



**Verified Carbon
Standard**

HEBEI YUXIAN SECOND PHASE 49.5MW WIND POWER PROJECT

Document Prepared by Demeter Venture Uk Limited

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Hebei Yuxian Second Phase 49.5 MW Wind Power Project (hereinafter referred to as the project) is developed by Hebei Construction Investment Yuzhou Wind Energy Co., Ltd. It is located at the southwest of Yuxian County, Hebei Province, P.R.China. The project installs 33 sets of wind turbine, each of which has a rated installed capacity of 1,500 kW, providing a total installed capacity of 49.5 MW. The annual output of the project is estimated to be 112,170 MWh and the electricity will be exported to the North China Power Grid (NCPG).

The scenario existing prior to the start of the implementation of the project is: The same electricity output by the proposed project activity would have otherwise been generated by the operation of NCPG connected power plants and by the addition of new generation sources. That is the same as the baseline scenario.

When the proposed project is operated, the electricity generated will displace part of the electricity from fossil fuel-fired plants connected to the NCPG, and thus greenhouse gas (GHG) generated by coal-fired power plants could be reduced. The estimated annual GHG emission reductions are 111,243 tCO_{2e}.

The construction of the project began on 20/08/2008, and the first turbine was put into operation on 01/09/2009. And the project was put into full commercial operation on 31/10/2009. This monitoring period is from 01/01/2013-31/10/2018 (2130 days). The total net electricity supplied to the grid by the project in this monitoring period are 640,904.226MWh and the emission reductions in this monitoring period are 635,607tCO₂.

1.2 Sectoral Scope and Project Type

This category would fall within sectoral scope 1: energy industries (Renewable sources).

Project type: wind power project.

This project is not grouped project.

1.3 Project Proponent

Organization name	Hebei Construction Investment Yuzhou Wind Energy Co., Ltd
Contact person	Zhang Bo
Title	Manager

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1.4 Other Entities Involved in the Project

Organization name	Demeter Venture Uk Limited
Role in the Project	Project participant
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1.5 Project Start Date

01/09/2009 (operation date, which means the date that started to generate GHG emission reductions)

1.6 Project Crediting Period

The first crediting period under VCS is from 01/09/2009 to 31/08/2019 (10years, renewable). Therefore, *the total* crediting period under VCS would have been from 01/09/2009 to 31/08/2039 (30 years). However, the project was registered under CDM on 01/06/2011 with registration number of 4789. And *the total* crediting period under CDM is from 01/06/2011 to 31/05/2032(21years).

According to VCS standard, the total crediting period under VCS is from 01/09/2009 to 31/05/2032.

1.7 Project Location

The project site is located in the southwest of Yuxian County, Zhangjiakou City of Hebei Province. The site is in Xiushuipeng Village approximately 18 km from Xiagongcun Town. The geographical coordinates of the project are 114°32'2.12"E, 39°35'0.71"N which are sourced from the approved FSR. Figure 1 shows the location of the project.

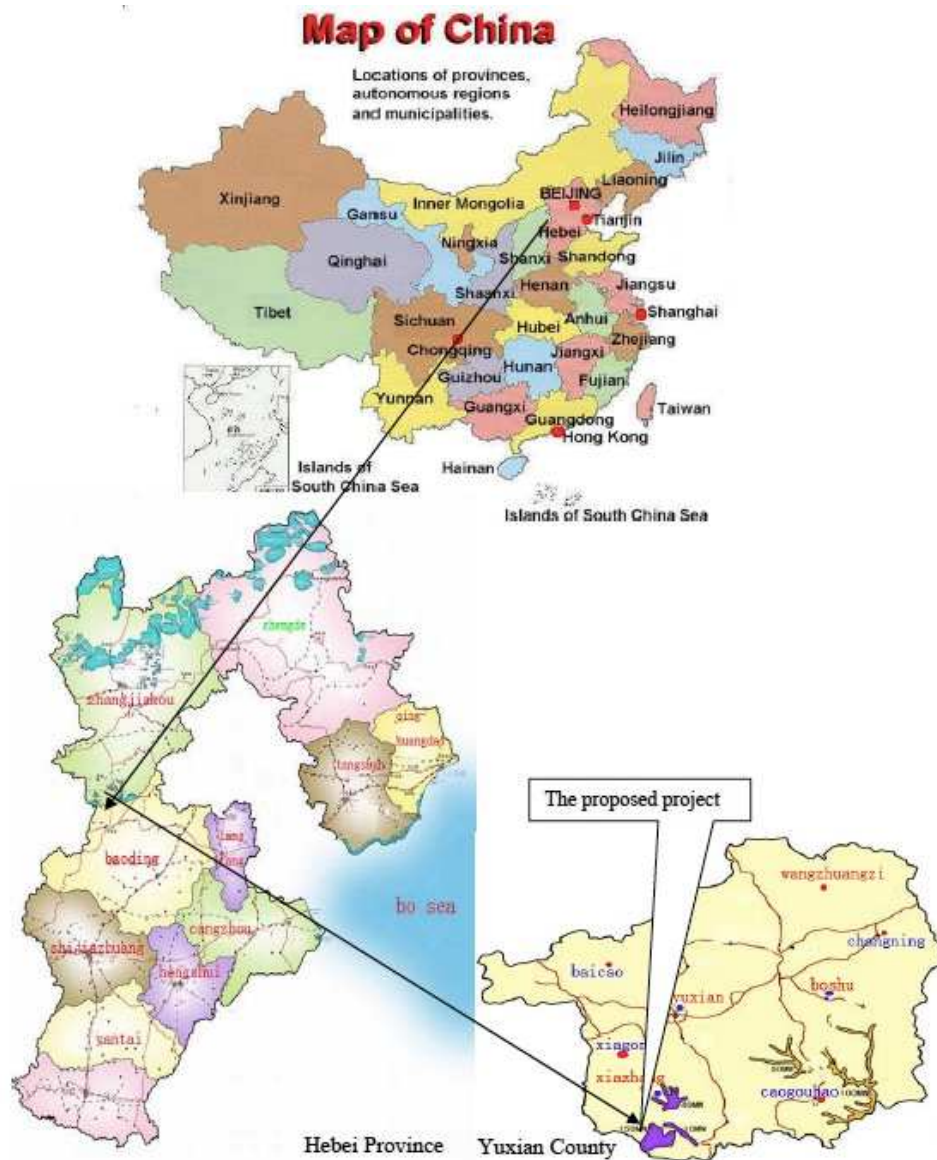


Figure 1. The location of the project

1.8 Title and Reference of Methodology

The project applies the approved consolidated baseline and monitoring methodology ACM0002

“Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (Version 12.1.0).

The methodology also refers to the following tools:

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

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

Guideline on Assessment of Investment Analysis (Version 03.1).

1.9 Participation under other GHG Programs

The Project has been registered as a CDM project on 01/06/2011 with registration number of 4789. It has been issued three times under CDM mechanism, covering monitoring period from 01/06/2011 to 31/12/2012.

The credits in this monitoring period (01/01/2013- 31/10/2018) has not been counted and will not be counted under other kind of GHG programs.

1.10 Other Forms of Credit

The project has been registered as a CDM project on 01/06/2011. It has been issued three times under CDM mechanism, covering monitoring period from 01/06/2011 to 31/12/2012.

The Project has not created another form of environmental credit, and the Project will not create other environmental credit in the future.

1.11 Sustainable Development

The Project will not only supply renewable electricity to the grid, but also contribute to sustainable development of the local community and the host country by means of:

1) GHG emission reduction

The project activity will achieve obvious GHG emission reductions by avoiding CO₂ emissions, as grid-connected fossil fuel-fired power plants are dominated in the NCPG.

2) Pollutants emission reduction through replacing fossil fuel combustion

The project is to replace electricity generated by grid-connected coal-fired power plants in the NCPG, and thus reduce fossil fuel consumption and avoid pollutants emission, such as sulfur dioxide and dust, brought by fossil fuel combustion. Therefore, the proposed project has obvious environmental benefit.

