation is calculated from gross generation and supply data presented.

Table A6 Power generation and net supply in NEPG (2004-2006)

2004

Province	Thermal Power generation (MWh)	Losses (%)	Thermal power supply (MWh)	Hydropower generation (MWh)	Losses (%)	Hydropower supply (MWh)	Other Power generation (MWh)	Total (MWh)
Liaoning	84543000	7.21	78,447,450	3947000	1.33	3,894,505	264000	
Jilin	33242000	7.68	30,689,014	6147000	0.75	6,100,898	81000	
Heilongjiang	53482000	7.84	49,289,011	1338000	1.27	1,321,007	46000	
Total (MWh)			158,425,475			11,316,410	391000	170,132,885

2005

Province	Total generation (MWh)	Losses (%)	Total supply electricity (MWh)
Liaoning	89668000	7.03	83,364,340
Jilin	43395000	6.59	40,535,270
Heilongjiang	59900000	7.96	55,131,960
Total (MWh)			179,031,569

2006

Province	Total generation (MWh)	Losses (%)	Total supply electricity (MWh)
Liaoning	101100000	6.62	94,407,180
Jilin	45600000	6.78	42,508,320
Heilongjiang	64600000	7.85	59,528,900
Total (MWh)			196,444,400

Source: China Power Year Book (2005 - 2007);

Table A7 Fuel consumption and CO_2 emissions of CCPG in 2006(connected system)

Fuel	Unit	Jiangxi	Henan	hubei	Hunan	Chongqing	Sichuan	Central China Grid	CO2 emissions (tCO2e)
Raw coal	10^4 t	1926.02	8098.01	3179.79	2454.48	1184.3	3285.22	**20127.82**	398,107,508
Clean coal	10^4 t					5.79		**5.79**	144,295
Other washed coal	10^4 t	4.51	104.12		8.59	79.21		**196.43**	1,554,036
moulding coal	10^4 t						0.01	**0.01**	204
Coke	10^4 t		17.23		0.32			**17.55**	534,299
Coke oven gas	10^8 m^3		0.52	1.07	4.24	0.38	0.01	**6.22**	461,572
Other gas	10^8 m^3	12.69	3.95		1.7	4.36	0.01	**22.71**	526,655
Crude oil	10^4 t		0.49					**0.49**	15,026
Gasoline	10^4 t		0.01					**0.01**	298
Diesel	10^4 t	0.91	2.23	1.41	1.78	0.96		**7.29**	230,298
Fuel oil	10^4 t	0.51	1.26	1.31	0.8	0.57	3.49	**7.94**	256,872
LPG	10^4 t							**0**	0
Refinery gas	10^4 t	0.86	8.1	1	0.97			**10.93**	289,780
Natural gas	10^8 m^3			0.28		0.16	18.63	**19.07**	4,164,943
Other petroleum products	10^4 t							**0**	0
Other coking products	10^4 t						0.01	**0.01**	269
Other E (standard coal)	10^4 Tce	17.45	37.36	31.55	18.29	29.35		**134**	0
							CO_2 Emission		406,286,055

Source: China Energy Statistical Year Book (2007)

Table A8 Power generation, own consumption and net supply in CCPG (2006)

Province	Total generate electricity (MWh)	Losses (%)	Total power supply (MWh)
Jiangxi	43600000	6.17	40,909,880
Henan	158300000	7.06	147,124,020
Hubei	130800000	2.75	127,203,000
Hunan	74800000	4.95	71,097,400
Chongqing	28900000	8.45	26,457,950
Sichuan	122700000	4.51	117,166,230
Total (MWh)			529,958,480

Source: China Power Year Book (2007)

Operating Margin Emission Factor calculations

The Operating Margin Emissions Factor is now calculated from the data presented above using the formula below, including adjustment for imports from NEPG and CCPG. The calculation is shown in Table A9.

$$EF_{grid,OMsimple,y} = \frac{\sum_i FC_{i,y} \times NCV_{i,y} \times EF_{co_2,i,y}}{EG_y}$$

Table A9 Operating margin emission factor calculation

	Unit	2004	2005	2006	3-year total
NCPG					
Emission	$MtCO_2$	549.02	647.65	723.30	1919.97
Generation	TWh	489.17	560.75	669.51	1719.43
Import from NEPG	TWh	4.51	3.93	2.62	11.06
EF NEPG	tCO_2/MWh	1.17384	1.15764	1.16688	
Emissions from imports	$MtCO_2$	5.30	4.55	3.05	12.90
Import from CCPG	TWh	-	-	0.50	0.50
EF CCPG	tCO_2/MWh	-	-	0.77134	
Emission from imports	$MtCO_2$	-	-	0.38	0.38
Total					
Emissions	$MtCO_2$	554.32	652.20	726.74	1933.26
Generation supply	TWh	493.69	564.68	672.62	1730.99
Operating Margin Emission Factor	**tCO_2/MWh**				**1.1169**

Based on above data, the simple OM emission factor of NCPG is calculated ex-ante using a 3-year generation-weighed average is 1.1169 tCO_2e/MWh.

