



JILIN DA'AN DAGANGZI WIND POWER PROJECT PHASE II



Document Prepared by Climate Bridge (Shanghai) Ltd.

Tel: +86 21 6246 2036; Fax: +86 21 2301 9950

Project Title	Jilin Da'an Dagangzi Wind Power Project Phase II
Version	1.1
Report ID	-
Date of Issue	16-Jun-2021
Project ID	548
Monitoring Period	25-Dec-2016 to 31-Dec-2018
Prepared By	Siran Wu
Contact	Block B, Level 24, Jiangong Mansion, 33 Fushan Road, Pudong New Area, Shanghai, P.R. of China Telephone: 021-6246 2036; Email: wu.siran@climatebridge.com; projects@climatebridge.com http://www.climatebridge.com

CONTENTS

1	PROJECT DETAILS.....	3
1.1	Summary Description of the Implementation Status of the Project	3
1.2	Sectoral Scope and Project Type	3
1.3	Project Proponent	3
1.4	Other Entities Involved in the Project	4
1.5	Project Start Date	4
1.6	Project Crediting Period	4
1.7	Project Location	5
1.8	Title and Reference of Methodology	7
1.9	Participation under other GHG Programs.....	7
1.10	Other Forms of Credit.....	7
1.11	Sustainable Development.....	8
2	SAFEGUARDS	8
2.1	No Net Harm	7
2.2	Local Stakeholder Consultation	7
2.3	AFOLU-Specific Safeguards	9
3	IMPLEMENTATION STATUS	10
3.1	Implementation Status of the Project Activity	10
3.2	Deviations	11
3.3	Grouped Projects	12
4	DATA AND PARAMETERS.....	12
4.1	Data and Parameters Available at Validation	12
4.2	Data and Parameters Monitored.....	13
4.3	Monitoring Plan.....	20
5	QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS	27
5.1	Baseline Emissions	27
5.2	Project Emissions	34
5.3	Leakage.....	34
5.4	Net GHG Emission Reductions and Removals.....	34

1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The Jilin Da'an Dagangzi Wind Power Project Phase II (hereafter referred to as the "Project") developed by Jilin CGN Wind Power Co., Ltd. (hereafter referred to as the "Project Developer") is a grid connected renewable energy project in Da'an city, Jilin Province, in the People's Republic of China. It involves the installation of 33 wind turbines, each of which has a rated output of 1,500 kW, providing a total installed capacity of 49.5 MW, with a predicted power supplied to the grid of 103,130 MWh per annum.

The project started construction on 10-Mar-2008 and it has been put into operation since 16-Dec-2008, the expected operation period of the project is 20 years as stated in the registered PD. The scenario existing prior to the start of the implementation of the project activity is Northeast China Power Grid (NECPG) providing the same electricity service as the Project.

The project has been registered as a Clean Development Mechanism (CDM) project in UNFCCC on 09-Mar-2010 (UNFCCC Ref. 2586), with the 7 years crediting period started from 09-Mar-2010. The CDM second crediting period from 09-Mar-2017 to 08-Mar-2024 has been renewed on 29-Mar-2019. Total GHG emission reductions of 561,051 tCO₂ generated from 09-Mar-2010 to 24-Dec-2016 (both days included) by the project has been issued as CER under CDM program. The previous VCS verification was carried on 10-Dec-2010. The proposed monitoring period 25-Dec-2016 to 31-Dec-2018 is 2nd VCS verification.

During this VCS monitoring period from 25-Dec-2016 to 31-Dec-2018 (both days included), the total emission reduction achieved is 177,467 tCO_{2e}.

1.2 Sectoral Scope and Project Type

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

Project type: Wind-power generation project;

The project is not a grouped project.

1.3 Project Proponent

Organization name	Jilin CGN Wind Power Co., Ltd.
Contact person	Lei Shi
Title	Vice General Manager
Address	No.2 Building, Area 12 of Advanced Business Park, No.188 West of South 4th Ring Road, Beijing, P.R.China

Telephone	+86-21-23019950
Email	3542346576@qq.com

1.4 Other Entities Involved in the Project

Organization name	Climate Bridge (Shanghai) Ltd.
Role in the Project	Consultancy
Contact person	Zhiwen Gao
Title	General Manager
Address	Block B, Level 24, Jiangong Mansion, 33 Fushan Road, Pudong New Area, Shanghai, China
Telephone	+86-21 6246 2036
Email	gao.zhiwen@climatebridge.com

1.5 Project Start Date

The project started on 16-Dec-2008 (the start date of electricity generation).

1.6 Project Crediting Period

There is a deviation for the crediting period. As per VCS version 4, registered projects and projects that complete validation on or before 19-Mar-2020 remain eligible to apply the crediting period requirements under VCS Version 3. Thus, it remains eligible to apply the crediting period requirements under VCS Version 3 which shall be a maximum of ten years and may be renewed at most twice for a total of 30 years. However, as the project is also registered as a CDM project with a seven year twice renewable project crediting period, it is not eligible for VCU issuance beyond the end of those 21 years (08-Mar-2031). So the first renewable crediting period of the project should be updated from 01-Jan-2009¹-08-Mar-2010 to 01-Jan-2009-31-Dec-2018.

¹ The project start date is 16-Dec-2008, while the project owner chose 01-Jan-2009 as the start date of the first crediting period based on the approved 1st VCS monitoring report.

1.7 Project Location

The Project is located near the village of Shuanggang, Dagangzi County, Da'an City, Jilin Province, People's Republic of China (P. R. China). The exact location of the project is defined using geographic coordinates obtained with a Global Positioning System (GPS) receiver: E 123° 35' 26" ~ 123° 38' 58" Longitude, N 44° 18' 23" ~ 45° 18' 46" Latitude for the whole area of the wind farm.