3) Employment opportunities

The conducting of the project will create certain job opportunities for local people during the construction and operation periods and achieve the economic growth in the region. Furthermore, the project plans to utilize state-of-the-art wind turbines produced by domestic factories to promote the wind turbine manufacturing industries.

2 SAFEGUARDS

2.1 No Net Harm

The Environmental Impact Assessment of the proposed project was completed by the Institute of Hydrogeology and Environmental Geology, CAGS and approved by the Environment Protection Bureau of Hebei Province on 27/09/2007. Main contents of the Environmental Impact Assessment are summarized as follows:

Ecological impact

Construction Phase

1) Impact on Foliage

The area of the buildings stated above will be all the shrub-grassland. There will be some impacts on the local vegetation during the construction period. The main impact will be eradication of local sward and the stack of earth on the lawn. But after the construction period, new trees and grass will be planted again on the site. The vegetation condition of the earth surface will recover very soon. The original ecological system will be recovery from the third year after the construction period.

2) Impact on other animals

No big mammal has been found in the local area. There are only small mammals just like hare and mice.

The small animals disturbed by the construction (like the snail, the angleworm, the ant) will migrate the similar habitat conditions nearby due to their strong ability of migration. So, the species diversity and population size in the area will not be obviously influenced by the proposed project during the construction phase.

3) Impact on the residents

The main air pollution sources during the construction period include dust from excavation, blasting and transportation. Since the local residential area is 500m away from the temporary construction site and local atmosphere environment capacity is very large, the impact of construction dust on the local region is light. Some measures will be taken to reduce impact of dust on the construction staff, such as sprinkling, covering and so on.

Noise will be generated by machine equipment during construction. Measures will be taken to reduce the environmental impacts of noise: choosing low-noise machines and technologies, arranging reasonable construction time, and enhancing construction management. In addition, the nearest residential area is 1000m away from the wind farm, the neighbor residents will not be influenced by the noise. So, the dust and the noise generated by construction activities will have less impact on local residents.

Operation Phase

1) Impact on the local biogeocenose

There is no waste gas, waste water and solid waste in the process of wind energy. Thus, the project will not obviously affect the local biogeocenose.

2) Visual Impact

The wind turbines installed in the grassland will enhance the visual value of the grassland and demonstrate the harmonious relation between human and nature. So, the proposed project has little impact on the local scene.

3) Impact on the animals

No big mammal has been found in the local area. There are only small mammals just like hare and mice.

They may migrate back to the former sites after the completion of the project. Therefore, the project will have less impact on other propagation during the operation phase.

Environmental Impact

Construction phase

The max impact range of dust generated by construction activities is about in the downwind 150 m and the noise pollution generated by construction machine will occur in the range of 300 m. The shortest distance between the project site and the village is 1000 m. So the dust and the noise generated by construction activities will have less impact on local residents.

The main solid waste generated from the site will be construction waste as well as the household waste from the personnel at the site. The solid waste will be carried to the landfill. And both domestic sewage and the sewage from the worksite will be treated up to the standards before being discharged. So, the waste and waste water generated by construction activities will have less impact on local residents.

Operation Phase

1) Sewage

The waste water from the proposed project during operation phase will only be sewage. The sewage processed by the biological septic tank will in compliance with the second level standards <Integrated Wastewater discharge Standard > and will be discharged into the collecting pond. The processed sewage will be utilized to irrigate plant in the project site without discharge. Therefore, the sewage from the project during the operation phase will have less impact on the environment.

2) Noise

The operating noise level of the 1500 kW turbine is 103 dB at the height of 10m from the ground.

However, at a distance of 400 m no serious noise impacts are caused, and noise levels at this distance drop down to the national standard 43 dB (A). Furthermore, the resident regions are 1000 m away from the wind farm, and with the background noise in the area being high, so the noise does not influence the residential districts nearest to the site.

3) Solid waste

The solid waste will be mainly composed of the household garbage generated from the workers in the 110kV booster station. The solid waste will be carried termly to the landfill nearby. Therefore, impact of solid waste on the environment is considered to be insignificant.

Conclusion

The project does not have any major adverse impacts on the environment during its construction and operation phase. Therefore, this project does not do harm to local environment.

2.2 Local Stakeholder Consultation

The project owner invited the comments of local stakeholders by issuing questionnaires. Hebei Construction Investment Yuzhou Wind Energy Co., Ltd carried out the surveys on the local villagers and residents, the representative of governmental officials, etc. during November 2007.

In order to invite comments from local stakeholders, a bulletin was published by the project owner on the bulletin boards in Guoshipen Village, Choushuipen Village and Chadao Village around the project, providing a detailed introduction of the project and the stakeholder meeting.

Investigations on public opinion have been carried out through site surveys, distribution of questionnaires and meetings. Questionnaire were designed to be easily filled in the following sections:

- 1) Project introduction
- 2) Respondent's basic information and education level
- 3) Questions
- 4) Space for the respondents' signature and date.

The questions include:

What level do you know about the project?

Do you know about the Clean Development Mechanism?

Impacts of the project to local environment?

Do you think which impact on the environment may be caused by the project?

Impacts of the project to local economic development?

Whether to support the construction of the project?

Questionnaires have been distributed according to the principle of both representation and randomness in order to reflect the public opinions and comments in a fair and real manner.

The investigated stakeholders include the individuals from the construction site and the nearby Yuxian County. The stakeholders also include the group from the government and association. The investigation has taken full account into the public advice of different ages, education levels and occupations.

80 valid responses from 80 questionnaires were collected and the following is a summary of the key findings:

100% of the investigated stakeholders know something about the project; 95% of them know about CDM; 57.50% of them don't think it will take positive effects of their livelihoods environment while

42.50% of them think it takes no little impact of the local environment; The fields of environmental protection the public concerned mainly include noise of the construction (32.50%) , noise of the operation (11.25%), construction waste water (11.25%), impact of dust on air quality (21.25%), use of land (48.75%), soil and water conservation (21.25%), construction waste (23.75%), impact on traffic (2.50%), impact on the ecological environment (8.75%),the interference on television and other receivers (5.00%); 98.75% of them think it will promote the local economy. And the stakeholders are all supportive of this project.

Comments from the questionnaires show that 100% of the investigated stakeholders agree with the project construction, and none of them objects.

The fields of environmental protection which the public concerned mainly include noise, impact of dust on air quality, use of land as mentioned above. The EIA approved by the Environment Protection Bureau of Hebei Province shows that the noise levels would be within China national standards and no interference is expected. The developer will take some measures to reduce the dust during the construction such as watering and covering. Construction waste and waste water will be disposed of properly according to the EIA. Impact on the ecological environment and the traffic impact are very little and will be disposed of properly according to the EIA. Most of the lands for the wind farm are for temporary use, and the developer will carry out the compensation for land requisition according to state regulations. The interference on television and other receivers would be reduced the national standard.

The soil and water conservation program has got the approval by the Water Resources Department of Hebei Province. The project owner will put the measures listed in the EIA into effect during construction and operation, so as to achieve environmental benefits, social benefits and economic benefits.

In conclusion, the stakeholders are supportive of this project.

In addition to the physical stakeholder consultations, for continuous communication with local stakeholders, the project owner public its office telephone to local people and put a grievance book in the office of the company. Anyone who have comments on the project could write on the book or leave message by phone. And after these years' operation, no negative comments were received from local people.

2.3 AFOLU-Specific Safeguards

This project is not an AFOLU project. Therefore, this section is not applicable.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project installed 33 sets of wind turbine, each of which has a rated installed capacity of 1,500 kW, providing a total installed capacity of 49.5 MW. 10 sets of FD70B type wind turbines and 23 sets of FD77B type wind turbines are all supplied by Dongfang Steam Turbine Co., Ltd. The main technical parameters are shown in the table 1.

