NINGXIA XIANGSHAN WIND FARM

Project title	Ningxia Xiangshan Wind Farm Project
Project ID	1867
Monitoring period	01/09/2022--31/08/2024
Original date of issue	10/09/2024
Most recent date of issue	27/12/2024
Version	03
***VCS Standard* Version**	Version 4.7
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CONTENTS

PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Ningxia Xiangshan Wind farm Project (hereafter referred to as the Project) is located in Zhongwei City, Ningxia Hui Autonomous Region, People's Republic of China. It is operated by Ningxia Zhongwei Aluminum New Energy Co., Ltd.

The project has a total installed capacity of 397.5MW consisting of 265 wind turbines with unit capacity of 1,500kW. The expected annual power delivered to the grid is 948,633.8 MWh. The power generated will be delivered to the Northwest Power Grid (NWPG) via Ningxia Power Grid to replace equivalent amount of electricity that would have otherwise been generated by other fossil fuel power plants. Therefore, this project could avoid GHG emissions. The estimated annual average emission reductions are 727,982 tCO_2e.

This monitoring period is from 01/09/2022-31/08/2024 (731days). The total net electricity supplied to the grid by the project in this monitoring period are 1,887,318.076 MWh and the emission reductions in this monitoring period are 1,448,318 tCO_2e. The project started construction on 01/11/2016 and started commercial operation on 15/04/2017 and fully operation on 20/07/2017.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Validation	08/04/2019	VCS	LGAI Technological Center, S.A.	/
1st Verification	15/04/2017-28/02/2019	VCS	LGAI Technological Center, S.A.	1.87
2nd Verification	01/03/2019-29/02/2020	VCS	Shenzhen CTI International Certification Co.,Ltd.	1
3rd Verification	01/03/2020-31/12/2020	VCS	Shenzhen CTI International Certification Co.,Ltd.	0.84
4th Verification	01/01/2021-30/09/2021	VCS	Shenzhen CTI International Certification Co.,Ltd.	0.75
5th Verification	01/10/2021-31/08/2022	VCS	Shenzhen CTI International Certification Co.,Ltd.	0.92

6th Verification	01/09/2022-31/08/2024	VCS	China Classification Society Certification Co., Ltd.	2.0

1.3 Sectoral Scope and Project Type

Sectoral scope[1]	01： Energy industries (renewable sources)
Project activity type	Wind power project This project is not grouped project.

1.4 Project Proponen

Organization name	**Ningxia Zhongwei Aluminum New Energy Co., Ltd**
Contact person	Sun Ping
Title	Manager
Address	No 218, Xinchang West Road, Yinchuan City
Telephone	+86-951-6733448
Email	cdmcarbon@126.com

1.5 Other Entities Involved in the Project

Organization name	**DEMETER VENTURE UK LIMITED**
Role in the project	Project buyer
Contact person	FAN Xiaowen
Title	Manager
Address	Unit 4, Building 5, No.1 South Road, Renmin University, Haidian District, Beijing, , China
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[1] *Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes*

Organization name	**Beijing Cronus Technology Consultancy Centre**
Role in the project	Project participant
Contact person	Li Qiang
Title	Manager
Address	814-004, No.15, information road, Haidian, Beijing, 100083, China
Telephone	+86-13488823878
Email	yaobaojie@126.com

1.6 Project Start Date

Project start date	15/04/2017
Justification	Started commissioning, which means the date that started to generate GHG emission reductions

1.7 Project Crediting Period

Crediting period	☐ Seven years, twice renewable ☑ Ten years, fixed ☐ Other (state the selected crediting period and justify how it conforms with the VCS Program requirements)
Start and end date of first or fixed crediting period	15/04/2017 to 14/04/2027

1.8 Project Location

The project is located southwest of Zhongwei City, Ningxia Hui Autonomous Region, People's Republic of China. The coordinates of the proposed project location are 106° 41′ 32″ to 108 ° 23′ 65″ east longitude and 37° 14′ 05″ to 39° 05′ 23″ north latitude. The site is 1,700-1,350m above sea level. Figure 1 and figure 2 shows the location of the project.

