



Verified Carbon Standard

GUAZHOU BEIDAQIAO NO.1 WIND FARM PROJECT IN GANSU PROVINCE, CHINA

Document Prepared by Beijing MD Energy Technology Co., Ltd.

Project Title	Guazhou Beidaqiao No.1 Wind Farm Project in Gansu Province, China
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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The Guazhou Beidaqiao No.1 Wind Farm Project in Gansu Province, China (hereafter refers to “the project”), a wind power project, is located in Guazhou County, Jiuquan City, Gansu Province, China. The total installed capacity of the project activity is 201MW (67 sets of SL1500 wind turbine units and 67 sets of GW1500 wind turbine units). Dependent on the reliability of the local wind resource, the project is expected to supply 461,464 MWh of electricity annually. The electricity generated by the project activity is supplied to Northwest China Power Grid (“NWPG”) through Gansu Grid, displacing part of electricity generated by NWPG which is dominated by thermal power plants, and thus greenhouse gas (GHG) emission reductions could be achieved.

As a renewable energy project, the project activity produces positive environmental and economic benefits and contributes to the local sustainable development. The implementation of the project achieves CO₂ emission reduction by replacing electricity generated by fossil fuel fired power plants. During the second VCS crediting period, the estimated annual GHG emission reductions are 359,630 tCO₂e. The implementation of the project activity was:

Date	Key Events
28/10/2009	Construction start date
29/09/2011	Registered as a CDM project
03/01/2011	Operation start date
03/01/2011 to 28/09/2011	1 st VCS monitoring period
29/09/2011 to 28/06/2012	1 st CDM monitoring period
29/06/2012 to 31/12/2017	2 nd VCS monitoring period
01/01/2018 to 02/01/2021	3 rd VCS monitoring period
03/01/2021 to 31/08/2022	4 th VCS monitoring period (This monitoring period)

During this monitoring period, the Quantity of net electricity generation supplied by the project plant/unit to the grid in year y by the project is 581,204.171 MWh, and the emission reduction achieved is 452,938 tCO₂.

1.2 Sectoral Scope and Project Type

Sectoral Scope 1: Energy industries (renewable - / nonrenewable sources);

Project type: wind power generation project;

The project is not a grouped project.

1.3 Project Proponent

Organization name	Hydrochina Guazhou Wind Power Co., Ltd.
Contact person	Kong Weidou
Title	Project Manager
Address	7th Floor, Building A, NORTH STAR CENTURY CENTER, Beichen West Road 8#, Chaoyang District, Beijing
Telephone	+86 010-86301832
Email	kongweidou@hydrochina.com.cn

1.4 Other Entities Involved in the Project

Organization name	Beijing MD Energy Technology Co., Ltd.
Role in the Project	Consultancy
Contact person	Will Yang
Title	Project Manager
Address	Room 11-F, Beijing City Plaza, No.4 Office Building, Chaoyang District, Beijing, China
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1.5 Project Start Date

The project started on 03/01/2011 (operation start date).

1.6 Project Crediting Period

As per renewed VCS PD, the total VCS crediting period is from 03/01/2011 to 02/01/2032 (21 years). The first VCS crediting period is from 03/01/2011 to 02/01/2021 and the second VCS crediting period is from 03/01/2021 to 02/01/2031 (10 years, renewable).

This monitoring period belongs to the second VCS crediting period.

1.7 Project Location

The project is located in Guazhou County, Jiuquan City, Gansu Province, China, about 18km northwest away from Guazhou County. The geographical coordinates of the project is the North Latitude of +40.6025° and the East Longitude of +95.8037°.

1.8 Title and Reference of Methodology

Methodology:

ACM0002 “Grid-connected electricity generation from renewable sources” (version 20.0)

Reference:

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

Tools:

- Tool to calculate the emission factor for an electricity system (version 07.0)

- Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation (version 03.0)

Reference:

<https://cdm.unfccc.int/Reference/tools/index.html>

1.9 Participation under other GHG Programs

The project was registered as a Clean Development Mechanism (CDM) project (reference number: 4254) in UNFCCC with 3*7 years renewable crediting period started from 29/09/2011. 197,617tCO₂e has been issued under CDM scheme. Please refer to the following link for details:

<https://cdm.unfccc.int/Projects/DB/ERM-CVS1292512044.7/view>

Except CDM and VCS scheme, the project activity does not participated under other GHG programs.

1.10 Other Forms of Credit

The project is a registered CDM project with reference No. 4254. GHG emission reductions from 29/09/2011 to 28/06/2012 by the project has been issued as CERs under CDM program, the detailed information can be found at <https://cdm.unfccc.int/Projects/DB/ERM-CVS1292512044.7/view>.

All emission reductions during 03/01/2021 to 31/08/2022 have not and will not seek CDM CER issuance. Emission reductions during this monitoring period will only seek issuance under VCS program. 309,444 tCO₂e generated from 03/01/2011 to 28/09/2011, 1,368,760 tCO₂e

generated from 29/06/2012 to 31/12/2017, and 452,938 tCO₂e generated from 01/01/2018 to 02/01/2021 has been issued as VCU under VCS program.

The project proponent is not part of any emission trading program. The net GHG emission reductions from the project will not be used for compliance with emission trading programs or to meet binding limits on GHG emissions. The project activity has not participated in any other GHG programs.