Table 1. Main technical parameters of key equipment in the Project

Items	Value	
Turbine type	FD70B	FD77B
Rated Power (kW)	1500	1500
Cut-in Wind Speed (m/s)	3.5	3.0
Rotor Diameter (m)	70	77
Rated Wind Speed (m/s)	13	12
Tower Height (m)	65	61.5
Rated Voltage (V)	690	690
Generator Type	double-fed asynchronous motor	double-fed asynchronous motor
Lifetime (years)	20	20

The simplified flow diagram and the meters that will be installed within the project activity are shown in the following figure 2:

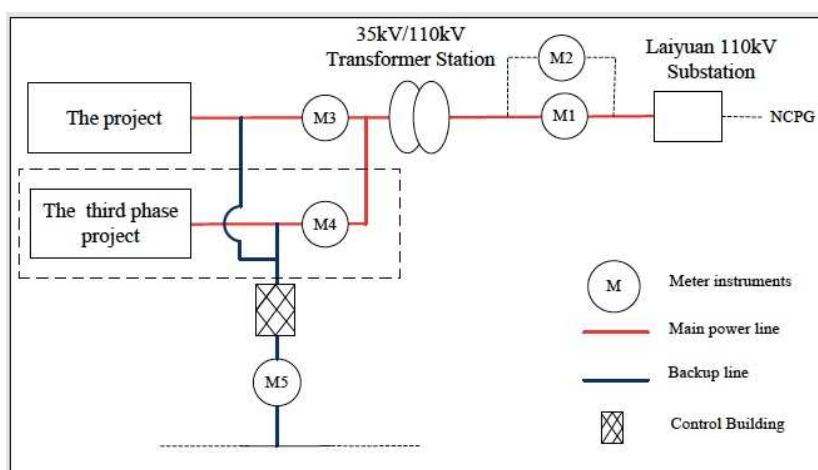


Figure 2 The simplified flow diagram of the project

The electricity generated by the project and the electricity generated by the third phase project were transmitted through 35 kV transmission lines to 35 kV/110 kV Transformer Station which is on site, and then to NCPG via Laiyuan 110kV Substation by 110 kV transmission line.

The Project started construction on 20/08/2008 and the first turbine was put into operation on 01/09/2009 and the project was put into commercial operation on 31/10/2009.

During this monitoring period, the monitoring system of the Project was implemented in line with the monitoring plan. The wind farm operated normally. No equipment is overhauled or replaced in this monitoring period. No emergencies which may impact the methodology application and monitoring occurred during the monitoring period.

3.2 Deviations

2.3.1 Methodology Deviations

There is no methodology deviation in this monitoring period.

2.3.2 Project Description Deviations

There is a deviation about the crediting period in this monitoring period.

According to the registered PD, the crediting period is from 01/07/2011-30/06/2018 (7years, renewable).

As the description in section 1.6, the total crediting period under VCS is from 01/09/2009 to 31/05/2032 according to VCS standard,

3.3 Grouped Projects

Not applicable because this is not a grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$FC_{i,m,y}$
Data unit	Mass or volume unit
Description	The amount of fuel i (in a mass or volume unit) consumed by relevant power sources m in year(s) y
Source of data	China Energy Statistical Yearbook (2005-2007)
Value applied	Annex 3 of registered PD
Justification of choice of data or description of	Official statistical data

measurement methods and procedures applied	
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	$NCV_{i,y}$
Data unit	GJ/mass or volume unit of a fuel
Description	The net calorific value (energy content) per mass or volume unit of a fuel i
Source of data	China Energy Statistical Yearbook 2005-2007
Value applied	Annex 3 of registered PD
Justification of choice of data or description of measurement methods and procedures applied	China Energy Statistical Yearbook 2005-2007
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	$EF_{i,m,y}$
Data unit	tCO ₂ /GJ
Description	The CO ₂ emission factor per unit of energy of the fuel i.
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value applied	Annex 3 of registered PD
Justification of choice of data or description of measurement methods and procedures applied	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Purpose of Data	Calculation of baseline emissions
Comments	NCV values used for the OM/BM calculation are based on IPCC default value which is at the lower limit of the uncertainty at a 95% confidence interval, so it is conservative.

Data / Parameter	$EG_{grid,j,y}$
Data unit	MWh

Description	Net electricity generated and delivered to the grid by province j in year y
Source of data	China Power Yearbook 2005-2007
Value applied	Annex 3 of registered PD
Justification of choice of data or description of measurement methods and procedures applied	Official statistical data
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	GENE _{best,coal}
Data unit	/
Description	Best electricity supply efficiency for coal fired plant
Source of data	Notification on Determining Baseline Emission Factor of China's Grid
Value applied	37.28%
Justification of choice of data or description of measurement methods and procedures applied	Official statistical data
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	GENE _{best,oil,gas}
Data unit	/
Description	Efficiency level of the best technology commercially available in China for gas-fired and oil-fired power generators
Source of data	Notification on Determining Baseline Emission Factor of China's Grid
Value applied	48.81%
Justification of choice of data or description of measurement methods and procedures applied	Official statistical data
Purpose of Data	Calculation of baseline emissions

Comments	/
Data / Parameter	$CAP_{j,y}$
Data unit	MW
Description	Installed capacity in each province of NCPG
Source of data	China Electric Power Yearbook 2005-2007
Value applied	Annex 3 of registered PD
Justification of choice of data or description of measurement methods and procedures applied	Official statistical data
Purpose of Data	Calculation of baseline emissions
Comments	/

4.2 Data and Parameters Monitored

Data / Parameter	$EG_{facility,y}$
Data unit	MWh/yr
Description	Quantity of net electricity generation supplied by the project plant to the grid in year y
Source of data	Measured by electricity meter
Description of measurement methods and procedures to be applied	This value is calculated as the difference of exported electricity and imported electricity. $EG_{facility,y} = EG_{export,y} - EG_{import,y} - EG_{backupline,y}$ $EG_{export,y}$: Annual electricity exported to the grid $EG_{import,y}$: Annual electricity imported from the grid. $EG_{backupline,y}$: Electricity delivered to the project through the backup line.
Frequency of monitoring/recording	Continuously measurement and monthly recording
Value monitored	640,904.226
Monitoring equipment	The information of the electricity meter is in the following table.
QA/QC procedures to be applied	The electricity meters are calibrated by qualified entity according to national standards. The electricity records are crosschecked

	with electricity transaction note (ETN). The main information of the meters are shown in following table.
Purpose of the data	Calculation of baseline emissions
Calculation method	$EG_{\text{facility},y} = EG_{\text{export},y} - EG_{\text{import},y} - EG_{\text{backupline},y}$
Comments	/

Data / Parameter	EG _{export,y,1} , EG _{export,y,3} , EG _{export,y,4}				
Data unit	MWh				
Description	Annual electricity exported to the grid.				
Source of data	Measured by electricity meter				
Description of measurement methods and procedures to be applied	It is continuously measured by the bi-directional meter and monthly recorded by the project owner. The accuracy of the meters are 0.2S.				
Frequency of monitoring/recording	Continuously measured and monthly recorded				
Value monitored	942,919.120(M1); 641958.891(M3); 303,166.080(M4)				
Monitoring equipment	The information of the electricity meter is in the following table.				
QA/QC procedures to be applied	The electricity meter is calibrated by qualified entity according to national standards. The main information is shown below:				
	Name	Type	Serial No.	Accuracy	Calibration Date and valid date
	M1	ZMD402C	94827520	0.2S	17/05/2012-16/05/2013
					13/05/2013-12/05/2014
					06/05/2014-05/05/2015
					30/04/2015-29/04/2016
					25/04/2016-24/04/2017
					18/04/2017-17/04/2018
					11/04/2018-10/04/2019