Step 4. 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 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. This option is chosen as it comprises larger annual generation than the five units built most recently. Following the deviation, the latest statistical data available (from the China Power Yearbook 2007) is used by the DNA to determine the most recent year from which the added generation capacity is equal to or just exceeds 20% of the latest statistic year 2006. The added generation capacity is the sample group of power units *m* used to calculate the build margin.

Step 5. Calculate the build margin emission factor

As described in step4, because of the limited availability of publicly available data, this proposed project uses a substitute method accepted by EB to calculate $EF_{BM,y}$

Sub-step 1: calculate the thermal emission factor

Calculate the different CO_2 emission percentage of solid, liquid and gas fuel in the total emission of North China Power Grid in 2006 using new latest statistical data available from China Energy Statistical Year Book 2007.

Table A10 Calculation of CO_2 Emission of NCPG in 2006

Fuel type	CO_2 Emission (tCO_2)	Share
Coal	715573958	98.932%
Oil	676091	0.093%
Gas	7048610	0.975%
Total	**723298659**	**100%**

Source: China Energy Statistical Year Book (2007).

λ_{Coal} = 98.932%;

λ_{Oil} = 0.093%;

λ_{Gas} = 0.975%.

Sub-step 2:

Based the emission percentage (λ_i) of different kind fossil fuels and the corresponding emission factor (EF_i) according to the best technology commercially available in the China, the weighted emission factor of thermal power ($EF_{thermal}$) is calculated.

Table A11 Calculation of CO_2 Emission Factor of Coal, Oil and Gas Fuel Power Plant with the Best Commercial Efficiency in China

Power plant type	Parameter	Best efficiency	Carbon factor (tC/TJ)	Oxidizing rate	CO_2 emission factor (tCO_2/MWh)
		A	B	C	D=3.6/A/1000*B*C*44/12
Coal	$EF_{Coal,Adv}$	37.28%	25.8	100%	0.9135
Gas	$EF_{Gas,Adv}$	48.81%	15.3	100%	0.4138
Oil	$EF_{Oil,Adv}$	48.81%	21.1	100%	0.5706

Source: http://cdm.ccchina.gov.cn/web/NewsInfo.asp?NewsId=2876

So, emission factor of thermal plant is:

$$EF_{Thermal} = \lambda_{Coal} \times EF_{Coal,Adv} + \lambda_{Oil} \times EF_{Oil,Adv} + \lambda_{Gas} \times EF_{Gas,Adv} = 0.9083 tCO_2/MWh$$

Sub-step3:

Using the latest statistical data available (from the China Electric Power Yearbook) determine the year from which the added generation capacity is equal to or just exceeds 20% of the latest statistic year 2006.

Table A12 Identify the year from which the added generation capacity is equal to or just exceeds 20% of the latest statistic year 2006

	2004	2005	2006	Capacity added in 2005-2006	Share in added capacity
	A	B	C	D=C-B	
Thermal (MW)	93594.9	111068.7	141538	30469.3	95.64%
Hydropower (MW)	3250.7	3216.2	4004	787.8	2.47%
Nuclear (MW)	0	0	0	0.0	0.00%
Other (MW)	137.5	335.5	937	601.5	1.89%
Total (MW)	96983.1	114620.4	146479	31858.6	100.00%
Percentage of 2006 capacity	66.21%	78.25%	100.00%		

Source: China Power Year Book (2005, 2006, 2007)

$EF_{BM} = (CAP_{Thermal} / CAP_{Total}) * EF_{Thermal}$

$CAP_{Thermal}$ is the thermal capacity among the new capacity from 2005 to 2006, and CAP_{Total} is the total capacity from 2005 to 2006.

EF_{BM}= 0.9083×95.64% = 0.8687 tCO_2/MWh

Step 6. Calculation of the combined margin emission factor

The combined margin emission factor is calculated as follows:

$EF_{grid,CM,y} = w_{OM} \bullet EF_{grid,OM,y} + w_{BM} \bullet EF_{grid,BM,y}$ = 0.75× 1.1169 + 0.25×0.8687 = 1.0548 tCO_2/MWh

Annex 4

MONITORING INFORMATION

1. Introduction

CGN Inner Mongolia Duerbote Wind farm Project adopts the Revision to the approved consolidated monitoring methodology ACM0002 "Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources" (version 07) to determine the emission reductions from the net electricity generation from the wind farm. This plan describes in more detail the process.

2. Responsibility

Overall responsibility for monitoring and carrying out the monitoring following this monitoring plan lies with CGN Wind Power Co., Ltd.

CDM manager of CGN Wind Power Co., Ltd is responsible for the monitoring and reporting of the wind farm.

CGN Wind Power Co., Ltd, in co-operation with Wulanchabu Power Grid Company and existing wind farm experienced experts will train the staff carrying out the monitoring work.