China has a national emissions trading scheme only cover the high-emission industries, such as thermal power generation, petrochemical, chemical, building materials, iron and steel, non-ferrous, paper, aviation and other key emission industries that emitted at least 26,000 tons of CO₂e/year¹. And the project activity is not included the mandatory emission control scheme and there is no emission cap enforced for the project owner according to the enforced company list² in public information. Hence, it is confirmed that the emission reductions will not be double counted.

1.11 Sustainable Development

The contributions of this project to the sustainable development of the host country and project site are summarized as follows:

Because the wind power plants of the project will generate electricity without GHG emission, the project can help the local areas reduce GHG emissions by replacing some part of the electricity from coal-fired power plants. And the project also helps decrease the local environmental pollution caused by coal burning, which has remarkable environmental benefits. The project has achieved a GHG emission reduction of 452,938 tCO₂e during this monitoring period. Thus, the project achieved SDG 13 Climate Action³.

During this monitoring period, 581,204.171 MWh of electricity from renewable sources has been exported to the power grid. And the project makes good use of the local water resource to solve the difficulties of lack of power and unstable voltage, which help improve local life quality. Thus, the project achieved SDG 7 Affordable and Clean Energy⁴.

During the construction, operation, and maintenance of this project, the project, directly and indirectly, generates more job opportunities, which helps improve local employment and reduce local poverty. Thus, the project achieved SDG 8 Decent Work and Economic Growth⁵.

Refer to table 1 for detail. The evidence of the project's SD contributions have been provided in the Appendix of this report.

1 http://www.mee.gov.cn/xxgk2018/xxgk/xxgk05/202103/t20210330_826728.html

2 <http://mee.gov.cn/xxgk2018/xxgk/xxgk03/202012/W020201230736907682380.pdf>

3 <https://sdgs.un.org/goals/goal13>

4 <https://sdgs.un.org/goals/goal7>

5 <https://sdgs.un.org/goals/goal8>

Table 1: Sustainable Development Contributions

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
1)	7.2	Renewable energy share in the total final energy consumption	Implemented activities increase to	During this monitoring period, 581,204.171 MWh of electricity from renewable sources has been exported to the power grid.	The SDG 7 contributions over project lifetime (since project start date, i.e. 03/01/2011) is 3,557,948.75MWh of electricity from renewable sources has been exported to the power grid.
2)	8.5	The number of long-term jobs provided by the implementation of the project	Implemented activities increase to	During this monitoring period, 27 people including 3 females were employed for operation, and maintenance of this project.	The project activity generates temporary working opportunities during the construction period. From the operation start date of this project activity to the end of this monitoring period, 27 people were employed including 3 females.
3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities increase to	During this monitoring period, the project has achieved GHG emission reductions of 452,938 tCO ₂ e.	The SDG 13 contributions over project lifetime (since project start date, i.e. 03/01/2011) is 3,125,353 tCO ₂ e of GHG emission reductions.

2 SAFEGUARDS

2.1 No Net Harm

Environmental Impact

The Environmental Impact Assessment (EIA) of the project was completed by Resource and Environment & Quality Evaluation Research Center of Lanzhou University and approved by Gansu Environmental Protection Administration. The summary of this evaluation is as following:

1. Noise

The noises will be produced by the constructing equipments and transporting vehicle during construction period. The construction will be arranged by daylight mostly, and there is no residential area and industrial and mining enterprises a few kilometres around the project site, so the constructing noise will not interrupt the residents and the noise will disappear when the project finishes construction. The measurements as arranging the transport time reasonably, limited the speed and no tooting of the vehicles in some environmental sensitive area will be carried out to reduce the noise impact of the transporting vehicle. The low-noise wind turbines will be employed to reduce the noise impact during operation period.

2. Air Pollution

The Powder and dust produced in the constructing process are the main factor for the air pollution during construction period. Sprinkling, covering the raw material and so on will be carried out to reduce the impact to lowest. The tail gas of transporting vehicles and constructing equipments will impact on part environment, but the impact will be over when the project finishes construction.

3. Wastewater

The wastewater during construction period involves equipment washing wastewater and domestic sewage. The evaporation tank will be built to treat the wastewater. When the project finishes construction, the evaporation tank will be buried. In the operation period, the domestic sewage will be drained into the water storage pit after treatment. Then it will be used for factory virescence. Therefore, there is no impact on the water environment.

4. Solid waste

The solid wastes include living garbage and construction garbage during construction period. The solid waste will be transported to the Guazhou County landfill. The smeary solid wastes will be set on fire or collected to treat. When the project finishes construction, the solid waste will be cleaned in time. The oilskin will be collected and sent to the hazardous waste treatment and disposal company during the operation period, so it will not impact on the environment.

5. Ecological environment

The impact on the ecological environment is mainly happened during construction period. The excavation, transport and the storage of equipments and materials will lead to the destruction of vegetation and changes of earth's surface structure. The construction area will be strictly arranged and will carry out the environment protecting and recovery measurements.

The project site is in the Gobi desert which is not the birds migrating channel, so there is no harm for the birds.

6. Conclusion

After the above measurements performed, the negative impacts on environment will be minimized below the requirements of laws and regulations during the construction and operation periods. Furthermore, as renewable power project, the project can reduce the consumption of fossil fuel sources and GHG emission. Besides, the project will become the special scenery in the Gobi desert and will improve the development of the local tourism.

According to EIA, no significant environmental impacts are discovered by the project participants or the host party. Gansu Environmental Protection Administration has approved the EIA in 06/08/2008.