	M2	ZMD402C	94827519	0.2S	17/05/2012-16/05/2013
					13/05/2013-12/05/2014
					06/05/2014-05/05/2015
					30/04/2015-29/04/2016
					25/04/2016-24/04/2017
					18/04/2017-17/04/2018
					11/04/2018-10/04/2019
	M3	ZFD402C	94316768	0.2S	29/01/2012-28/01/2013
					24/01/2013-23/01/2014
					17/01/2014-16/01/2015
					12/01/2015-11/01/2016
					05/01/2016-04/01/2017
					29/12/2016-28/12/2017
					21/12/2017-20/12/2018
	M4	ZFD402C	94316769	0.2S	29/01/2012-28/01/2013
					24/01/2013-23/01/2014
					17/01/2014-16/01/2015
					12/01/2015-11/01/2016
					05/01/2016-04/01/2017
					29/12/2016-28/12/2017
					21/12/2017-20/12/2018
Purpose of the data	Calculation of baseline emissions				
Calculation method	/				

Comments	/																											
Data / Parameter	EG _{import,y,1} , EG _{import,y,3} , EG _{import,y,4}																											
Data unit	MWh																											
Description	Annual electricity imported from the grid.																											
Source of data	Measured by electricity meter																											
Description of measurement methods and procedures to be applied	It is continuously measured by the bi-directional meter and monthly recorded by the project owner.																											
Frequency of monitoring/recording	Continuously measured and monthly recorded																											
Value monitored	1054.665 (M3); 1119.078 (M4); 2339.040 (M1)																											
Monitoring equipment	The information of the electricity meter is in the following table.																											
QA/QC procedures to be applied	The electricity meter is calibrated by qualified entity according to national standards. The main information is shown below:																											
	<table><tr><td>Name</td><td>Type</td><td>Serial No.</td><td>Accuracy</td><td>Calibration Date and valid date</td></tr><tr><td rowspan="7">M1</td><td rowspan="7">ZMD402C</td><td rowspan="7">94827520</td><td rowspan="7">0.2S</td><td>17/05/2012-16/05/2013</td></tr><tr><td>13/05/2013-12/05/2014</td></tr><tr><td>06/05/2014-05/05/2015</td></tr><tr><td>30/04/2015-29/04/2016</td></tr><tr><td>25/04/2016-24/04/2017</td></tr><tr><td>18/04/2017-17/04/2018</td></tr><tr><td>11/04/2018-10/04/2019</td></tr><tr><td rowspan="3">M2</td><td rowspan="3">ZMD402C</td><td rowspan="3">94827519</td><td rowspan="3">0.2S</td><td>17/05/2012-16/05/2013</td></tr><tr><td>13/05/2013-12/05/2014</td></tr><tr><td>06/05/2014-05/05/2015</td></tr></table>					Name	Type	Serial No.	Accuracy	Calibration Date and valid date	M1	ZMD402C	94827520	0.2S	17/05/2012-16/05/2013	13/05/2013-12/05/2014	06/05/2014-05/05/2015	30/04/2015-29/04/2016	25/04/2016-24/04/2017	18/04/2017-17/04/2018	11/04/2018-10/04/2019	M2	ZMD402C	94827519	0.2S	17/05/2012-16/05/2013	13/05/2013-12/05/2014	06/05/2014-05/05/2015
	Name	Type	Serial No.	Accuracy	Calibration Date and valid date																							
	M1	ZMD402C	94827520	0.2S	17/05/2012-16/05/2013																							
					13/05/2013-12/05/2014																							
					06/05/2014-05/05/2015																							
					30/04/2015-29/04/2016																							
					25/04/2016-24/04/2017																							
					18/04/2017-17/04/2018																							
					11/04/2018-10/04/2019																							
	M2	ZMD402C	94827519	0.2S	17/05/2012-16/05/2013																							
13/05/2013-12/05/2014																												
06/05/2014-05/05/2015																												

				30/04/2015-29/04/2016	
				25/04/2016-24/04/2017	
				18/04/2017-17/04/2018	
				11/04/2018-10/04/2019	
	M3	ZFD402C	94316768	0.2S	29/01/2012-28/01/2013
					24/01/2013-23/01/2014
					17/01/2014-16/01/2015
					12/01/2015-11/01/2016
					05/01/2016-04/01/2017
					29/12/2016-28/12/2017
					21/12/2017-20/12/2018
	M4	ZFD402C	94316769	0.2S	29/01/2012-28/01/2013
					24/01/2013-23/01/2014
					17/01/2014-16/01/2015
					12/01/2015-11/01/2016
					05/01/2016-04/01/2017
					29/12/2016-28/12/2017
					21/12/2017-20/12/2018
Purpose of the data	Calculation of baseline emissions				
Calculation method	/				
Comments	/				
Data / Parameter	EG _{backuptline,y}				
Data unit	MWh				

Description	Electricity delivered to the project through the backup line, which will be measured by M5 (single-directional)					
Source of data	Measured by electricity meter					
Description of measurement methods and procedures to be applied	This parameter was continuously measured and monthly recorded.					
Frequency of monitoring/recording	Continuously measured and monthly recorded					
Value monitored	0					
Monitoring equipment	The information of the electricity meter is in the following table.					
QA/QC procedures to be applied	The electricity meter is calibrated by qualified entity according to national standards. The main information is shown below:					
		Type	Serial No.	Accuracy	Calibration Date	Valid date
	M5	DSSD331	20070130030114	0.5S	08/08/2012	07/08/2013
					02/08/2013	01/08/2014
					28/07/2014	27/07/2015
					21/07/2015	20/07/2016
					15/07/2016	14/07/2017
					10/07/2017	09/07/2018
03/07/2018	02/07/2019					
Purpose of the data	Calculation of baseline emissions					
Calculation method	/					
Comments	/					

4.3 Monitoring Plan

1. Monitoring data

The following parameters were measured directly by the onsite meters while the net electricity ($EG_{\text{facility},y}$) supplied to the grid by the project will be calculated from the following parameters.

$EG_{\text{export},y,1}, EG_{\text{export},y,3}, EG_{\text{export},y,4}$ is the electricity exported to the grid;

$EG_{\text{import},y,1}, EG_{\text{import},y,3}, EG_{\text{import},y,4}$ is the electricity imported from the grid;

$EG_{\text{backupline},y}$ the electricity consumed by the project and the third phase project through the backup line.

2. Organization Chart

This monitoring plan was implemented by Hebei Construction Investment Yuzhou Wind Energy Co., Ltd, the project owner, and consultants appointed by the project owner. The monitoring activity involves one project manager, who is responsible for the implementation and monitoring of the monitoring activity.

There are 2 departments organized for data report and quality control. There is 1 manager responsible for data report and quality control department by 1 of each. The manager will take charge of the employment administration, as well as the operation implementation and monitoring; staffs will carry on the concrete assignment based on the guide of their manager. The monitoring system flowchart of this project is shown in following figure 3.