3. Training

The CDM project management office will assign and train the dedicated people carrying out the monitoring work. Mr. Zhao Jingjing will complete the monitoring personnel training before the registration, further training work will be completed with the preliminary verification.

4. Installation of meters

The net electricity supplied by the proposed project activity to the grid will be monitored through the main meter installed in the substation of the grid, recording exports to the grid (supply) and imports from the grid (consumption). Net generation is calculated as exports minus imports. The back-up meters will be also installed at the grid substation.

Every month the Wind Farm will obtain the net on-grid electricity supplied from the substation. The net generation monitored by these meters will suffice for the purpose of billing and emission reductions, as long as the error in the meters is within the agreed limits. The main meter used for billing (at the substation) will also be the primary meter used for emission reduction calculations.

In addition, at the project site, electricity from the turbines and the transmission lines connected to the turbines is monitored, and these data will be the references to the net power supply to the grid.

If in the future, some other wind farms share the same transformer, substation or transmission line with this wind farm, the appropriate separate meters will also be installed in the project site so that the

electricity generation can be monitored respectively to calculate the share of this wind farm of the net supply to the grid.

5. Calibration

The metering equipments are calibrated and checked for accuracy in accordance with Chinese electric industry regulation DL/T448-2000. The metering equipments shall have sufficient accuracy so that the specification of the meters should be 0.5s or more precise than 0.5s. The net generation output registered by the meters alone will suffice for the purpose of billing and emission reduction verification as long as the error in the meters is within the agreed limits.

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

Calibration is carried out by the qualified entity with the records being supplied to CGN Wind Power Co., Ltd every year, and these records will be maintained by CGN Wind Power Co., Ltd.

All the meters installed shall be tested by qualified entity after: the detection of a difference larger than the allowable error in the readings of both meters; the repair of all or part of meter caused by the failure of one or more parts to operate in accordance with the specifications.

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

6. Monitored data

Grid-connected electricity generated by the proposed project will be continuously measured by the metering equipment at the 220kV substation (interconnection facility connecting the facility to the grid). Every month CGN Wind Power Co., Ltd will obtain the on-grid electricity generation from the 220kv substation and monthly recorded the data.

6.1 Meter failure

Should any previous months reading of the main meter be inaccurate by more than the allowable error, or otherwise functioned improperly, the net generation output shall be determined by:
(a) first, by reading backup meter, unless a test by either party reveals it is inaccurate;
(b) if the backup system is not within acceptable limits of accuracy or operation is performed improperly CGN Wind Power Co., Ltd and the North China Power Grid shall jointly prepare an reasonable and conservative estimate of the correct reading, and provide sufficient evidence that this estimation is reasonable and conservative when DOE undertakes verification; and
(c) if the North China Power Grid and CGN Wind Power Co., Ltd fail to agree then the matter will be referred for arbitration according to agreed procedures.

6.2 Additions to the proposed generating capacity

Should any additional generating capacity be installed, sharing transmission and transformer facilities as well as the metering equipment at the substation with the proposed project activity, net generation

recorded by the main meter at the substation will be allocated between the proposed project activity and any such added capacity on the basis of generation as recorded by meters onsite.

If such additional capacity is installed, the output data from turbines and other relevant data will be monitored and be used to calculate the share of the project in the overall net output, and the net electricity supplied by the project activity ($EG_{project}$) will be calculated as follows:

$$EG_{project} = EG_{total} * E_{project} / (E_{project} + E_{others})$$

EG_{total} is the total net electricity supplied to the grid based on the data metered by the main meter;
$E_{project}$ is the electricity generation from the project activity metered by the separate meter;
E_{others} is the electricity generation from other projects metered by the other separate meters.

7. Quality control

Monthly net generation data will be approved and signed off by CDM manager before it is accepted and stored.

This audit will check compliance with operational procedures in this monitoring plan.

This internal audit will also identify potential improvements to procedures to improve monitoring and reporting in future years.

8. Data management system

Physical document such as paper-based maps, diagrams and environmental assessments will be collated in a central place, together with this monitoring plan. In order to facilitate auditors' reference of relevant literature relating to the CGN Inner Mongolia Duerbote Wind farm Project, the project material and monitoring results will be indexed. All paper-based information will be stored by the technology department of CGN Wind Power Co., Ltd and all the material will have a copy for backup.

And all data including calibration records are archived electronically and kept until 2 years after the end of the total crediting period of the CDM project.

9. Reporting and verification

- Wulanchabu Power Grid Company reads main meter and reports the result to North China Power Grid Company and the readings are confirmed by CGN Wind Power Co., Ltd monthly.
- CGN Wind Power Co., Ltd records readings from the on site meter monthly.
- CGN Wind Power Co., Ltd carries out an internal audit on the readings and calculations.
- CGN Wind Power Co., Ltd, after the internal audit, reports the readings, grid data and calculations to the DOE for verification.

CGN Wind Power Co., Ltd will facilitate the verification through providing the DOE with all required necessary information at any stage.