Socio-economic impact

Furthermore, the project is renewable project and achieves the SDG 7 and SDG 13. Also, the project provides 27 long-term job opportunities for local, which has a positive effect on the local economy and contributes to SDG 8. Please refer to section 1.11 of this report for details.

In conclusion, no net harm on local environment and social community has been detected for the project.

2.2 Local Stakeholder Consultation

Local Stakeholder Consultation during the project preparation stage:

To ensure the sustainability of the project which is one of the key requirements of CDM project, the project owner has carried out a stakeholder investigation around the project site in April 2009. The stakeholder investigating summary is shown as below:

In 28/04/2009, a public stakeholder consultation was held by the developer. the project and the CDM procedures were introduced in detail to the publics on the meeting, and 45 questionnaires were distributed and 43 of the distributed questionnaires had been returned. The meeting participants includes: residents in the neighbouring area, governmental officials, staff from the project owner company, and other related persons.

The questions in the questionnaires including:

- What do you think is there any air pollution/water pollution /noise/electromagnetic interference? If any, what's the extent?
- What do you think the influence on the conditions of the local ecosystem?
- What do you think the influence on your life and income?
- What do you think the influence on local employment?
- What do you think the influence on local power distribution?
- What do you think the influence on the local economic development?
- From the perspective of environmental protection and residents' interest, do you have any suggestions about the project construction and operation?

50 questionnaires had been delivered and 50 of them had been collected, 90% support the construction of the project; other 5% shows that they are indifferent to the construction of the project. Over 95% think the positive influences will be brought to the local economic/social/cultural development.

The residents and local government are all very supportive to the project. No negative comments have been received on the project. The result of the stakeholder investigation with answers to the mainly cared issues was put up in the neighbouring area lasted for one month, and no objection or any more comments have been received.

Local Stakeholder Consultation during the project implementation stage:

To keep on-going communications with local stakeholders, the project owner public its telephone through bulletin and oral notice to local people. Anyone who have comments on the project could phone the project owner directly. Besides, the project owner also put a grievance book in the office of wind plant and some villages. People can leave their grievance or suggestions on the book.

Meanwhile, the local authority has also conducted spot checks on the implementation of the project from time to time as per the request from the local governments' regulations. 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

NA.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project installed and operated four sets 134 wind turbine-generators, each with a capacity of 1,500 kW, forming a total capacity of 201 MW. The 67 sets of wind turbines model SL1500/77 are manufactured by Sinovel Wind Technology Co., Ltd, and the other 67 sets of wind turbines model GW77/1500 are manufactured by Xinjiang Goldwind Technology Co., Ltd. The technology is introduced from Germany and produced under license. Therefore, the establishment and operation of the project activity will promote technology transfer and utilization in China. The technology is considered good practice in China.

The details of the equipment can be referred to Table 1 below.

Table 1. Summary of key equipment in the project

Parameter of Turbines	Unit	Value	
		SL1500/77	GW77/1500
Type	/	SL1500/77	GW77/1500
Quantity of Turbine	/	67	67
Rated Power	kW	1500	1500
Cut-in Wind Speed	m/s	3.0	3.0
Cut-out Wind Speed	m/s	20.0	22.0
Rated Wind Speed	m/s	11.0	11.5
Rated Voltage	V	690	690

The project adopts turbine-transformer units to boost voltage from 690V to 35 kV. All the turbine-transformers are linked with the 35 kV suspension lines and are connected to West Beidaqiao Substation, which boosts the voltage from 35kV to 330 kV. The electricity will then be boosted to 750kV through Anxi Substation and be transmitted to NWPG through the 750kV transmission line. In this monitoring period, the project was running orderly without any overhauling and downtimes of equipment. No special events occurred during the monitoring period which may impact the applicability of the methodology.

3.2 Deviations

3.2.1 Methodology Deviations

There is a deviation on calculation of Build Margin when adopting the methodological tool - "Tool to calculate the emission factor for an electricity system" by the Chinese DNA in the

“2019 Baseline Emission Factors for Regional Power Grids in China”. The deviation has been approved by the EB Board in a response letter entitled “Request for clarification on use of approved methodology AM0005 for several projects in China”⁶, thus the same deviation method has been adopted in the second crediting periods of the project by the Chinese DNA.

3.2.2 Project Description Deviations

The project is registered under VCS version 3 and completed validation before 19/03/2020, thus it remains eligible to apply the crediting period requirements under VCS version 3, the first crediting period of the project is updated from 03/01/2011 - 28/09/2011 to 03/01/2011 - 02/01/2021 and thus the second crediting period is from 03/01/2021 to 02/01/2031.

The deviation for the crediting period is applicable to this monitoring period (03/01/2021 to 31/08/2022) and it has no impacts on the applicability, additionality or baseline of the project.

Furthermore, as per revised CDM PDD, the accuracy of the meter M_{21} is changed from 0.5 to 1.0, which has been approved by CDM EB on 15/01/2013. The net electricity will be determined by the following formula:

$$EG_{\text{facility},y} = EG_{\text{export},y} - EG_{\text{import1},y} - EG_{\text{import2},y} \times (1+0.5\%)$$

Except these, there are no other project description deviations occurred in this monitoring period or a previous monitoring period.