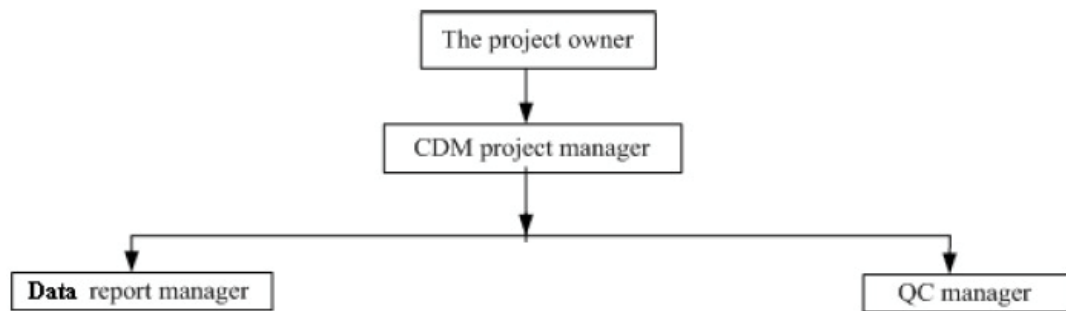


Figure 3. Monitoring structure

3. Metering System

The electricity generated by the project and the third phase project will be transmitted to an on-site 35kV/110kV transformer station that increase the voltage to 110kV, and then be delivered to Laiyuan Substation by main transmission line. The simplified electrical grid connection diagram is shown in the following figure 4:

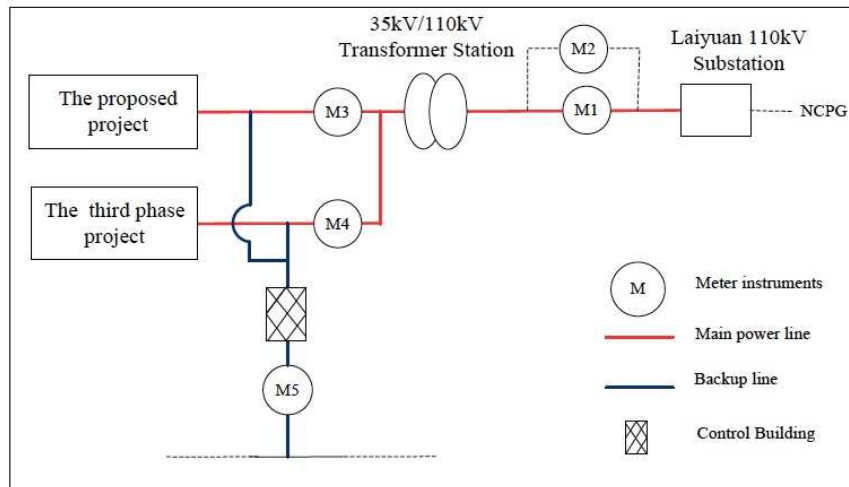


Figure 4. Simplified electrical grid connection diagram

The power line supplying electric power to the grid can also deliver power from the grid to the wind farm. The metering equipment run in two directions and will record two readings, i.e. electricity exported to the grid ($EG_{\text{export}, y}$) and electricity imported from the grid ($EG_{\text{import}, y}$). Net electricity supplied to the grid is calculated as exports minus imports.

The metering system indicated by the meter instruments at M1 in Figure 2 is the main meter, while M2 is the backup meter. M1 is installed at 35kV/110kV transformer higher side. M2 is installed at the same point of M1.

Both of them are operated by the grid company. The grid company and the project owner together will read all the meters monthly and record the readings respectively. Cut-off time of all meters is at 24:00 on last day of each month. After the meter readings of all the meters were correspondingly crosschecked through respective meter reading records saved by the grid and the project owner and both sides confirmed the meter readings, and then the sale receipts have been issued. The readings of the meters on 24:00 of the end of every year are also confirmed in separate sales receipts issued by the grid company.

Separate meters for the two projects (the meter M3 for the project and the meter M4 for the third phase project) exist at the low voltage side of the 35 kV/110 kV transformer on the project site. This means that any transmission and transformer losses and any consumption by the onsite offices are accounted for and are shared between the two projects on the basis of electricity generation. The third phase project was connected to the low voltage side of the shared 35 kV/110 kV transformer.

In case of emergencies and when the wind farm does not produce enough power for auxiliary power use, the project will use the power through the backup line. Power delivered to the projects through a backup power line ($EG_{\text{backup line}, y}$) is metered by instruments at M5.

Net electricity supplied to the grid by the project is calculated on a monthly basis as:

$$EG_{\text{facility},y} = EG_{\text{export},y} - EG_{\text{import},y} - EG_{\text{backupline},y}$$

Where:

$$EG_{\text{export},y} = EG_{\text{export},y,1} \times EG_{\text{export},y,3} / (EG_{\text{export},y,3} + EG_{\text{export},y,4});$$

$$EG_{\text{import},y} = EG_{\text{import},y,1} \times EG_{\text{import},y,3} / (EG_{\text{import},y,3} + EG_{\text{import},y,4});$$

$EG_{\text{export},y,1}$: are the electricity exported to the grid by the project and the third phase project measured by the meter M1;

$EG_{\text{export},y,3}$: are the electricity exported to the grid by the project measured by the meter M3;

$EG_{\text{export},y,4}$: are the electricity exported to the grid by the third phase project measured by the meter M4;

$EG_{\text{import},y,1}$: are the electricity imported from the grid by the project and the third phase project measured by the meter M1;

$EG_{\text{import},y,3}$: are the electricity imported from the grid by the project measured by the meter M3;

$EG_{\text{import},y,4}$: are the electricity imported from the grid by the third phase project measured by the meter M4;

$EG_{\text{backupline},y}$: are the electricity consumed by the project and the third phase project through the backup (10kV) line measured by the meter M5;

4. Quality Assurance and Quality Control Procedure

Particular QC staff will be appointed by the Project Owner to take the overall responsibility of calibrating monitoring equipment, managing and processing the monitored data.

The meter of the Project will be calibrated by qualified entity according to national standard. The accuracy of the metering equipments (M1, M2, M3, and M4) shall not be less than 0.5S and the accuracy of backup line meter (M5) shall not be less than 1.0.

5. Information collection and management

All physical documents including the readings in electronic and manual form of the Meters, billing receipts will be stored by the project owner and kept one copy in order to facilitate the verification of DOE.

The monthly records of power supplied to the grid and received from the grid, relevant accounting documents and billing receipts and the results of calibration shall be collected in a central place by the project owner. All data collected as part of monitoring will be kept at least for 2 years after the end of the last crediting period by the project owner.

6. Procedure of emergency handling

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

a. In case the main meter is damaged only:

By reading the backup meter.

b. In case both the main meter and the backup one are damaged:

The project owner and the grid company will jointly calculate a conservative estimate of power supplied to the grid. A statement will be prepared indicating

- The background to the damage to metering equipment
- The assumptions used to estimate net supply to the grid for the days for which no record could be recorded the estimation of power supplied to the grid. The statement will be signed by both a representative of the project entity as well as a representative of the grid company.
- The project entity will furthermore document all efforts taken to restore normal monitoring procedures.

7. Monitoring Report

The Project owner will annually prepare a monitoring report which will include among others a summary of metering values of power supplied to and received from the grid, copies of sales/billing receipts, a report on calibration and a calculation of emission reductions.

All the data shall be kept until two years after the end of the first crediting period.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

According to ACM0002, the baseline emission during this verification period is calculated as

$$BE_y = EG_{\text{facility},y} \times EF_{\text{grid},CM,y}$$

Where:

BE_y is the baseline emissions (tCO₂e)

$EG_{\text{facility},y}$ is the net electricity supplied to the grid by the project in year y (MWh);

$EF_{grid, CM, y}$ is the CO₂ emission factor of the NCPG, which is fixed in the first crediting period (tCO₂e/MWh)

The yearly electricity volume and baseline emissions are listed in following table 2.

Table 2. Baseline emissions

Period	Electricity exported to the Grid by the project ($EG_{export, y}$) (MWh)	Electricity imported from the grid ($EG_{import, y}$) (MWh)	Electricity delivered to the project through backup line ($EG_{backupline, y}$) (MWh)	Net Electricity supplied by the project plant to Grid in year y ($EG_{facility, y}$) (MWh)	$EF_{grid, CM, y}$ (tCO ₂ /yr)	Baseline Emissions (tCO ₂ e)
01/01/2013-31/12/2013	95581.941	171.116	0	95410.825	0.99174	94,622
01/01/2014-31/12/2014	106088.840	210.974	0	105877.866	0.99174	105,003
01/01/2015-31/12/2015	109195.136	246.984	0	108948.152	0.99174	108,048
01/01/2016-31/12/2016	111798.369	115.885	0	111682.484	0.99174	110,759
01/01/2017-31/12/2017	114,757.285	174.015	0	114583.270	0.99174	113,636
01/01/2018-31/10/2018	104537.320	135.691	0	104401.629	0.99174	103,539
Total in this monitoring period	641,958.891	1054.665	0	640,904.226		635,607

The monthly data are shown in appendix 1.