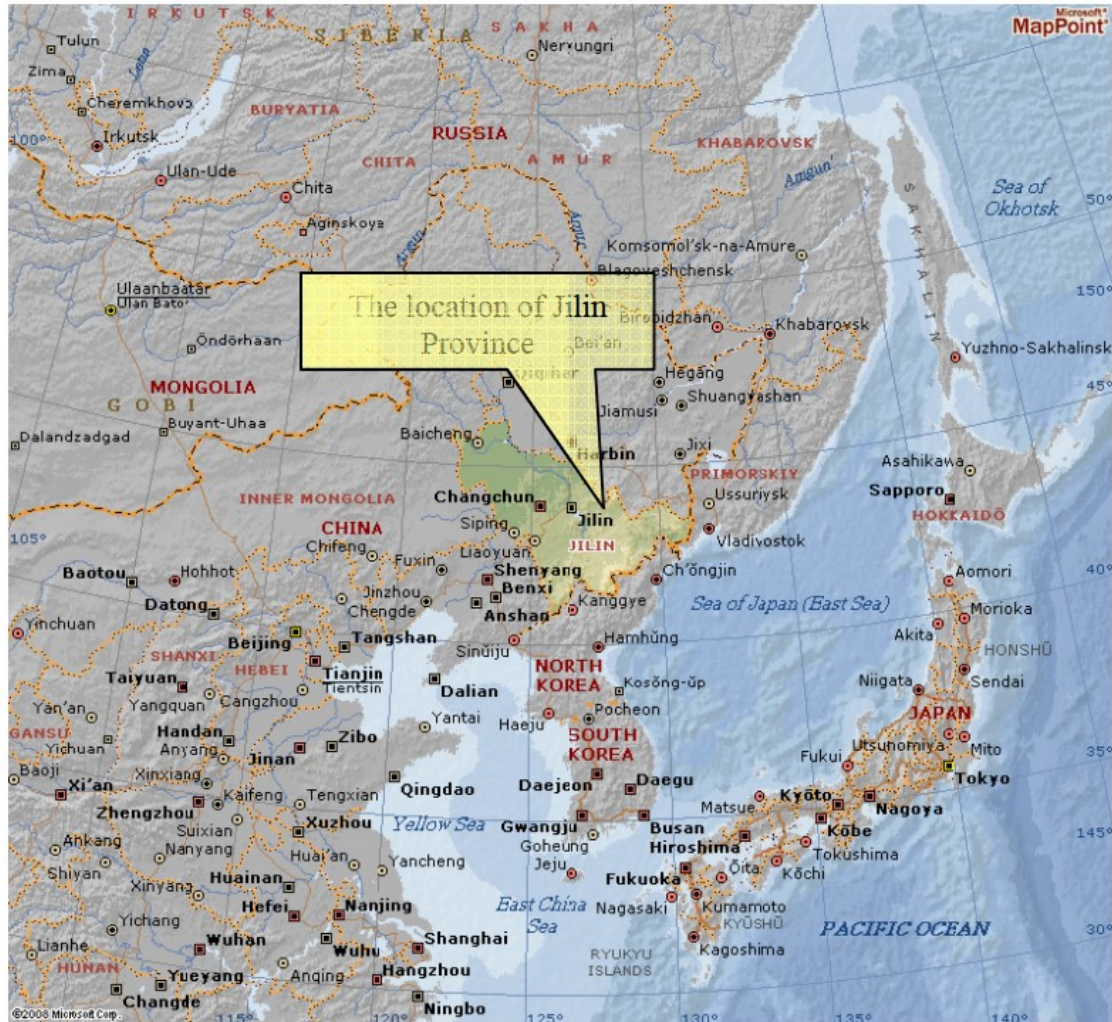


Figure 1. The location of Jilin Province in China



Figure 2. The location of the project

1.8 Title and Reference of Methodology

The selected methodology

The approved methodology applied in the project activity is ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (Version 07.0)

Reference:

<https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG>

Tools applied

“Tool for the demonstration and assessment of additionality”, version 05.2. (EB 39)

“Tool to calculate the emission factor for an electricity system”, version 01.1 (EB 35)

Reference: <http://cdm.unfccc.int/methodologies/PAmethodologies/approved>.

1.9 Participation under other GHG Programs

The project has been registered as a Clean Development Mechanism (CDM) project in UNFCCC on 09-Mar-2010 (UNFCCC Ref. 2586), with the 7 years crediting period started from 09-Mar-2010. The CDM second crediting period from 09-Mar-2017 to 08-Mar-2024 has been renewed on 29-Mar-2019. Total GHG emission reductions of 561,051 tCO₂ generated from 09-Mar-2010 to 24-Dec-2016 (both days included) by the project has been issued as CER under CDM program. Please refer to the following link for details:

<https://cdm.unfccc.int/Projects/DB/TUEV-SUED1242408811.21/view>

Except for CDM, the project did not register under any other GHG program.

1.10 Other Forms of Credit

Total GHG emission reductions of 561,051 tCO₂ generated from 09-Mar-2010 to 24-Dec-2016 (both days included) by the project has been issued as CERs under CDM program.

All credits from 25-Dec-2016 to 31-Dec-2018 will be claimed under VCS program as VCUs for the project to avoid double counting.

Emission Trading Programs and Other Binding Limits

The project does not reduce GHG emissions from activities that are included in an emissions trading program or any other mechanism that includes GHG allowance trading.

Other Forms of Environmental Credit

The project has not sought or received another form of GHG-related environmental credit, including renewable energy certificates, during this monitoring period.

1.11 Sustainable Development

The Project is contributing to the sustainable development in the following ways:

- Achieves GHG emission reductions by avoiding CO₂ emission from the business-as-usual scenario electricity generation of those fossil fuel-fired power plants connected to the Grid, which is dominated by fossil fuel fired electricity.
- Increases employment opportunities in the area where the project is located (approximately 16 people are permanently employed for the project operation, and the construction of the project secures jobs in the construction sector) and thereby contributes to poverty alleviation.
- Enhances the local investment environment and therefore improves the local economy.
- Diversifies the sources of electricity generation, important for meeting growing energy demands and the transition away from coal-supplied electricity generation.
- Makes greater use of renewable wind resources.

2 SAFEGUARDS

2.1 No Net Harm

The Environmental Impact Assessment (EIA) Report for the project was compiled by the Northeast Coal Industry and Environment Institute and has been approved by the Jilin Provincial Environmental Protection Bureau in September 2007. Every aspect of environmental impact has been considered in the EIA report with corresponding measures during the project development, thus there are no negative environmental and/or socio-economic impacts due to the project. In fact, the project as a clean renewable energy project can reduce greenhouse gas emissions and the environmental pollution caused by fossil fuels consumption. Meanwhile, the implementation of the project improves local socio-economic development through creating career opportunities and paying taxes.

2.2 Local Stakeholder Consultation

The stakeholder consultation took place in February 2008. During the consultation, local stakeholders were invited to submit comments on the Project activity by filling a questionnaire sent out by the Project Developer. The Project Developer posted a notice about the stakeholder

consultation at the project management office as well as the government building around the project site and also randomly sent the questionnaire out around the project site.

The questionnaire included a technical description of the Project as well as a brief explanation of how the project activity mitigates climate change through the Clean Development Mechanism of the Kyoto Protocol and brings sustainable development benefits. The questions asked were as follows:

- What impacts do you think the Project activity will have on the local environment?
- What impacts do you think the Project activity will have on employment and social welfare in the local area?
- Are there any negative impacts on your livelihood during the construction of the Project?
- What would be the overall positive effects of the construction and operation of the Project?
- What would be the overall negative effects of the construction and operation of the Project?
- What is your attitude towards the construction of the Project?
- Do you support the construction of the Project?

The survey received 100% participation (30 questionnaires returned out of 30). The survey shows the stakeholders believe that the project activity will have positive impacts on the local ecological, environmental, employment and social life. All stakeholders expressed their support to the project.

Local Stakeholder Consultation during the project implementation stage:

Communications with Local stakeholders were carried out at periodic intervals. In this monitoring period, the project owner carried out questionnaire survey for the local stakeholder to collect the relevant comments and suggestions in April 2017 and March 2018. And there are no negative comments received for the project. Key implementation schedules or changes of the project will be communicated to the local authority, who will inform the neighbourhood committee and the local residents, the comments and suggestions from residents will be collected by the local authority meanwhile. And the local government agencies and competent authorities will conduct spot checks on the implementation of the project from time to time and give suggestions on the involved rectification problems. There are no negative comments received for the project. In line with VCS requirements all the processes have been implemented to receive comments from local stakeholders as well as communicate with them at periodic intervals.

2.3 AFOLU-Specific Safeguards

There is not applicable due to the project is non-AFOLU project.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The purpose of the Project is to use well established wind power generation technology for electricity generation and transmission to generate low emissions electricity for the Grid thereby displacing CO₂ emissions from electricity generation from the Grid. The baseline scenario is the same as the scenario existing prior to the start of the implementation of the project activity: electricity delivered to the Grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources. The Grid includes the Jilin, Liaoning and Heilongjiang Provincial Power Grids.

The project involves the installation of 33 wind turbines each of which has a rated capacity of 1,500 kW, providing a total capacity of 49.5MW. The expected annual electricity supply to the grid is 103,130MWh. The height of the rotor hub of all turbines is 61.5m. As the wind resource in the area is plentiful, and the average wind speed is relatively high at 5.91m/s at a height of 30m and 6.61m/s at a height of 50m, the wind resource can be used as much as possible. The expected operation period of the project is 20 years as stated in the registered PD.