3.3 Grouped Projects

NA.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{\text{grid,OM simple},y}$
Data unit	tCO ₂ /MWh
Description	Simple operating margin CO ₂ emission factor in year y
Source of data	“2019 Baseline Emission Factors for Regional Power Grids in China” issued by China DNA ⁷

⁶ http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_QEJWJEF3CFBP1OZAK6V5YXPQKK7WYJ

⁷ <http://www.mee.gov.cn/ywgz/ydqhbh/wsqtz/202012/W020201229610353816665.pdf>

Value applied	0.8922
Justification of choice of data or description of measurement methods and procedures applied	Official public data from Chia DNA
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO ₂ /MWh
Description	Build margin CO ₂ emission factor in year y
Source of data	“2019 Baseline Emission Factors for Regional Power Grids in China” issued by China DNA ⁸
Value applied	0.4407
Justification of choice of data or description of measurement methods and procedures applied	Official public data from MEE
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	W _{OM}
Data unit	%
Description	Weighting of operating margin emissions factor
Source of data	“Tool to calculate the emission factor for an electricity system” (Version 07.0)
Value applied	75
Justification of choice of data or description of measurement methods and procedures applied	Based on the requirements of “Tool to calculate the emission factor for an electricity system” (Version 07.0)

⁸ <http://www.mee.gov.cn/ywgz/ydqhbh/wsqtz/202012/W020201229610354442145.pdf>

Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	WBM
Data unit	%
Description	Weighting of build margin emissions factor
Source of data	“Tool to calculate the emission factor for an electricity system” (Version 07.0)
Value applied	25
Justification of choice of data or description of measurement methods and procedures applied	Based on the requirements of “Tool to calculate the emission factor for an electricity system” (Version 07.0)
Purpose of Data	Calculation of baseline emissions
Comments	/

4.2 Data and Parameters Monitored

Data / Parameter	$EG_{\text{Facility},y}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Source of data	Calculated
Description of measurement methods and procedures to be applied	Calculated based on parameters $EG_{\text{export},y}$ and $EG_{\text{import},y}$
Frequency of monitoring/recording	Measured continuously and recorded monthly
Value monitored	581,204.171
Monitoring equipment	/
QA/QC procedures to be	/

applied	
Purpose of the data	Calculation of baseline emissions
Calculation method	$EG_{\text{facility},y} = EG_{\text{export},y} - EG_{\text{import},y}$ $EG_{\text{import},y} = EG_{\text{import}1,y} + EG_{\text{import}2,y} * (1+0.5\%)$ <p>$EG_{\text{export},y}$ is Electricity supplied by the project activity to the grid in year y;</p> <p>$EG_{\text{import},y}$ is Electricity imported from the grid by the project in year y;</p>
Comments	NA

Data / Parameter	$EG_{\text{export},y}$																										
Data unit	MWh																										
Description	Electricity supplied by the project activity to the grid in year y																										
Source of data	Monthly Meter Records and electricity sales receipts																										
Description of measurement methods and procedures to be applied	<p>This parameter is monitored through bi-directional meters M_{11} and M_{12}. M_{11} is main meter while M_{12} is back up meter. Both meters are installed at the 330kV West Beidaqiao Substation. Back up meter M_{12} is used when main meter M_{11} is out of order. In this monitoring period, main meter M_{11} is working well. The cut off time was 24:00 of the last day of each month. At the cut off time, staff from the project owner and the grid company will read the main meter M_{11} together.</p>																										
Frequency of monitoring/recording	Measured continuously and recorded monthly																										
Value monitored	583,979.571																										
Monitoring equipment	<p>The information of the electricity meters are shown in the following table. The main information of the meters is shown below:</p> <table border="1"> <thead> <tr> <th>Meter No.</th> <th>Type</th> <th>Serial No.</th> <th>Accuracy</th> <th>Calibration Date</th> <th>Valid Date</th> </tr> </thead> <tbody> <tr> <td rowspan="3">M₁₁ (main meter)</td> <td rowspan="3">MK6E</td> <td rowspan="3">219208569</td> <td rowspan="3">0.2S</td> <td>23/03/2020</td> <td>22/03/2021</td> </tr> <tr> <td>23/03/2021</td> <td>22/03/2022</td> </tr> <tr> <td>23/03/2022</td> <td>22/03/2023</td> </tr> <tr> <td rowspan="3">M₁₂ (backup meter)</td> <td rowspan="3">MK6E</td> <td rowspan="3">219208564</td> <td rowspan="3">0.2S</td> <td>23/03/2020</td> <td>22/03/2021</td> </tr> <tr> <td>23/03/2021</td> <td>22/03/2022</td> </tr> <tr> <td>23/03/2022</td> <td>22/03/2023</td> </tr> </tbody> </table> <p>Calibration entity: Electric Energy measurement Center Gansu Electric Power Corporation</p>	Meter No.	Type	Serial No.	Accuracy	Calibration Date	Valid Date	M ₁₁ (main meter)	MK6E	219208569	0.2S	23/03/2020	22/03/2021	23/03/2021	22/03/2022	23/03/2022	22/03/2023	M ₁₂ (backup meter)	MK6E	219208564	0.2S	23/03/2020	22/03/2021	23/03/2021	22/03/2022	23/03/2022	22/03/2023
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				23/03/2021	22/03/2022																						
				23/03/2022	22/03/2023																						

QA/QC procedures to be applied	Data measured by meter will be crosschecked by electricity receipt.
Purpose of the data	Calculation of baseline emissions
Calculation method	Measured directly by electricity meters.
Comments	NA