5.2 Project Emissions

According to the ACM0002, the emission of wind power project activity is zero, i.e. $PE_y=0$.

5.3 Leakage

According to ACM0002, the leakage of wind power project is not needed to be considered.

5.4 Net GHG Emission Reductions and Removals

In according with the registered PD

$$ER_y = BE_y - PE_y$$

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)
01/01/2013-31/12/2013	94,622	0	0	94,622
01/01/2014-31/12/2014	105,003	0	0	105,003
01/01/2015-31/12/2015	108,048	0	0	108,048
01/01/2016-31/12/2016	110,759	0	0	110,759
01/01/2017-31/12/2017	113,636	0	0	113,636
01/01/2018-31/10/2018	103,539	0	0	103,539
Total	635,607	0	0	635,607

The emission reductions in the registered PD are 111,243tCO₂e/yr. This monitoring period is from 01/01/2013 to 31/10/2018(2130days). The ex-ante estimated ER for this monitoring period are $111243/365 \times 2130 = 649,171 \text{tCO}_2$. And the actual ER for this monitoring period is 635,607tCO₂, which is 97.9% of the ex-ante estimation.

APPENDIX: < MONTHLY ELECTRICITY SUPPLY >

period	Electricity exported to the Grid by the project (EGexport,y)(MWh)							Electricity imported from the grid (EGimport,y)(MWh)							Electricity delivered to the project through backup line(EGbackupline,y) (MWh)			Net Electricity supplied by the project plant to Grid in year y (EGfacility,y) (MWh)
	Annual electricity exported to the grid by the project (M3) (MWh)	Annual electricity exported to the grid by the third phase project (M4) (MWh)	Annual electricity exported to the grid by the project and the third phase project M1	Sales receipt (M1) (MWh)	Exported electricity of this project through M1 (MWh)	Calculated export sales receipt for the project (M3)	Conservative value of exported electricity by this project (EGexport,y)	Annual electricity imported from the grid by this project (M3) (MWh)	Annual electricity imported from the grid by the third phase project (M4) (MWh)	Annual electricity imported from the grid by this project and third phase project (M1) (MWh)	Sales receipt (M1) (MWh)	Calculated imported electricity of this project through M1 (MWh)	Calculated sales receipt for the project	Conservative value for imported electricity (M3)(MWh)	Through M5			

	Meter readin gs	Meter readin gs	Meter readin gs					Mete r readi ngs	Mete r readi ngs	Mete r readi ngs						Met er read ings	Dat a on the sal es rec eip t	Conserv ative value for importe d electricit y(MWh)	
	A	B	C	D	E=C*A /(A+B)	F=D*A /(A+B)	G=Min(E,F)	H	I	J	K	L=J*H /(H+I)	M=K* H/(H+I)	N=Max(L, M)	O	P	Q=Max(O,P)	R=G-N- Q	
01/01/ 2013- 31/01/ 2013	13904 .940	6925. 8	20785 .600	20785 .000	13874 .808	13,87 4.408	13,87 4.408	10.9 20	13.0 20	30.8 00	31.0 00	14.04 9	14.14 0	14.140	0	0	0	13,86 0.268	
01/02/ 2013- 28/02/ 2013	9680. 580	4776. 24	14276 .240	14276 .000	9559. 660	9,559. 499	9,559. 499	9.24 0	12.1 80	28.1 60	29.0 00	12.14 7	12.51 0	12.510	0	0	0	9,546. 989	
01/03/ 2013- 31/03/ 2013	9636. 060	4557	14021 .920	14021 .000	9519. 868	9,519. 244	9,519. 244	5.88 0	7.56 0	21.1 20	22.0 00	9.240	9.625	9.625	0	0	0	9,509. 619	
01/04/ 2013- 30/04/ 2013	10058 .580	4598. 58	14575 .440	14575 .000	10002 .499	10,00 2.197	10,00 2.197	3.78 0	7.98 0	16.7 20	17.0 00	5.374	5.464	5.464	0	0	0	9,996. 733	
01/05/ 2013- 31/05/ 2013	7129. 080	3034. 5	10105 .920	10105 .000	7088. 635	7,087. 990	7,087. 990	7.98 0	8.82 0	19.3 60	20.0 00	9.196	9.500	9.500	0	0	0	7,078. 490	
01/06/ 2013- 30/06/ 2013	5674. 200	2803. 08	8459. 440	8459. 000	5662. 259	5,661. 964	5,661. 964	10.5 00	11.7 60	25.5 20	26.0 00	12.03 8	12.26 4	12.264	0	0	0	5,649. 700	
01/07/ 2013- 31/07/ 2013	4166. 400	1692. 18	5770. 160	5770. 000	4103. 519	4,103. 405	4,103. 405	24.7 80	27.7 20	57.2 00	58.0 00	26.99 8	27.37 6	27.376	0	0	0	4,076. 029	
01/08/ 2013- 31/08/ 2013	2860. 200	949.2	3632. 640	3632. 000	2727. 484	2,727. 003	2,727. 003	21.8 40	25.2 00	51.0 40	52.0 00	23.69 7	24.14 3	24.143	0	0	0	2,702. 860	
01/09/ 2013- 30/09/ 2013	3977. 820	1443. 12	5359. 200	5359. 000	3932. 516	3,932. 369	3,932. 369	16.3 80	17.2 20	38.7 20	39.0 00	18.87 6	19.01 3	19.013	0	0	0	3,913. 356	
01/10/ 2013-	5504. 100	2302. 02	7659. 520	7659. 000	5400. 732	5,400. 366	5,400. 366	10.9 20	15.1 20	32.5 60	33.0 00	13.65 4	13.83 9	13.839	0	0	0	5,386. 527	

31/10/ 2013																		
01/11/ 2013- 30/11/ 2013	8980. 860	4041. 66	12978 .240	12978 .000	8950. 323	8,950. 157	8,950. 157	2.94 0	7.14 0	14.0 80	15.0 00	4.107	4.375	4.375	0	0	0	8,945. 782
01/12/ 2013- 31/12/ 2013	14875 .140	6923. 7	21635 .680	21635 .000	14763 .803	14,76 3.339	14,76 3.339	18.0 60	23.1 00	42.2 40	43.0 00	18.53 4	18.86 7	18.867	0	0	0	14,74 4.472
Total in 2013	96447 .960	44047 .08	13926 0.000	13925 4.000	95586 .106	95581 .941	95581 .941	143. 220	176. 440	377. 520	385. 000	167.9 10	171.1 16	171.116	0	0	0	95410 .825
01/01/ 2014- 31/01/ 2014	11760 .000	5396. 16	17139 .760	17139 .000	11748 .758	11,74 8.237	11,74 8.237	4.20 0	6.30 0	17.6 00	18.0 00	7.040	7.200	7.200	0	0	0	11,74 1.037
01/02/ 2014- 28/02/ 2014	9124. 920	4537. 68	13614 .480	13614 .000	9092. 782	9,092. 461	9,092. 461	46.2 00	51.2 40	100. 320	101. 000	47.56 6	47.88 8	47.888	0	0	0	9,044. 573
01/03/ 2014- 31/03/ 2014	11202 .240	5238. 24	16417 .280	16417 .000	11186 .432	11,18 6.241	11,18 6.241	5.88 0	6.72 0	19.3 60	20.0 00	9.035	9.333	9.333	0	0	0	11,17 6.908
01/04/ 2014- 30/04/ 2014	6983. 760	3382. 68	10206 .240	10206 .000	6875. 835	6,875. 673	6,875. 673	19.3 20	22.2 60	44.0 00	44.0 00	20.44 4	20.44 4	20.444	0	0	0	6,855. 229
01/05/ 2014- 31/05/ 2014	9959. 460	4641. 84	14549 .040	14549 .000	9923. 814	9,923. 786	9,923. 786	1.68 0	4.62 0	14.0 80	15.0 00	3.755	4.000	4.000	0	0	0	9,919. 786
01/06/ 2014- 30/06/ 2014	5003. 880	2234. 82	7177. 280	7177. 000	4961. 422	4,961. 229	4,961. 229	21.0 00	23.9 40	51.9 20	52.0 00	24.26 2	24.29 9	24.299	0	0	0	4,936. 930
01/07/ 2014- 31/07/ 2014	4124. 820	1924. 44	5877. 520	5877. 000	4007. 715	4,007. 361	4,007. 361	10.9 20	13.0 20	24.6 40	25.0 00	11.23 9	11.40 4	11.404	0	0	0	3,995. 957
01/08/ 2014- 31/08/ 2014	3497. 760	1233. 96	4555. 760	4555. 000	3367. 688	3,367. 126	3,367. 126	26.8 80	27.7 20	62.4 80	63.0 00	30.75 9	31.01 5	31.015	0	0	0	3,336. 111
01/09/ 2014- 30/09/ 2014	6842. 640	3376. 38	10205 .360	10205 .000	6833. 493	6,833. 252	6,833. 252	17.2 20	18.0 60	39.6 00	40.0 00	19.32 9	19.52 4	19.524	0	0	0	6,813. 728
01/10/ 2014-	8895. 180	4076. 52	12874 .400	12874 .000	8828. 458	8,828. 183	8,828. 183	15.1 20	15.9 60	32.5 60	33.0 00	15.84 0	16.05 4	16.054	0	0	0	8,812. 129