According to the turbine layout, each turbine is equipped with one transformer. The construction also includes the wind farm 220kV step-up substation. The wind power generated is delivered to the step-up substation by 35kV transmission lines. The power in the 220kV step-up substation is transmitted to the Baicheng 220kV Da'an substation. The electricity generated is first transmitted to the Jilin Power Grid and then to the North East China Power Grid.

The project has been registered as a Clean Development Mechanism (CDM) project in UNFCCC on 09-Mar-2010 (UNFCCC Ref. 2586), with the 7 years crediting period started from 09-Mar-2010. The CDM second crediting period from 09-Mar-2017 to 08-Mar-2024 has been renewed on 29-Mar-2019. Total GHG emission reductions of 561,051 tCO₂ generated from 09-Mar-2010 to 24-Dec-2016 (both days included) by the project has been issued as CER under CDM program. The previous VCS verification was carried on 10-Dec-2010. The proposed monitoring period 25-Dec-2016 to 31-Dec-2018 is 2nd VCS verification.

And in the CDM 5th monitoring period, the old main meter (serial No. 94348627) was changed to new meter (serial No. is 96628173) due to the regular inspection on 23-Jun-2014, the old meter of m₁ (serial No. 20070865050028) was changed to new meter (serial No. 1210139747000006) due to the regular inspection on 20-Jan-2016, and the old meter of m₁₃ (serial No. 09080131710194) was changed to new meter (serial No. 1110089576000011) due to the regular inspection on 21-Jun-2012. The accuracy of these meters is not changed. Please refer to table 2 for more details.

There was no significant malfunction or any emergency reported for the Project during this VCS monitoring period from 25-Dec-2016 to 31-Dec-2018.

The wind turbine is produced by Dongfang Steam Turbine Works Company. All other items of equipment used in the Project are produced domestically and the project developer is experienced in handling and operating this kind of equipment. The key technical parameters of wind turbines are listed in Table 1.

Table 1 The main technical specification²

Item	Unit	Index
Type	-	FD77B
Number of blades	-	3
Rated Power	kW	1,500
Diameter of wheels	m	77
Cut-in speed	m/s	4
Cut-out speed	m/s	25
Rated wind speed	m/s	16
Height of wheel	m	61.5
Lifetime	years	20

3.2 Deviations

3.2.1 Methodology Deviations

N.A.

3.2.2 Project Description Deviations

As per VCS version 4, registered projects and projects that complete validation on or before 19-Mar-2020 remain eligible to apply the crediting period requirements under VCS Version 3. Thus, it remains eligible to apply the crediting period requirements under VCS Version 3 which shall be a maximum of ten years and may be renewed at most twice, so the first renewable crediting period of the project should be updated from 01-Jan-2009³-08-Mar-2010 to 01-Jan-2009-31-Dec-2018.

The project shares the same substation 220KV transmission line and gateway meters (M_{main} as the main meter and M_{backup} as the backup meter) with other 4 projects, The total electricity

² These parameters are sourced from technical specifications of wind turbines.

³ The project start date is 16-Dec-2008, while the project owner chose 01-Jan-2009 as the start date of the first crediting period based on the approved 1st VCS monitoring report.

generated by the five projects and imported from the grid is monitored through the main meter installed on site of the 220kV high voltage side of the 35kV-to-220kV transformer, and the backup meters which is an assistant meter, is installed on site of the 220kV high voltage side of the 35kV-to-220kV transformer also. When the main meter has any troubles, the project developer should employ the data monitored by the backup meter. The main meter and the backup meter are both bidirectional meters which can also monitor the electricity imported from the grid.

In addition, a spare 10kV line is used for supplying electricity in emergency case that the Project fails to generate power. The electricity from the spare 10kV line connecting with the grid monitored by the meter M_{10kv} . Currently four other wind power project shares the same substation 220kV transmission line, the spare 10kV line, and all the involved meters.

In order to deal with the jointly-reading problem, the project owner and the grid company set up the procedure and calculation method to determine the net electricity supplied by the project to the grid, which is calculated according to the equation (1) in section 4.3. And the revised monitoring plan is applicable to the VCS first monitoring period (from 01-Jan-2009 to 03-Aug-2010) and all the following monitoring period, including this monitoring period (from 25-Dec-2016 to 31-Dec-2018)

Please refer to section 4.3 for more details about the changes to the monitoring plan.

3.3 Grouped Projects

The Project is not a grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

The baseline grid emission factor is obtained directly from the official source Notification on Determining Baseline Emission Factor of China's Grid by China's DNA. Thus, the relevant basic parameters for calculation of the baseline grid emission factor are not described in detail here. With consideration of the fact of the Project, data and parameters that are available at validation are summarized in below tables.

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO ₂ e/MWh
Description	Combined margin CO ₂ emission factor for the NECPG
Source of data	Baseline emission factor for power grid in China
Value applied	1.1461

Justification of choice of data or description of measurement methods and procedures applied	-
Purpose of Data	Calculation of baseline emissions
Comments	The baselines emission factor was determined ex-ante and fixed during the first crediting period.

4.2 Data and Parameters Monitored

Data / Parameter	EG _y										
Data unit	MWh										
Description	The net electricity supplied to the grid by the project										
Source of data	Measured by the electricity meters: M _{main} , M _{backup} , M _{10kv} , m ₁ , m ₂ , m ₃ , m ₄ , m ₅ , m ₆ , m ₇ , m ₈ , m ₉ , m ₁₀ , m ₁₁ , m ₁₂ and calculated by the formula showed in section 4.3										
Description of measurement methods and procedures to be applied	The net electricity supplied to the grid by the project is calculated with the readings of the national standard electricity metering instruments. The electricity of the meter instruments is daily recorded. The metering instruments have been calibrated annually in accordance with the national standards The net electricity supplied to the grid is calculated with the formula showed in section 4.3										
Frequency of monitoring/recording	-										
Value applied	<table> <tr> <th>Year</th><th>Value</th></tr> <tr> <td>25-Dec-2016~31-Dec-2016</td><td>260.387</td></tr> <tr> <td>01-Jan-2017~31-Dec-2017</td><td>69,449.701</td></tr> <tr> <td>01-Jan-2018~31-Dec-2018</td><td>85,135.515</td></tr> <tr> <td>Total</td><td>154,845.602</td></tr> </table>	Year	Value	25-Dec-2016~31-Dec-2016	260.387	01-Jan-2017~31-Dec-2017	69,449.701	01-Jan-2018~31-Dec-2018	85,135.515	Total	154,845.602
Year	Value										
25-Dec-2016~31-Dec-2016	260.387										
01-Jan-2017~31-Dec-2017	69,449.701										
01-Jan-2018~31-Dec-2018	85,135.515										
Total	154,845.602										
Monitoring equipment	Details of electricity meters can be showed in Table 2.										
QA/QC procedures to be applied	The metering instruments were calibrated annually in accordance with the latest version "Technical administrative code of electric energy metering".										