Data / Parameter	EG_{import1,y}																										
Data unit	MWh																										
Description	Electricity imported from the grid through the main meter to the project																										
Source of data	Monthly Meter Records and electricity purchase receipts																										
Description of measurement methods and procedures to be applied	This parameter is monitored through bi-directional meters M ₁₁ and M ₁₂ . M ₁₁ is main meter while M ₁₂ is back up meter. Both meters are installed at the 330kV West Beidaqiao Substation. Back up meter M ₁₂ is used when main meter M ₁₁ is out of order. In this monitoring period, main meter M ₁₁ is working well. The cut off time was 24:00 of the last day of each month. At the cut off time, staff from the project owner and the grid company will read the main meter M ₁₁ together.																										
Frequency of monitoring/recording	Measured continuously and recorded monthly																										
Value monitored	2,775.400																										
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Meter No.	Type	Serial No.	Accuracy	Calibration Date	Valid Date																						
M ₁₁ (main meter)	MK6E	219208569	0.2S	23/03/2020	22/03/2021																						
				23/03/2021	22/03/2022																						
				23/03/2022	22/03/2023																						
M ₁₂ (backup meter)	MK6E	219208564	0.2S	23/03/2020	22/03/2021																						
				23/03/2021	22/03/2022																						
				23/03/2022	22/03/2023																						
QA/QC procedures to be applied	Data measured by meter will be crosschecked by electricity receipt.																										

Purpose of the data	Calculation of baseline emissions
Calculation method	Measured directly by electricity meters.
Comments	NA

Data / Parameter	EG_{import2,y}																
Data unit	MWh																
Description	Electricity imported from the grid through the backup line to the project																
Source of data	Monthly Meter Records																
Description of measurement methods and procedures to be applied	This parameter is monitored through meter M ₂₁ . The meter is installed at the project site. The cut off time was 24:00 of the last day of each month. At the cut off time, staff from the project owner and the grid company will read the meter M ₂₁ together. During this monitoring period, no electricity was imported by the project via the backup line																
Frequency of monitoring/recording	Measured continuously and recorded monthly																
Value monitored	0																
Monitoring equipment	<p>The information of the electricity meter is shown in the following table. The main information of the meter is shown below:</p> <table border="1"> <thead> <tr> <th>Meter No.</th> <th>Type</th> <th>Serial No.</th> <th>Accuracy</th> <th>Calibration Date</th> <th>Valid Date</th> </tr> </thead> <tbody> <tr> <td rowspan="3">M₂₁</td> <td rowspan="3">DTS607</td> <td rowspan="3">1000759046</td> <td rowspan="3">1.0</td> <td>23/03/2020</td> <td>22/03/2021</td> </tr> <tr> <td>23/03/2021</td> <td>22/03/2022</td> </tr> <tr> <td>23/03/2022</td> <td>22/03/2023</td> </tr> </tbody> </table> <p>Calibration entity: Electric Energy measurement Center Gansu Electric Power Corporation</p>	Meter No.	Type	Serial No.	Accuracy	Calibration Date	Valid Date	M ₂₁	DTS607	1000759046	1.0	23/03/2020	22/03/2021	23/03/2021	22/03/2022	23/03/2022	22/03/2023
Meter No.	Type	Serial No.	Accuracy	Calibration Date	Valid Date												
M ₂₁	DTS607	1000759046	1.0	23/03/2020	22/03/2021												
				23/03/2021	22/03/2022												
				23/03/2022	22/03/2023												
QA/QC procedures to be applied	Data measured by meter will be crosschecked by electricity receipt.																
Purpose of the data	Calculation of baseline emissions																
Calculation method	Measured directly by electricity meters.																
Comments	NA																

4.3 Monitoring Plan

Monitoring organization

The project developer had set up a VCS project team for monitoring of the project activity. Clear roles and responsibilities are assigned to all staffs involved in the VCS project and the prospect of nominating a VCS Manager (office manager) has been considered. The VCS project manager (office manager) authorized by the project developer is in charge of all the management works and the fulfilment of the Monitoring Plan. Clear roles and responsibilities have been assigned to all staff involved in the project. The staff in the monitoring section is responsible for managing the collection, storage and archive of all data and records; technicians belongs to the monitoring section are in charge of the maintenance of the meters; staff in audit section are responsible for internal audit of data, the VCS Manager will be informed in case any non-conformities were identified and suitable measures will be taken to solve these non-conformities. All staffs are trained for their duty. Training records are kept on site. The operation and management structure is show as in Figure 2 below:

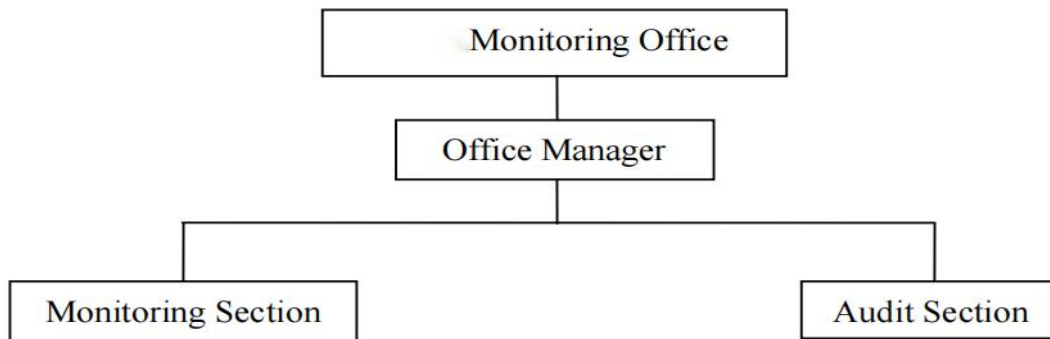


Figure 2: Monitoring and management Structure

Metering system

The net electricity supplied to the grid is monitored through the main meter M_{11} installed at the 330kV West Beidaqiao Substation and the meter M_{21} installed at the project site. The main meter M_{11} is bidirectional and has two-way metering, recording both exports to the grid $EG_{export,y}$ and imports from the grid $EG_{import1,y}$.