31/10/ 2014																		
01/11/ 2014- 30/11/ 2014	12231 .240	5778. 78	17833 .200	17833 .000	12111 .155	12,11 1.019	12,11 1.019	8.82 0	13.8 60	25.5 20	26.0 00	9.924	10.11 1	10.111	0	0	0	12,10 0.908
01/12/ 2014- 31/12/ 2014	17261 .160	8205. 54	25309 .680	25309 .000	17154 .733	17,15 4.272	17,15 4.272	7.98 0	11.7 60	23.7 60	24.0 00	9.605	9.702	9.702	0	0	0	17,14 4.570
Total in 2014	10688 7.060	50027 .04	15576 0.000	15575 5.000	10609 2.285	10608 8.840	10608 8.840	185. 220	215. 46	455. 840	461. 000	208.7 98	210.9 74	210.974	0	0	0	10587 7.866
01/01/ 2015- 31/01/ 2015	15442 .560	7496. 16	22782 .320	22782 .000	15337 .270	15,33 7.055	15,33 7.055	7.14 0	10.5 00	17.6 00	18.0 00	7.124	7.286	7.286	0	0	0	15,32 9.769
01/02/ 2015- 28/02/ 2015	13317 .360	6605. 76	19727 .840	19727 .000	13186 .828	13,18 6.266	13,18 6.266	12.1 80	15.9 60	35.2 00	36.0 00	15.23 6	15.58 2	15.582	0	0	0	13,17 0.684
01/03/ 2015- 31/03/ 2015	14301 .000	6997. 62	21206 .240	21206 .000	14238 .971	14,23 8.810	14,23 8.810	7.98 0	11.7 60	22.8 80	23.0 00	9.249	9.298	9.298	0	0	0	14,22 9.512
01/04/ 2015- 30/04/ 2015	9255. 120	4270. 56	13327 .600	13327 .000	9119. 581	9,119. 171	9,119. 171	12.1 80	15.1 20	30.8 00	31.0 00	13.74 2	13.83 1	13.831	0	0	0	9,105. 340
01/05/ 2015- 31/05/ 2015	10796 .940	4872. 42	15604 .160	15604 .000	10752 .014	10,75 1.904	10,75 1.904	8.40 0	12.1 80	20.2 40	21.0 00	8.261	8.571	8.571	0	0	0	10,74 3.333
01/06/ 2015- 30/06/ 2015	6196. 680	2701. 44	8768. 320	8768. 000	6106. 287	6,106. 064	6,106. 064	8.82 0	9.66 0	24.6 40	25.0 00	11.76 0	11.93 2	11.932	0	0	0	6,094. 132
01/07/ 2015- 31/07/ 2015	3572. 100	1333. 92	4729. 120	4729. 000	3443. 298	3,443. 211	3,443. 211	22.6 80	26.8 80	54.5 60	55.0 00	24.96 8	25.16 9	25.169	0	0	0	3,418. 042
01/08/ 2015- 31/08/ 2015	3179. 820	1039. 92	4050. 640	4050. 000	3052. 393	3,051. 911	3,051. 911	39.4 80	44.5 20	87.1 20	88.0 00	40.94 6	41.36 0	41.360	0	0	0	3,010. 551
01/09/ 2015- 30/09/ 2015	5710. 320	2735. 46	8254. 400	8254. 000	5580. 925	5,580. 655	5,580. 655	20.1 60	25.2 00	52.8 00	53.0 00	23.46 7	23.55 6	23.556	0	0	0	5,557. 099
01/10/ 2015-	8074. 500	3895. 08	11821 .920	11821 .000	7974. 891	7,974. 270	7,974. 270	7.98 0	11.7 60	22.0 00	22.0 00	8.894	8.894	8.894	0	0	0	7,965. 376

31/10/2015																		
01/11/2015-30/11/2015	9704.940	4381.44	14047.440	14047.000	9678.112	9,677.809	9,677.809	43.260	44.940	95.920	96.000	47.046	47.086	47.086	0	0	0	9,630.723
01/12/2015-31/12/2015	10768.380	4873.26	15583.920	15583.000	10728.643	10,728.010	10,728.010	33.600	38.640	73.040	74.000	33.972	34.419	34.419	0	0	0	10,693.591
Total in 2015	110319.720	51203.04	159903.920	159898.000	109199.213	109195.136	109195.136	223.860	267.891	536.800	542.000	244.665	246.984	246.984	0	0	0	108948.152
01/01/2016-31/01/2016	15999.060	7957.32	23773.200	23773.000	15876.725	15,876.591	15,876.591	1.680	2.940	7.040	8.000	2.560	2.909	2.909	0	0	0	15,873.682
01/02/2016-28/02/2016	14497.140	7001.4	21465.840	21465.000	14475.089	14,474.523	14,474.523	5.880	7.560	17.600	18.000	7.700	7.875	7.875	0	0	0	14,466.648
01/03/2016-31/03/2016	12072.060	5845.98	17778.640	17778.000	11978.141	11,977.710	11,977.710	5.880	6.720	20.240	21.000	9.445	9.800	9.800	0	0	0	11,967.910
01/04/2016-30/04/2016	9721.740	4324.74	13959.440	13959.000	9661.499	9,661.194	9,661.194	5.880	6.720	16.720	17.000	7.803	7.933	7.933	0	0	0	9,653.261
01/05/2016-31/05/2016	8866.200	4278.12	13008.160	13008.000	8774.356	8,774.248	8,774.248	5.880	8.820	21.120	22.000	8.448	8.800	8.800	0	0	0	8,765.448
01/06/2016-30/06/2016	4573.800	1932	6444.240	6444.000	4530.521	4,530.352	4,530.352	18.480	23.520	49.280	50.000	21.683	22.000	22.000	0	0	0	4,508.352
01/07/2016-31/07/2016	3853.500	1466.64	5133.040	5133.000	3717.979	3,717.950	3,717.950	5.880	7.560	14.080	15.000	6.160	6.563	6.563	0	0	0	3,711.387
01/08/2016-31/08/2016	2939.580	1357.02	4184.400	4184.000	2862.817	2,862.543	2,862.543	5.880	9.660	14.960	15.000	5.661	5.676	5.676	0	0	0	2,856.867
01/09/2016-30/09/2016	4454.100	1897.14	6283.200	6283.000	4406.384	4,406.244	4,406.244	5.880	10.920	22.000	22.000	7.700	7.700	7.700	0	0	0	4,398.544
01/10/2016-	8505.000	3799.32	12114.960	12114.000	8374.110	8,373.447	8,373.447	9.660	13.860	23.760	24.000	9.759	9.857	9.857	0	0	0	8,363.590