	Sale receipts/ records to the grid are used to ensure the consistency
Purpose of data	Calculation of baseline emissions
Calculation method	Calculated by the formula (1) showed in section 4.3
Comments	-

Data / Parameter	$M_{main,export,y}$	
Data unit	MWh/year	
Description	Quantity of the electricity supplied to the grid and measured by the meter M_{main} (or M_{backup}) during the monitoring period y	
Source of data	Measured by electricity meters: M_{main} or M_{backup}	
Description of measurement methods and procedures to be applied	The electricity supplied to the grid is measured by the meter M_{main} (or M_{backup}) and cumulative measurement and monthly recorded by the project owner. The accuracy of electricity meter M_{main} and M_{backup} is 0.2S. The recording of these meters is at 24:00 of 24th in each month during period from 25-Dec-2016 to 31-Dec-2018.	
Frequency of monitoring/recording	Continuously measured and monthly recorded	
Value applied	Year	Value
	25-Dec-2016~31-Dec-2016	1,503.835
	01-Jan-2017~31-Dec-2017	353,172.637
	01-Jan-2018~31-Dec-2018	404,153.512
	Total	758,829.984
Monitoring equipment	Details of electricity meters can be showed in Table 2.	
QA/QC procedures to be applied	The metering instruments will be calibrated annually in accordance with the latest version “Technical administrative code of electric energy metering”.	
Purpose of data	Calculation of baseline emissions	
Calculation method	-	
Comments	-	

Data / Parameter	$M_{main,import,y}$	
Data unit	MWh/year	
Description	Quantity of the electricity imported from the grid and measured by the meter M_{main} (or M_{backup}) during the monitoring period y	
Source of data	Measured by electricity meters: M_{main} / M_{backup}	
Description of measurement methods and procedures to be applied	The electricity supplied to the grid is measured by the meter M_{main} (or M_{backup}) and cumulative measurement and monthly recorded by the project owner. The accuracy of electricity meter M_{main} and M_{backup} is 0.2S. The recording of these meters is at 24:00 of 24th in each month during period from 25-Dec-2016 to 31-Dec-2018.	
Frequency of monitoring/recording	Continuously measured and monthly recorded	
Value applied	Year	Value
	25-Dec-2016~31-Dec-2016	59.613
	01-Jan-2017~31-Dec-2017	1,234.384
	01-Jan-2018~31-Dec-2018	1,227.731
	Total	2,521.728
Monitoring equipment	Details of electricity meters can be showed in Table 2.	
QA/QC procedures to be applied	The metering instruments will be calibrated annually in accordance with the latest version “Technical administrative code of electric energy metering”. Sale receipts have been used to cross-check the meters’ readings.	
Purpose of data	Calculation of baseline emissions	
Calculation method	-	
Comments	-	

Data / Parameter	$m_{i,export,y}$
Data unit	MWh/year
Description	Quantity of the electricity supplied to the grid and measured by the meters m_i during the monitoring period y

	i is the number of the meters which installed at its on-site 35kV low voltage side of the 35kV-to-220kV transformer. $i = 1 \sim 14$
Source of data	Measured by electricity meters: m_i
Description of measurement methods and procedures to be applied	The electricity supplied to the grid is measured by the meters m_i and cumulative measurement and monthly recorded by the project owner. The accuracy of electricity meters m_i is 0.2S or 0.5S, please refer to table 2 for details. The recording of these meters is at 24:00 of 24th in each month during period from 25-Dec-2016 to 31-Dec-2018
Frequency of monitoring/recording	Continuously measured and monthly recorded
Value applied	The details of monthly electricity data please refer to section 5.1 of this report and ER sheet.
Monitoring equipment	Details of electricity meters can be showed in Table 2.
QA/QC procedures to be applied	The metering instruments will be calibrated annually in accordance with the latest version "Technical administrative code of electric energy metering".
Purpose of data	Calculation of baseline emissions
Calculation method	-
Comments	-

Data / Parameter	$M_{10kv,import,y}$
Data unit	MWh/year
Description	Quantity of the electricity imported from the grid and measured by the meter M_{10kv} during the monitoring period y
Source of data	Measured by electricity meters: M_{10kv}
Description of measurement methods and procedures to be applied	The electricity imported from the grid is measured by the meter M_{10kv} and cumulative measurement and monthly recorded by the project owner. The accuracy of electricity meter M_{10kv} is 1.0. The recording of these meters is at 24:00 of 24th in each month during period from 25-Dec-2016 to 31-Dec-2018.
Frequency of monitoring/recording	Continuously measured and monthly recorded

Value applied	Year	Value ⁴
	25-Dec-2016~31-Dec-2016	0.000
	01-Jan-2017~31-Dec-2017	0.000
	01-Jan-2018~31-Dec-2018	0.000
	Total	0.000
Monitoring equipment	Details of electricity meters can be showed in Table 2.	
QA/QC procedures to be applied	The metering instruments will be calibrated annually in accordance with the latest version “Technical administrative code of electric energy metering”. Sale receipts have been used to cross-check the meters’ readings.	
Purpose of data	Calculation of baseline emissions	
Calculation method	-	
Comments	-	

Table 2 Details of the metering instruments

Meters	Type	Accuracy	Serial number	Calibration date	Validity
M _{main}	ZMD402CT44	0.2S	96628173 ⁵	20-Feb-2016	19-Feb-2017
				15-Feb-2017	14-Feb-2018
				12-Feb-2018	11-Feb-2019
M _{backup}	ZMD402CT44	0.2S	94348626	20-Feb-2016	19-Feb-2017
				15-Feb-2017	14-Feb-2018
				12-Feb-2018	11-Feb-2019

⁴ A spare 10kV line was used for supplying electricity in emergency case that the project fails to generate power in the registered Monitoring Plan. The electricity from the spare 10kV line was monitored by the meter M10kv. But according to the actual situation, the spare 10 kV line was only used for the construction purpose of the projects; when the Dagangzi Wind Power Project Phase I (the first project of the Dagangzi Wind Power Project Phase I-V) starting operation in December 2007, the spare 10 kV line was cut off but the spare 10kV line is still at the project site, Once the project meet the emergency case, the spare 10kV line will be connected again, therefore, the project owner still recorded the electricity import by the spare 10kV line monthly and calibrated the meter according to the MP. In this monitoring period, the electricity imported from the grid and measured by the meter M_{10kv} is 0MWh. Thus, M_{10kv,import, y} =0 MWh.

⁵ The main meter was changed on 23-Jun-2014 and the new meter serial No. is 96628173 due to the regular inspection.

m1	DTSD341	0.5S	1210139747000006 ⁶	20-Feb-2016 15-Feb-2017 12-Feb-2018	19-Feb-2017 14-Feb-2018 11-Feb-2019
m2			20070865050026	20-Feb-2016 15-Feb-2017 12-Feb-2018	19-Feb-2017 14-Feb-2018 11-Feb-2019
m3			20070865050027	20-Feb-2016 15-Feb-2017 12-Feb-2018	19-Feb-2017 14-Feb-2018 11-Feb-2019
m4		0.2S	20070712010071	20-Feb-2016 15-Feb-2017 12-Feb-2018	19-Feb-2017 14-Feb-2018 11-Feb-2019
m5		0.5S	20070865050025	20-Feb-2016 15-Feb-2017 12-Feb-2018	19-Feb-2017 14-Feb-2018 11-Feb-2019
m6			20070865050021	20-Feb-2016 15-Feb-2017 12-Feb-2018	19-Feb-2017 14-Feb-2018 11-Feb-2019
m7			20080846040146	20-Feb-2016 15-Feb-2017 12-Feb-2018	19-Feb-2017 14-Feb-2018 11-Feb-2019
m8			20080846040145	20-Feb-2016 15-Feb-2017 12-Feb-2018	19-Feb-2017 14-Feb-2018 11-Feb-2019
m9			20080846040142	20-Feb-2016	19-Feb-2017

⁶ The meter of m1 was changed on 20-Jan-2016 and the new meter serial No. is 1210139747000006 due to the regular inspection.