The back-up meter M_{12} is also installed at the 330kV West Beidaqiao Substation and used in case of the main meter is out of order.

The meter M_{21} is to record the electricity imports from the grid ($EG_{import2,y}$) through the backup line. The electricity imported from the grid $EG_{import,y} = EG_{import1,y} + EG_{import2,y} * (1+0.5\%)$. The net electricity supplied to the grid $EG_{facility,y} = EG_{export,y} - EG_{import,y}$.

Both the main meter M_{11} and the back-up meter M_{12} are in accuracy of 0.2S, the main meter M_{21} is in accuracy of 1.0. The electricity exported to the grid and imported from the grid will be cross-checked with sales receipts.

The detail metering system please sees the figure 3 below:

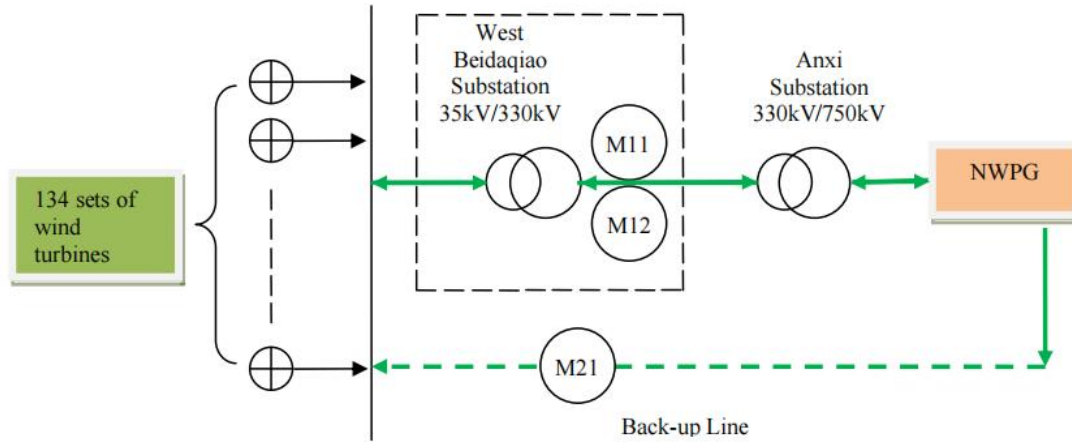


Figure 3: Monitoring System and Monitoring Meters

The electricity meters are properly calibrated following relevant provision in applicable national standard. Calibration is carried out by Electric Energy Measurement Center, Gansu Electric Power Corporation. The meter is calibrated no less than once a year.

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

Data collection procedures

- a. The main meter M_{11} and meter M_{21} is read and reported to Northwest Power Grid Company monthly.
- b. The backup meter M_{12} is read and reported monthly.
- c. The project owner reports the readings, grid data and calculations to the VVB for verification.

QA & QC

The calibration of meters conducted by qualified organization must comply with national standard and sector regulations regularly to ensure the accuracy. The meters are calibrated no less than once a year and must be pasted with seal after calibration. The calibration records must be archived together with other monitoring records.

If any errors are detected the party owning the meters shall repair, recalibrate or replace the meter giving the other party sufficient notice to allow a representative to attend during any corrective activity. If the readings of the main meter are beyond allowable error, the backup meter will be used; if the readings of both the main meter and the backup meter are beyond allowable error, the project owner and Power Grid Company shall jointly prepare a reasonable and conservative estimate of the correct reading. In any case there is any problem for the meters, the relevant third party is responsible to correct the meters.

After handling of the emergency, the project owner must prepare a report regarding the emergency to explain to DOE that the handling method is reasonable.

Data management

The project owners keep the copies of sales receipts and prepare a monitoring report when necessary, which includes the net electricity generation, the calibration records and meters' corrective action records. The monitoring data are verified by the Office Manager once every quarter. If there is anything wrong for the data, the Office Manager will correct the data according to other meters and historical data and write the corrective action records for it.

All the electronic and paper documents are archived during the crediting period and two years after the end of the crediting period or the last issuance of ERs, whichever occurs later.

Training program

The project owner entrust the professional engineers and experts to train all the relative staffs before operation of generators. The training contains CDM knowledge, operational regulations, quality control (QC) standard flow, data monitoring requirements and data management regulations etc.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

The emission reduction by the project is calculated according to approved consolidated methodology ACM0002 (version 20.0). The equation is showed below:

$$ER_y = BE_y - PE_y$$

Where:

ER_y is the emission reductions in year y (tCO₂e/yr)

BE_y is baseline emissions in year y (tCO₂e/yr)

PE_y is project emissions in year y (tCO₂e/yr)

To calculate BE_y :

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

Where:

$EG_{\text{facility},y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr).

$EF_{\text{grid,CM},y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y (tCO₂e/MWh).

The emission factor $EF_{\text{grid,CM},y}$, with the value of 0.779325 tCO₂e/MWh, is calculated ex-ante and is fixed during the crediting period. The details of the Quantity of net electricity generation

supplied by the project plant/unit to the grid in year y in this monitoring period (03/01/2021 ~ 31/08/2022) is shown in Table 2.