Figure 1. Location of Ningxia Hui Autonomous Region in China

Figure 2. Location of the project

1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	ACM0002	Consolidated methodology for grid-connected electricity generation from renewable sources	19.0
Tool	TOOL07	Tool to calculate the emission factor for an electricity system	07

1.10 Double Counting and Participation under Other GHG Programs

1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

1.10.2 Registration in Other GHG Programs

Was the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☐ Yes ☒ No

1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

1.12 Sustainable Development Contributions

The project provides many benefits that will help achieve China's Sustainable Development Goals (SDG)[2], a set of 17 universal goals covering the thematic areas of environmental, economic and social development.

The project will directly contribute to sustainable development in several ways as shown below:

• Provide clean energy. The project makes use of wind to generate electricity and heat. The clean electricity generation of this project is supplied to NWPG to replace the same amount of electricity that would have otherwise been supplied by NWPG, which is dominated by fossil fuel fired electricity. This helps diversify power structure of the NWPG and reduce the dependence on fossil fuels. This contributes to one of the China's actions for promoting the sustainable developing, "By 2030, increase the share of non-fossil fuels in primary energy consumption to about 20 percent"; (SDG 7). In this monitoring period, the net electricity generation is 1,887,318.076MWh.

• Provide decent work. The project provides 65 employment opportunities related to the operation and maintenance of the power plant, which meets one of the China's action plans "by 2030, achieve full and productive employment and decent work for all women and men, including for young people and

[2] https://www.fmprc.gov.cn/mfa_eng/zxxx_662805/W020161014332600482185.pdf

persons with disabilities, and equal pay for work of equal value." (SDG 8). The employee list is shown in appendix 1.

• Reduce CO_2 emissions. The project utilizes wind to generate electricity to replace the same amount of electricity that would have otherwise been generated by fossil fuel power plants. That means the project will reduce GHG emissions to local environment. This contributes to achieving one of China's stated sustainable development priorities "Actively adapt to climate change and strengthen resistance capacity to climate risks in agriculture, forestry, water resources and other key fields, as well as cities, coastal regions and ecologically vulnerable areas"; (SDG 13). The total emission reductions in this monitoring period are 1,448,318tCO_2e.

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	7.2.1 Renewable energy share in the total final energy consumption	Implemented activities to decrease	During this monitoring period, 1,887,318.076MWh renewable electricity is generated and exported to NWPG.	From the start date of project operation to the end date of this monitoring period, 7,398,453.606MWh[3] renewable electricity is generated.
2)	8.3	8.3.1 Proportion of informal employment in total employment, by sector and sex	Implemented activities to decrease	No further changes this monitoring period	The project provides 65 (including 13 females) long-term job opportunities for local people.
3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	By installing wind turbine generators for electricity generation, this project has prevented the release of 1,448,318tonnes CO_2 into the atmosphere during this monitoring period.	From the start date of project operation to the end date of this monitoring period, 5,677,541 CO2[4]emissions are avoided.

[3] 2001008.630 MWh +1016933.218 MWh +813910.300 MWh +757272.656 MWh +922010.726 MWh +1887318.076 MWh =7,398,453.606MWh

[4] 1,535,574 tCO_2+780,389 tCO_2+624,588 tCO_2+581,127 tCO_2+707,545 tCO_2+1,448,318 tCO_2=5,677,541tCO_2

1.13 Commercially Sensitive Information

The employee list in appendix 1 is commercially sensitive information in this monitoring report.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification	This is a wind power project, which is located in the wasteland of Zhongwei city. The people that may be possibly impacted by the project are whose residents nearby and the employees who work in the plant. Therefore, t**he possible stakeholder mainly includes the employees of the project and the local resident. Obviously, local government especially the village committees are included. And there is no change of stakeholder since validation.**
Legal or customary tenure/access rights	The project owner has the legal rights to construct and operate the project and own the equipment and product of the project. There is no right conflict with local people. The land occupied by this project is waste land, and all of them are government owned. No agriculture land is occupied by this project. The project owner has applied to Zhongwei Municipal Natural Resources Bureau before the project start and was approved by the Ningxia Autonomous Region Development and Reform Commission. And there is no relocation in this project.
Stakeholder diversity and changes over time	The project is located in Zhongwei city, Ningxia Hui Autonomous Region. As mentioned above, the stakeholders include the employees, local residents and local governments.