				15-Feb-2017 12-Feb-2018	14-Feb-2018 11-Feb-2019
m10			20080846040141	20-Feb-2016 15-Feb-2017 12-Feb-2018	19-Feb-2017 14-Feb-2018 11-Feb-2019
m11			20080846040151	20-Feb-2016 15-Feb-2017 12-Feb-2018	19-Feb-2017 14-Feb-2018 11-Feb-2019
m12			20080846040143	20-Feb-2016 15-Feb-2017 12-Feb-2018	19-Feb-2017 14-Feb-2018 11-Feb-2019
m13			1110089576000011 ⁷	20-Feb-2016 15-Feb-2017 12-Feb-2018	19-Feb-2017 14-Feb-2018 11-Feb-2019
m14			20080846040150	20-Feb-2016 15-Feb-2017 12-Feb-2018	19-Feb-2017 14-Feb-2018 11-Feb-2019
M _{10kv}	DTSD318	1.0	60014972	20-Feb-2016 15-Feb-2017 12-Feb-2018	19-Feb-2017 14-Feb-2018 11-Feb-2019

⁷ The meter of m13 was changed on 21-Jun-2012 and the new meter serial No. is 1110089576000011 due to the regular inspection.

4.3 Monitoring Plan

The monitoring system is specified as below:

1. Monitoring Organisation

Roles and responsibilities have been defined for the relevant staff involved in VCS monitoring, and the prospect of nominating a responsible person has been considered. The responsible person has the overall responsibility for the monitoring system on this project.

A responsible person manages the process of training new staff, ensuring trained staffs perform the monitoring duties and that where trained monitoring staffs are absent, and the integrity of the monitoring system is maintained by other trained staff.

Records of trained staff have been retained by the Project Developer. A formal set of monitoring procedures such as training, data quality assurance and control, and relevant back-up procedures have been identified prior to the start of the project. A description of these procedures is provided in Table 2 and Table 3. It is important to note that these procedures may be based on existing on-site practices.

Table 3. Monitoring System Procedures

Procedure name	Description
VCS Staff training	This procedure outlines the steps to ensure that staffs receive adequate training to collect and archive complete and accurate data necessary for VCS monitoring.
VCS data and record keeping arrangements	This procedure provides details of the sites data and record keeping arrangements. The arrangements ensure that complete and accurate records are retained by the appropriate senior Manager within the quality control system.
Data collection	This procedure outlines the steps to collect the data from the meter(s).
VCS data quality control and quality assurance	Data and records are checked prior to being stored and archived. Data from the project are checked to identify possible errors or emissions. The data checks include cross checks of the electricity figures on the

	receipts. All records will be checked for completeness.
Electricity meter check	This procedure outlines the steps to provide regular and preventative check to the electricity meter (s)
Equipment failure	This procedure details the process of data collection in the case that a problem with any meter occurs.
Equipment calibration	This procedure details the process of organizing and managing the calibration process. The procedure includes details of how a suitable company or organization is commissioned to undertake the calibration to the relevant standards.

The above procedures are available during the verification and documented as part of the monitoring support material. The procedures may be contained in a single document (e.g. a monitoring manual) for VCS monitoring rather than separate procedures. Some of these procedures may exist in the form of existing onsite practices.

Table 4. Operational procedures and responsibilities for monitoring and quality assurance of emissions reductions from the project activity

Task	On-site technician	Operations manager	Project developer's head office	Head of Maintenance/ External company
Collect Data	E	R	N/A	N/A
Enter data into Spreadsheet	N/A	E	R	N/A
Make monitoring reports	N/A	E	R	N/A
Archive data & reports	N/A	E	R	N/A
Calibration/ Maintenance	I	I	I	E

Legend: E=responsible for executing data collection, R=responsible for overseeing and assuring quality, I=to be informed

2. Monitoring equipment and installation

Given that the emission factor is calculated ex-ante, and referring to the Monitoring Methodology ACM0002, the only data to be monitored is the net electricity supplied to the grid by the Project.

As the project shares the same substation 220KV transmission line with other 4 projects, the net electricity supplied by the Project to the grid is calculated based on the equation (1) in section 4.3.

The total electricity generated by the five projects and imported from the grid is monitored through the main meter installed on site of the 220kV high voltage side of the 35kV-to-220kV transformer, and the backup meter which is an assistant meter, is installed on site of the 220kV high voltage side of the 35kV-to-220kV transformer also. When the main meter has any troubles, the project developer should employ the data monitored by the backup meter. The main meter and the backup meter are both bidirectional meters which can also monitor the electricity imported from the grid.

In addition, a spare 10kV line is used for supplying electricity in emergency case that the Project fails to generate power. The electricity from the spare 10kV line connecting with the grid monitored by the meter M_{10kv} . Currently four other wind power project shares the same substation 220kV transmission line, the spare 10kV line, and all the involved meters. The separate meters have already been installed in the project site presented as the following meter diagram so that the electricity generation can be monitored respectively to calculate the share of this wind power project of the net electricity delivered to the grid at 220kV transformer.

The project is the Phase II of five phases. The net electricity delivered to the Northeast China Power Grid by the Project has been monitored through the meters. There are totally 17 meters involved: M_{main} , M_{backup} , M_{10kv} , $m1$, $m2$, $m3$, $m4$, $m5$, $m6$, $m7$, $m8$, $m9$, $m10$, $m11$, $m12$, $m13$ and $m14$. The recording of these meters is at 24:00 of 24th in each month during period from 25-Dec-2016 to 31-Dec-2018, the electricity from 25th in December to 24th in January of each year is divided into two periods (period from 25th to 31st in December and the other period from 1st to 24th in January), and the electricity from 25th to 31st in December of each year is from daily meter recordings and then added into December. These electricity data is approved by the local grid company.

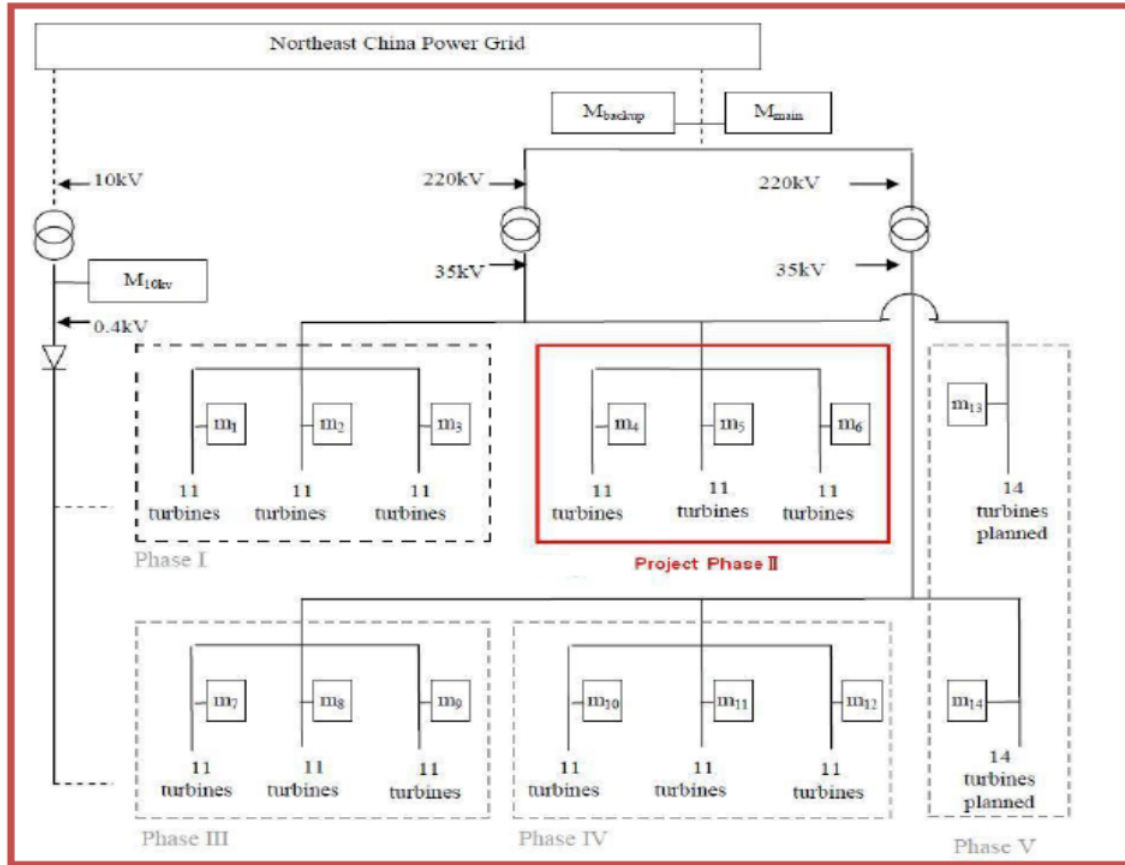
Please refer to table 2 for accuracy of all electricity meters. The metering diagram and the meters list are presented as follows, giving an overview of these meters.