Table 2. The summarization of emission reductions from 03/01/2021 ~ 31/08/2022⁹

Monitoring period		EG _{export,y} (MWh)			EG _{import,y} (MWh) $EG_{import,y} = EG_{import1,y} + EG_{import2,y} * (1+0.5\%)$						EG _{facility,y} (MWh)	Emission reductions (ERy)
					EG _{import1,y} (MWh)			EG _{import2,y} (MWh)				
from	to	meter reading records	electricity sales receipts	Data used for ER calculation	meter reading records	electricity Purchase receipts	Data used for ER calculation	meter reading records	electricity sales receipts	Data used for ER calculation	(MWh)	(tCO2e)
03/01/2021	31/01/2021	18726.576	18726.576	18726.576	214.600	214.600	214.600	0.000	0.000	0.000	18511.976	14426
01/02/2021	28/02/2021	26679.840	26679.840	26679.840	184.800	184.800	184.800	0.000	0.000	0.000	26495.040	20648
01/03/2021	31/03/2021	37198.128	37198.128	37198.128	132.000	132.000	132.000	0.000	0.000	0.000	37066.128	28886
01/04/2021	30/04/2021	40361.112	40361.112	40361.112	105.600	105.600	105.600	0.000	0.000	0.000	40255.512	31372
01/05/2021	31/05/2021	34204.104	34204.104	34204.104	79.200	79.200	79.200	0.000	0.000	0.000	34124.904	26594
01/06/2021	30/06/2021	32442.432	32442.432	32442.432	52.800	52.800	52.800	0.000	0.000	0.000	32389.632	25242
01/07/2021	31/07/2021	34882.584	34882.584	34882.584	105.600	105.600	105.600	0.000	0.000	0.000	34776.984	27102
01/08/2021	31/08/2021	36094.344	36094.344	36094.344	79.200	79.200	79.200	0.000	0.000	0.000	36015.144	28067
01/09/2021	30/09/2021	27817.680	27817.680	27817.680	132.000	132.000	132.000	0.000	0.000	0.000	27685.680	21576
01/10/2021	31/10/2021	40014.744	40014.744	40014.744	105.600	105.600	105.600	0.000	0.000	0.000	39909.144	31102
01/11/2021	30/11/2021	10677.480	10677.480	10677.480	290.400	290.400	290.400	0.000	0.000	0.000	10387.080	8094
01/12/2021	31/12/2021	16088.160	16088.160	16088.160	369.600	369.600	369.600	0.000	0.000	0.000	15718.560	12249
Sub Total		355187.184	355187.184	355187.184	1851.400	1851.400	1851.400	0.000	0.000	0.000	353335.784	275358
01/01/2022	31/01/2022	14872.704	14872.704	14872.704	343.200	343.200	343.200	0.000	0.000	0.000	14529.504	11323
01/02/2022	28/02/2022	23239.920	23239.920	23239.920	158.400	158.400	158.400	0.000	0.000	0.000	23081.520	17988
01/03/2022	31/03/2022	29964.792	29964.792	29964.792	105.600	105.600	105.600	0.000	0.000	0.000	29859.192	23270
01/04/2022	30/04/2022	25160.256	25160.256	25160.256	132.000	132.000	132.000	0.000	0.000	0.000	25028.256	19505
01/05/2022	31/05/2022	47961.936	47961.936	47961.936	52.800	52.800	52.800	0.000	0.000	0.000	47909.136	37336
01/06/2022	30/06/2022	26007.168	26007.168	26007.168	52.800	52.800	52.800	0.000	0.000	0.000	25954.368	20226
01/07/2022	31/07/2022	27529.092	27529.092	27529.092	52.800	52.800	52.800	0.000	0.000	0.000	27476.292	21412
01/08/2022	31/08/2022	34056.519	34056.519	34056.519	26.400	26.400	26.400	0.000	0.000	0.000	34030.119	26520

⁹ The amount of electricity exports and imports from the period of 01/01/2021 to 31/08/2022 have been confirmed by the grid company.

Sub Total	228792.387	228792.387	228792.387	924.000	924.000	924.000	0.000	0.000	0.000	227868.387	177580
total	583979.571	583979.571	583979.571	2775.400	2775.400	2775.400	0.000	0.000	0.000	581204.171	452938.000

Thus, the baseline emission during this monitoring period is 452,938 tCO_{2e}.

5.2 Project Emissions

As per the revised CDM PDD and the ACM0002 (version 20.0), for wind power plant, the project emission is 0.

5.3 Leakage

According to methodology ACM0002 (version 20.0), No leakage emissions should be considered.

5.4 Net GHG Emission Reductions and Removals

Year	Baseline emissions or removals (tCO _{2e})	Project emissions or removals (tCO _{2e})	Leakage emissions (tCO _{2e})	Net GHG emission reductions or removals (tCO _{2e})
03/01/2021-31/12/2021	275,358	0	0	275,358
01/01/2022-31/08/2022	177,580	0	0	177,580
Total	452,938	0	0	452,938

According to the revised CDM PDD, the estimated value of emission reduction during this crediting period is 359,630 tCO_{2e} per year. The total estimated value of the emission reduction of this monitoring period is calculated as:

$$\text{Total Estimated ER}_y = \frac{359,630 \text{ tCO}_2\text{e} \times \text{number of monitored days}}{365}$$

In the monitoring period from 03/01/2021 to 31/08/2022 (606 days, both days included), the estimated emission reduction is 597,084 tCO_{2e} while the actual emission reduction is 452,938 tCO_{2e}.