31/10/2016																		
01/11/2016-30/11/2016	14453.040	6764.52	21149.920	21149.000	14406.965	14,406.338	14,406.338	10.080	13.860	29.040	30.000	12.227	12.632	12.632	0	0	0	14,393.706
01/12/2016-31/12/2016	12751.620	6086.64	18817.920	18817.000	12737.852	12,737.229	12,737.229	10.920	13.020	30.800	31.000	14.049	14.140	14.140	0	0	0	12,723.089
Total in 2016	112686.840	52710.84	164112.960	164107.000	111802.438	11,1798.369	11,1798.369	91.980	125.16	266.640	273.000	113.195	115.885	115.885	0	0	0	11,1682.484
01/01/2017-31/01/2017	15180.900	7291.2	22309.760	22309.000	15071.232	15,070.719	15,070.719	13.440	17.640	38.720	39.000	16.744	16.865	16.865	0	0	0	15,053.854
01/02/2017-28/02/2017	13780.200	6714.96	20479.360	20479.000	13769.577	13,769.335	13,769.335	10.500	11.760	29.040	30.000	13.698	14.151	14.151	0	0	0	13,755.184
01/03/2017-31/03/2017	8104.320	3574.2	11626.560	11626.000	8068.262	8,067.874	8,067.874	15.960	18.900	39.600	40.000	18.130	18.313	18.313	0	0	0	8,049.561
01/04/2017-30/04/2017	11591.160	5760.3	17203.120	17203.000	11492.066	11,491.985	11,491.985	5.040	7.980	14.080	15.000	5.450	5.806	5.806	0	0	0	11,486.179
01/05/2017-31/05/2017	8886.780	3934.56	12628.000	12628.000	8752.771	8,752.771	8,752.771	5.040	9.660	22.880	23.000	7.845	7.886	7.886	0	0	0	8,744.885
01/06/2017-30/06/2017	4218.480	1752.24	5787.760	5787.000	4089.214	4,088.677	4,088.677	16.800	18.900	44.000	44.000	20.706	20.706	20.706	0	0	0	4,067.971
01/07/2017-31/07/2017	4283.160	2101.68	6312.240	6312.000	4234.458	4,234.297	4,234.297	29.400	30.660	60.720	61.000	29.723	29.860	29.860	0	0	0	4,204.437
01/08/2017-31/08/2017	5205.060	2489.34	7614.640	7614.000	5151.104	5,150.672	5,150.672	22.680	27.720	52.800	53.000	23.760	23.850	23.850	0	0	0	5,126.822
01/09/2017-30/09/2017	6226.500	3087.42	9286.640	9286.000	6208.263	6,207.835	6,207.835	3.780	7.140	14.080	15.000	4.874	5.192	5.192	0	0	0	6,202.643
01/10/2017-	6077.400	2847.6	8858.960	8858.000	6032.431	6,031.777	6,031.777	21.000	25.200	51.920	52.000	23.600	23.636	23.636	0	0	0	6,008.141

31/10/ 2017																		
01/11/ 2017- 30/11/ 2017	14865 .900	7158. 06	21884 .720	21884 .000	14771 .915	14,77 1.429	14,77 1.429	1.26 0	6.30 0	8.80 0	9.00 0	1.467	1.500	1.500	0	0	0	14,76 9.929
01/12/ 2017- 31/12/ 2017	17194 .800	8540. 28	25623 .840	25623 .000	17120 .475	17,11 9.914	17,11 9.914	4.20 0	9.24 0	19.3 60	20.0 00	6.050	6.250	6.250	0	0	0	17,11 3.664
Total in 2017	11561 4.660	55251 .84	16961 5.600	16960 9.000	11476 1.768	11475 7.285	114,7 57.28 5	149. 100	191. 1	396. 000	401. 000	172.0 47	174.0 15	174.015	0	0	0	11458 3.270
01/01/ 2018- 31/01/ 2018	14027 .580	6640. 62	20577 .920	20577 .000	13966 .307	13,96 5.682	13,96 5.682	8.40 0	9.24 0	19.3 60	20.0 00	9.219	9.524	9.524	0	0	0	13,95 6.158
01/02/ 2018- 28/02/ 2018	16235 .100	7953. 54	24166 .560	24166 .000	16220 .280	16,21 9.904	16,21 9.904	1.68 0	4.62 0	7.92 0	8.00 0	2.112	2.133	2.133	0	0	0	16,21 7.771
01/03/ 2018- 31/03/ 2018	11069 .520	5068. 56	16085 .520	16085 .000	11033 .468	11,03 3.111	11,03 3.111	4.20 0	7.14 0	16.7 20	17.0 00	6.193	6.296	6.296	0	0	0	11,02 6.815
01/04/ 2018- 30/04/ 2018	9084. 180	4461. 24	13523 .840	13523 .000	9069. 707	9,069. 144	9,069. 144	9.24 0	14.2 80	30.8 00	31.0 00	12.10 0	12.17 9	12.179	0	0	0	9,056. 965
01/05/ 2018- 31/05/ 2018	7873. 740	3639. 72	11422 .400	11422 .000	7811. 467	7,811. 193	7,811. 193	7.14 0	12.1 80	27.2 80	28.0 00	10.08 2	10.34 8	10.348	0	0	0	7,800. 845
01/06/ 2018- 30/06/ 2018	3460. 380	1304. 1	4603. 280	4603. 000	3343. 303	3,343. 099	3,343. 099	7.14 0	10.9 20	21.1 20	22.0 00	8.350	8.698	8.698	0	0	0	3,334. 401
01/07/ 2018- 16/07/ 2018	3724. 140	1776. 18	5373. 280	5373. 000	3638. 124	3,637. 935	3,637. 935	19.7 40	24.7 80	48.4 00	49.0 00	21.46 0	21.72 6	21.726	0	0	0	3,616. 209
01/08/ 2018- 31/08/ 2018	7828. 380	3315. 06	11132 .880	11132 .000	7820. 961	7,820. 343	7,820. 343	31.9 20	34.8 60	74.8 00	75.0 00	35.75 3	35.84 9	35.849	0	0	0	7,784. 494
01/09/ 2018- 30/09/ 2018	14341 .740	7518. 84	21812 .560	21812 .000	14310 .236	14,30 9.869	14,30 9.869	14.7 00	15.5 40	36.9 60	37.0 00	17.96 7	17.98 6	17.986	0	0	0	14,29 1.883

01/10/ 2018- 31/10/ 2018	17342 .640	8248. 38	25568 .400	25568 .000	17327 .311	17,32 7.040	17,32 7.040	8.40 0	9.24 0	22.8 80	23.0 00	10.89 5	10.95 2	10.952	0	0	0	17,31 6.088
Total in 2018	10498 7.400	49926 .24	15426 6.640	15426 1.000	10454 1.164	10453 7.320	10453 7.320	112. 560	142. 800	306. 240	310. 000	134.1 31	135.6 91	135.691	0	0	0	10440 1.629
Total	64694 3.640	303,1 66.08 0	942,9 19.12 0	942,8 84.00 0	641,9 82.97 4	641,9 58.89 1	641,9 58.89 1	905. 940	1119 .078	2339 .040	2372 .000	1040. 746	1054. 665	1054.665	-		0.000	640,9 04.22 6