Meter list is as below:

Meter	Owner	Monitor	Site
M_{main}	Power company	The total electricity of the all five projects exported to the grid ($M_{main,export,y}$) and imported from the grid ($M_{main,import,y}$)	At 220kV high voltage side of the 35kV-to-220kV transformer

M_{backup}	Power company	The total electricity of the all five projects exported to the grid ($M_{main,export,y}$) and imported from the grid ($M_{main,import,y}$), only when the main meter has a breakdown, the readings of back up meter will be adopted.	At 220kV high voltage side of the 35kV-to-220kV transformer
M_{10kv}	Project Owner	The total electricity of the all five projects imported from grid through the 10kV spare line	At enter of the spare 10kV line where the grid is connected
$m1, m2, m3$	Project Owner	The total electricity supplied to the grid by the phase I project	At the Phase I project's onsite 35kV low voltage side of the 35kV-to 220kV transformer
$m4, m5, m6$	Project Owner	The total electricity supplied to the grid by the Project	At the Phase II project's onsite 35kV low voltage side of the 35kV-to 220kV transformer
$m7, m8, m9$	Project Owner	The total electricity supplied to the grid by the phase III project	At the phase III project's onsite 35kV low voltage side of the 35kV-to 220kV transformer
$m10, m11, m12$	Project Owner	The total electricity supplied to the grid by the phase IV project	At the phase IV project's onsite 35kV low voltage side of the 35kV-to 220kV transformer
$m13, m14$	Project Owner	The total electricity supplied to the grid by the phase V project	At the phase V project's onsite 35kV low voltage side of the 35kV-to 220kV transformer

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



The net electricity supplied to the grid by the Project ($EG_{\text{facility}, y}$) will be calculated as follows:

$$EG_y = M_{\text{main}, \text{export}, y} \times \frac{\sum_{i=4}^6 m_{i, \text{export}, y}}{\sum_{i=1}^{14} m_{i, \text{export}, y}} - M_{\text{main}, \text{import}, y} - M_{10kv, \text{import}, y} \quad (1)$$

Where:

EG_y	=	The net electricity supplied to the grid by the project
$m_{i, \text{export}, y}$	=	Quantity of the electricity supplied to the grid and measured by the meters m_i during the monitoring period y
$M_{\text{main}, \text{export}, y}$	=	Quantity of the electricity supplied to the grid and measured by the meter M_{main} (or M_{backup}) during the monitoring period y
$M_{\text{main}, \text{import}, y}$	=	Quantity of the electricity imported from the grid and measured by the meter M_{main} (or M_{backup}) during the monitoring period y
$M_{10kv, \text{import}, y}$	=	Quantity of the electricity imported from the grid and measured by the meter M_{10kv} during the monitoring period y

i	=	The number of the meters m_i which installed at its onsite 35kV low voltage side of the 35kV-to-220kV transformer. $i = 1 \sim 14$.
-----	---	--

It is conservative to calculate the net electricity supplied to the grid by the Project by deduction of the total electricity of the all five projects imported from the grid ($M_{main,import,y}$) and the total electricity of the all five projects imported from grid through the 10kV spare line ($M_{10kv,import,y}$).

The net electricity supplied to the grid by the Project shall be recorded by the project owner and the data should be cross-checked against relevant electricity sale receipts from the grid.

The Project owner should ensure that the meter readings be readily available for DOE's verification.

3. Data recording procedure, management and archiving

The monitoring steps are as follows:

- (1) Net electricity supplied to the grid will be monitored continuously and recorded monthly.
- (2) The Project Developer and the Grid Company will confirm the electricity sales receipts or records of each wind farms respectively.
- (3) The copies of sales receipts will be obtained to cross check the data of supplied electricity.
- (4) The project developer will archive the data electronically until two years after the end of the crediting period or the last issuance of VCUs, whichever occurs later.

All relevant documentation such as technical drawings and reports (the Environmental Impact Assessment and the Feasibility study etc.) should be stored and available for reference. All the data shall be kept until two years after the end of crediting period, or the last issuance of VCUs, whichever occurs later.

4. Quality Assurance and Quality Control

The quality of data will be maintained through the development of an overarching monitoring system. Relevant operating procedures will be provided to relevant monitoring staff, and the monitoring staff will be supervised. The on-site trained staff will be responsible for quality control of data collection and data archiving.

In the event of erroneous meter(s) readings (where there are either data gaps, or data outliers present), data can be cross-checked against sale receipts, power generation statements, or other meters (back-up meter, etc). Details of the back-up strategy will be consolidated into the monitoring manual for VCS monitoring.

5. Emergency procedures

When the meters have a breakdown, the electricity generation difference will be treated as follows:

- (1) When one of the main meter or backup meter has a breakdown, the readings of the other meter will be adopted;
- (2) If both the main meter and back-up meter have breakdowns, Jilin CGN Wind Power Co., Ltd. and the Northeast China Power Grid shall jointly prepare a reasonable and conservative estimate of the correct reading and deducting the line losses, then provide sufficient evidence that this estimation is reasonable and conservative when DOE undertakes verification.
- (3) If any of 17 meters has breakdown, the project owner and Northeast China Power Grid shall jointly prepare a reasonable and conservative estimate of the correct reading, and provide sufficient evidence that this estimation is reasonable and conservative.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

According to the registered PD, the baseline emissions are calculated as the net electricity supplied to the grid by the project (EG_y in MWh) times the combined margin emission factor ($EF_{grid,CM,y}$ in tCO₂/MWh) as follows:

$$BE_y = EG_y \times EF_{grid,CM,y} \quad (2)$$

Where:

BE_y = Baseline emissions in year y (tCO₂e)

EG_y = The net electricity supplied to the grid by the project (MWh)

$EF_{grid,CM,y}$ = Combined margin CO₂ emission factor (tCO₂e/MWh)

As described in Section 4.3,

$$EG_y = M_{main,export,y} \times \frac{\sum_{i=4}^6 m_{i,export,y}}{\sum_{i=1}^{14} m_{i,export,y}} - M_{main,import,y} - M_{10kv,import,y}$$

So the net electricity supplied to the grid by the project in year y (EG_y) in this monitoring period (25-Dec-2016-31-Dec-2018) as in the table below:

The electricity supplied to the grid by meter m_i and M_{main} is listed as below:

Period ⁸		Phase I	Phase II	Phase III	Phase IV	Phase V	$m_{1,export,y} + \dots + m_{14,export,y}$	$M_{main,export,y}$
		$m_{1,export,y} + m_{2,export,y} + m_{3,export,y}$	$m_{4,export,y} + m_{5,export,y} + m_{6,export,y}$	$m_{7,export,y} + m_{8,export,y} + m_{9,export,y}$	$m_{10,export,y} + m_{11,export,y} + m_{12,export,y}$	$m_{13,export,y} + m_{14,export,y}$		
		MWh	MWh	MWh	MWh	MWh	MWh	MWh
		A1	A2	A3	A4	A5	A	B
25-Dec-2016	31-Dec-2016	356.973	329.137	278.161	294.379	285.085	1,543.735	1,503.835
01-Jan-2017	24-Jan-2017	1,223.907	1,128.473	953.699	1,009.301	977.435	5,292.815	5,156.005
25-Jan-2017	24-Feb-2017	2,064.930	2,075.010	2,166.150	2,166.150	2,682.400	11,154.640	11,020.064
25-Feb-2017	24-Mar-2017	5,180.490	5,950.980	6,103.020	5,859.840	5,210.800	28,305.130	27,919.936
25-Mar-2017	24-Apr-2017	8,128.050	9,231.180	7,530.810	6,589.380	6,913.200	38,392.620	37,930.112
25-Apr-2017	24-May-2017	10,486.560	10,867.920	9,924.600	9,192.120	14,610.960	55,082.160	54,890.176
25-May-2017	24-Jun-2017	6,980.820	7,323.943	5,215.560	4,892.580	11,127.200	35,540.103	35,229.920
25-Jun-2017	24-Jul-2017	4,254.390	4,491.270	4,532.430	4,511.850	4,223.520	22,013.460	21,369.920
25-Jul-2017	24-Aug-2017	3,527.580	3,010.350	3,610.320	3,631.110	3,465.560	17,244.920	16,670.016
25-Aug-2017	24-Sep-2017	9,534.210	7,213.710	8,989.260	8,676.570	7,586.880	42,000.630	41,629.984
25-Sep-2017	24-Oct-2017	9,237.900	7,723.380	8,339.310	8,056.650	7,521.640	40,878.880	40,489.856
25-Oct-2017	24-Nov-2017	7,937.160	7,593.390	10,252.620	10,131.240	2,264.920	38,179.330	37,760.096
25-Nov-2017	24-Dec-2017	4,201.050	3,881.010	4,366.110	4,748.100	1,899.240	19,095.510	18,500.064
25-Dec-2017	31-Dec-2017	1,083.722	1,151.294	971.860	1,123.317	424.182	4,754.375	4,606.488
01-Jan-2018	24-Jan-2018	3,715.618	3,947.296	3,332.090	3,851.373	1,454.338	16,300.715	15,793.672
01-Jan-2018	24-Feb-2018	6,084.330	6,074.040	5,538.750	5,075.490	2,964.920	25,737.530	25,000.096
25-Feb-2018	24-Mar-2018	8,247.120	8,962.800	8,388.240	8,287.440	4,708.200	38,593.800	38,280.000
25-Mar-2018	24-Apr-2018	11,122.860	10,125.360	9,994.320	9,903.810	5,188.680	46,335.030	45,989.856

⁸ The recording of these meters is at 24:00 of 24th in each month during period from 25-Dec-2016 to 31-Dec-2018, the electricity from 25th in December to 24th in January of each year is divided into two periods (period from 25th to 31st in December and the other period from 1st to 24th in January), and the electricity from 25th to 31st in December of each year is from daily meter recordings and then added into December. These electricity data is approved by the local grid company.

25-Apr-2018	24-May-2018	10,167.780	10,097.220	9,804.900	9,411.990	5,078.920	44,560.810	44,220.000
25-May-2018	24-Jun-2018	5,922.000	6,468.630	6,164.970	6,762.210	3,188.640	28,506.450	28,160.000
25-Jun-2018	24-Jul-2018	6,389.460	7,137.690	6,884.850	7,724.010	3,275.720	31,411.730	31,069.984
25-Jul-2018	24-Aug-2018	2,160.690	2,922.150	3,097.080	2,808.960	4,033.400	15,022.280	14,599.904
25-Aug-2018	24-Sep-2018	5,698.770	7,642.110	6,366.780	6,903.120	8,755.600	35,366.380	34,939.872
25-Sep-2018	24-Oct-2018	4,981.410	6,135.780	5,953.500	6,125.700	8,981.000	32,177.390	31,779.968
25-Oct-2018	24-Nov-2018	9,317.700	5,558.280	6,437.550	5,851.440	10,055.360	37,220.330	36,830.112
25-Nov-2018	24-Dec-2018	17,463.390	10,992.450	8,490.510	8,550.780	6,089.160	51,586.290	51,339.904
25-Dec-2018	31-Dec-2018	1,269.030	1,382.640	1,310.400	1,320.690	1,062.880	6,345.640	6,150.144
Total		166,737.900	159,417.493	154,997.850	153,459.600	134,029.840	768,642.683	758,829.984

The electricity imported from the grid and measured by the meter M_{10kv} is as below:

A spare 10kV line was used for supplying electricity in emergency case that the project fails to generate power in the registered Monitoring Plan. The electricity from the spare 10kV line was monitored by the meter M_{10kv} . But according to the actual situation, the spare 10 kV line was only used for the construction purpose of the projects; when the Dagangzi Wind Power Project Phase I (the first project of the Dagangzi Wind Power Project Phase I-V) starting operation in December 2007, the spare 10 kV line was cut off but the spare 10kV line is still at the project site, Once the project meet the emergency case, the spare 10kV line will be connected again, therefore, the project owner still recorded the electricity import by the spare 10kV line monthly and calibrated the meter according to the MP. In this monitoring period, the electricity imported from the grid and measured by the meter M_{10kv} is 0MWh.

Thus, $M_{10kv,import,y} = 0$ MWh.

The electricity imported from the grid and measured by meter M_{main} used for ERs calculation is listed as follows:

Period ⁹		Electricity imported from grid by meter M _{main} reading M _{main,import,y}	Electricity imported from grid by receipts M _{main,import,y}	Electricity imported from grid used for ERs calculation M _{main,import,y}
		MWh	MWh	MWh
		D	E	F=MAX(D,E)
25-Dec-2016	31-Dec-2016	59.613	59.613	59.613
01-Jan-2017	24-Jan-2017	204.387	204.387	204.387
25-Jan-2017	24-Feb-2017	93.632	93.632	93.632
25-Feb-2017	24-Mar-2017	152.416	152.416	152.416
25-Mar-2017	24-Apr-2017	54.208	54.208	54.208
25-Apr-2017	24-May-2017	33.088	33.088	33.088
25-May-2017	24-Jun-2017	90.112	90.112	90.112
25-Jun-2017	24-Jul-2017	99.264	99.264	99.264
25-Jul-2017	24-Aug-2017	117.920	117.920	117.920
25-Aug-2017	24-Sep-2017	58.784	58.784	58.784
25-Sep-2017	24-Oct-2017	83.776	83.776	83.776
25-Oct-2017	24-Nov-2017	68.288	68.288	68.288
25-Nov-2017	24-Dec-2017	146.080	146.080	146.080
25-Dec-2017	31-Dec-2017	32.429	32.429	32.429
01-Jan-2018	24-Jan-2018	111.187	111.187	111.187
01-Jan-2018	24-Feb-2018	113.344	113.344	113.344
25-Feb-2018	24-Mar-2018	121.440	121.440	121.440
25-Mar-2018	24-Apr-2018	41.184	41.184	41.184
25-Apr-2018	24-May-2018	86.592	86.592	86.592
25-May-2018	24-Jun-2018	91.872	91.872	91.872
25-Jun-2018	24-Jul-2018	119.328	119.328	119.328

⁹ The recording of these meters is at 24:00 of 24th in each month during period from 25-Dec-2016 to 31-Dec-2018, the electricity from 25th in December to 24th in January of each year is divided into two periods (period from 25th to 31st in December and the other period from 1st to 24th in January), and the electricity from 25th to 31st in December of each year is from daily meter recordings and then added into December. These electricity data is approved by the local grid company.