Table 3. The comparison of emission reductions between the estimated and actual value

Estimated ER _y during Monitoring Period (tCO _{2e})	Actual ER _y during Monitoring Period (tCO _{2e})	Difference Percentage (%)
597,084	452,938	-24.14


The actual emission reduction is 24.14% lower than the estimated emission reduction, which will not caused the over estimation of emission reductions.

APPENDIX 1: <EVIDENCE OF ACHIEVED SD CONTRIBUTIONS>

SDG Target 7.2, SDG Indicator Renewable energy share in the total final energy consumption

period	Amount of renewable energy (MWh)	Data source
03/01/2011 - 28/09/2011	332,994.0379	https://registry.verra.org/app/projectDetail/VCS/1037
29/09/2011 - 28/06/2012	212,656.2647	https://cdm.unfccc.int/Projects/DB/ERM-CVS1292512044.7/view
29/06/2012 - 31/12/2017	1,472,958.850	https://registry.verra.org/app/projectDetail/VCS/1037
01/01/2018 - 02/01/2021	958,135.424	https://registry.verra.org/app/projectDetail/VCS/1037
03/01/2021 - 31/08/2022 (This monitoring period)	581,204.171	Section 5 of this report
Cumulative amount since project start date	3,557,948.75	/

SDG Target 8.5, SDG Indicator The number of long-term jobs provided by the implementation of the project


中国水电顾问集团风电瓜州有限公司正式职工花名册

序号	单位	所在部门	姓名	职务/岗位	性别	备注
1	中国水电顾问集团风电瓜州有限公司	公司领导	陈登平	总经理	男	
2	中国水电顾问集团风电瓜州有限公司	公司领导	杨福斌	副总经理	男	
3	中国水电顾问集团风电瓜州有限公司	瓜州电厂	王超	副厂长（主持工作）	男	
4	中国水电顾问集团风电瓜州有限公司	瓜州电厂	万生梁	安全专责	男	
5	中国水电顾问集团风电瓜州有限公司	瓜州电厂	王艺菲	合同采购专责	女	
6	中国水电顾问集团风电瓜州有限公司	瓜州电厂	何帆	营销主管	男	
7	中国水电顾问集团风电瓜州有限公司	瓜州电厂	闫潇	运行班长	男	
8	中国水电顾问集团风电瓜州有限公司	瓜州电厂	张国威	运行班长	男	
9	中国水电顾问集团风电瓜州有限公司	瓜州电厂	魏宇翔	运行值班员	男	
10	中国水电顾问集团风电瓜州有限公司	瓜州电厂	薛新娟	运行值班员	女	
11	中国水电顾问集团风电瓜州有限公司	瓜州电厂	谢飞	运行值班员	男	
12	中国水电顾问集团风电瓜州有限公司	瓜州电厂	师培耕	检修维护员	男	
13	中国水电顾问集团风电瓜州有限公司	瓜州电厂	安东	检修班长	男	
14	中国水电顾问集团风电瓜州有限公司	瓜州电厂	罗刚	检修维护员	男	
15	中国水电顾问集团风电瓜州有限公司	瓜州电厂	赵玉龙	检修班长	男	
16	中国水电顾问集团风电瓜州有限公司	瓜州电厂	王海兵	维护班长	男	
17	中国水电顾问集团风电瓜州有限公司	瓜州电厂	王建全	检修维护员	男	
18	中国水电顾问集团风电瓜州有限公司	瓜州电厂	温少祥	检修维护员	男	
19	中国水电顾问集团风电瓜州有限公司	瓜州电厂	张海龙	运行值班员	男	
20	中国水电顾问集团风电瓜州有限公司	瓜州电厂	庄园	运行值班员	女	
21	中国水电顾问集团风电瓜州有限公司	瓜州电厂	马晓明	检修维护员	男	
22	中国水电顾问集团风电瓜州有限公司	瓜州电厂	何超	运行值班员	男	
23	中国水电顾问集团风电瓜州有限公司	瓜州电厂	朱磊	检修维护员	男	
24	中国水电顾问集团风电瓜州有限公司	瓜州电厂	潘熙	检修维护员	男	
25	中国水电顾问集团风电瓜州有限公司	瓜州电厂	赵建涛	检修维护员	男	
26	中国水电顾问集团风电瓜州有限公司	瓜州电厂	李彬彬	运行值班员	男	
27	中国水电顾问集团风电瓜州有限公司	瓜州电厂	张潇	运行值班员	男	

SDG Target 13, SDG Indicator Tonnes of greenhouse gas emissions avoided or removed

period	Amount of emission reductions (tCO₂e)	Data source
03/01/2011 - 28/09/2011 (VER)	309,444	https://registry.verra.org/app/projectDetail/VCS/1037
29/09/2011 - 28/06/2012 (CER)	197,617	https://cdm.unfccc.int/Projects/DB/ERM-CVS1292512044.7/view
29/06/2012 - 31/12/2017 (VER)	1,368,760	https://registry.verra.org/app/projectDetail/VCS/1037
01/01/2018 - 02/01/2021 (VER)	796,594	https://registry.verra.org/app/projectDetail/VCS/1037
03/01/2021 - 31/08/2022 (This monitoring period)	452,938	Section 5 of this report
Cumulative amount since project start date	3,125,353	/