25-Jul-2018	24-Aug-2018	103.488	103.488	103.488
25-Aug-2018	24-Sep-2018	103.488	103.488	103.488
25-Sep-2018	24-Oct-2018	80.256	80.256	80.256
25-Oct-2018	24-Nov-2018	111.584	111.584	111.584
25-Nov-2018	24-Dec-2018	114.752	114.752	114.752
25-Dec-2018	31-Dec-2018	29.216	29.216	29.216
Total		2,521.728	2,521.728	2,521.728

The net electricity supplied to the grid by the Project used for ERs calculation is listed as follows:

Period		Electricity supplied to the grid by calculation meter readings	Electricity supplied to the grid by receipts	Electricity supplied to the grid used for ERs calculation	The electricity imported by the project from the grid via the main line	Electricity imported from the grid via the 10kV line by the meter M10kV	Net electricity supplied to the grid by the project
		MWh	MWh	MWh	MWh	MWh	MWh
		$G=A2/A*B$	H	$I=MIN(G:H)$	F	C	$J=I-F-C$
25-Dec-2016	31-Dec-2016	320.630	320.000	320.000	59.613	0.000	260.387
01-Jan-2017	24-Jan-2017	1,099.304	1,100.000	1,099.304	204.387	0.000	894.917
25-Jan-2017	24-Feb-2017	2,049.976	2,050.000	2,049.976	93.632	0.000	1,956.344
25-Feb-2017	24-Mar-2017	5,869.995	5,870.000	5,869.995	152.416	0.000	5,717.579
25-Mar-2017	24-Apr-2017	9,119.974	9,120.000	9,119.974	54.208	0.000	9,065.766
25-Apr-2017	24-May-2017	10,830.041	10,830.000	10,830.000	33.088	0.000	10,796.912
25-May-2017	24-Jun-2017	7,260.022	7,260.000	7,260.000	90.112	0.000	7,169.888
25-Jun-2017	24-Jul-2017	4,359.973	4,360.000	4,359.973	99.264	0.000	4,260.709

25-Jul-2017	24-Aug-2017	2,909.992	2,910.000	2,909.992	117.920	0.000	2,792.072
25-Aug-2017	24-Sep-2017	7,150.051	7,150.000	7,150.000	58.784	0.000	7,091.216
25-Sep-2017	24-Oct-2017	7,649.880	7,650.000	7,649.880	83.776	0.000	7,566.104
25-Oct-2017	24-Nov-2017	7,510.010	7,510.000	7,510.000	68.288	0.000	7,441.712
25-Nov-2017	24-Dec-2017	3,759.990	3,760.000	3,759.990	146.080	0.000	3,613.910
25-Dec-2017	31-Dec-2017	1,115.482	1,115.000	1,115.000	32.429	0.000	1,082.571
01-Jan-2018	24-Jan-2018	3,824.513	3,825.000	3,824.513	111.187	0.000	3,713.326
01-Jan-2018	24-Feb-2018	5,900.006	5,900.000	5,900.000	113.344	0.000	5,786.656
25-Feb-2018	24-Mar-2018	8,889.925	8,890.000	8,889.925	121.440	0.000	8,768.485
25-Mar-2018	24-Apr-2018	10,049.931	10,050.000	10,049.931	41.184	0.000	10,008.747
25-Apr-2018	24-May-2018	10,019.994	10,020.000	10,019.994	86.592	0.000	9,933.402
25-May-2018	24-Jun-2018	6,390.014	6,390.000	6,390.000	91.872	0.000	6,298.128
25-Jun-2018	24-Jul-2018	7,060.035	7,060.000	7,060.000	119.328	0.000	6,940.672
25-Jul-2018	24-Aug-2018	2,839.989	2,840.000	2,839.989	103.488	0.000	2,736.501
25-Aug-2018	24-Sep-2018	7,549.948	7,550.000	7,549.948	103.488	0.000	7,446.460
25-Sep-2018	24-Oct-2018	6,059.997	6,060.000	6,059.997	80.256	0.000	5,979.741
25-Oct-2018	24-Nov-2018	5,500.007	5,500.000	5,500.000	111.584	0.000	5,388.416
25-Nov-2018	24-Dec-2018	10,939.948	10,940.000	10,939.948	114.752	0.000	10,825.196
25-Dec-2018	31-Dec-2018	1,340.044	1,339.000	1,339.000	29.216	0.000	1,309.784
Total		157,369.672	157,369.000	157,367.330	2,521.728	0.000	154,845.602

Thus, the annual net electricity supplied to the grid by the project used for baseline emission is as below:

Period	Net electricity supplied to the grid by the project	EF	BE _y
	MWh	tCO ₂ e/MWh	tCO ₂ e
	J	K	L=K*J
25-Dec-2016~31-Dec-2016	260.387	1.1461	298
01-Jan-2017~31-Dec-2017	69,449.701	1.1461	79,596
01-Jan-2018~31-Dec-2018	85,135.515	1.1461	97,573
Total	154,845.602		177,467

In summary,

Among which, EF_{grid,CM,y} is 1.1461 tCO₂/MWh in the first crediting period, therefore, the baseline emission during this monitoring period is:

$$BE_y = EG_y * EF_{grid,CM,y} = 154,845.602 \text{ MWh} \times 1.1461 \text{ tCO}_2/\text{MWh} = 177,467 \text{ tCO}_2$$

5.2 Project Emissions

According to ACM0002, no project emissions were to be counted by the Project.

Hence, $PE_y=0$.

5.3 Leakage

According to the ACM0002, no leakage emissions are considered.

5.4 Net GHG Emission Reductions and Removals

According to the Section 5.1, 5.2 and 5.3 above,

$$BE_y = 177,467 \text{ tCO}_2\text{e};$$

$$PE_y = 0 \text{ tCO}_2\text{e};$$

$$LE_y = 0 \text{ tCO}_2\text{e};$$

$$\text{Therefore, } ER_y = BE_y - PE_y - LE_y = 177,467 \text{ tCO}_2\text{e}$$

This monitoring period started from 25-Dec-2016 to 31-Dec-2018, with totally 737 days. Based on the annual estimated emission reductions from the registered PD, the amount of emission reductions for this monitoring period would be $118,197 \text{ tCO}_2\text{e}/365\text{d} \times 737\text{d} = 238,660 \text{ tCO}_2\text{e}$. The actual emission reductions in this monitoring period (737 days) are 177,467 tCO₂e, which is 25.64% less than the estimation in the registered PD, which is considered to be conservative.

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
25-Dec-2016~31-Dec-2016	298	0	0	298
01-Jan-2017~31-Dec-2017	79,596	0	0	79,596
01-Jan-2018~31-Dec-2018	97,573	0	0	97,573
Total	177,467	0	0	177,467