	As for the employees, all of them are from Zhongwei city. Males and females are included in the project. The employees of this project and the local residents include Han population and Hui population. Local residents and government people also include Han population and Hui people. There is no big difference between each kind of stakeholders. Employees are payed directly by this project, while local residents and government more pay attention to the social and environmental benefits. Hui people believe in Islam, they dot eat pig, They have their own traditional festivals and costume. In addition to the above, there are no other significant difference in the social, economic and culture. Plus, there is no significant change in the make-up of each group over time.
Expected changes in well-being	In the baseline scenario, local people mainly depend on farming and work outside for their livelihood. And there is no there is no expected change in the well-being of stakeholders. Besides, no special environmental related activity is and will be implemented. Therefore, no expected change will happen in ecosystem.
Location of stakeholders	The stakeholders are located in the project site and Zhongwei city. Local villages and communities include Haojiadigou village, Cheluhao village, Laofentang village, Pengdigou village, etc. The project is owned by the Ningxia Zhongwei Aluminum New Energy Co., Ltd. which is also located in the project site.
Location of resources	The project site (Zhongwei city, Ningxia Hui Aotonumous Region) and the boundaries of Northwest Power Grid are the main area that the stakeholders would be accessed.

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation	**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. People can leave their grievance or suggestions on the book.**
Date(s) of stakeholder consultation	11-2017
Communication of monitored results	The monthly monitoring records of monitoring parameters of this project are crosschecked with technical reviewers of the company. The electricity records are confirmed with grid power company.
Consultation records	To let the public realize the objective of the proposed project, support and cooperate with construction of the project, and heighten the environmental benefits and social benefits of the project, the project proponent developed a stakeholders' survey of the project in Nov 2017, to collect comments and requirement of public in the related region. The first stage The public participation was organized in Nov 2016 for collecting stakeholder's views and opinions mainly focused on the environmental impacts through releasing questionnaire and public announcement, partly by interview one by one. Medium bulletin: make medium bulletin in the local residential area near the location site and release bulletin survey of stakeholders in the residential area near the project construction site. The bulletin contents include general description of the proposed project, public participation load table and contact method. Questionnaire survey: The survey objects include local government and related departments of Xiangshan County, the local villagers living nearby Xiangshan Wind power project. During the survey of stakeholders, 150 questionnaires were released, and 145 questionnaires were got back, the return ratio is 96.7%. In addition, 40 people is interviewed and consulted. The second stage To know the public's suggestions and advices mainly on the issues of VCS application of the project, the project owner did the stakeholders' survey in Nov 2017. The survey was

	conducted in Xiangshan County. 46 questionnaires were released, and all were got back. The survey shows the stakeholders believe that the VER project activity will have positive impacts on the local ecology and employment. Some stakeholders expressed concerns about potential increased soil erosion in the area due to the project activity. All stakeholders expressed their support to the proposed project.
Stakeholder input	During this monitoring period, no comments were received from local stakeholders. And there are no updates to project design.

2.1.3 Free, Prior, and Informed Consent

Consent	The project is owned by the Ningxia Zhongwei Aluminum New Energy Co., Ltd. The land occupied by this project is waste land, and all of them are government owned. The project owner has applied to Zhongwei Municipal Natural Resources Bureau before the project start and was approved by the Ningxia Autonomous Region Development and Reform Commission. Before the project start date, two local stakeholder consultation meetings were held respectively in Nov.2016 and Nov. 2017 to collect stakeholder's opinions on the environmental impacts and VCS application. Through the questionnaire survey, all the stakeholders have positive opinion and support this project. The project does not involve conflicts with IPs, LCs, and customary rights. There are no ongoing or unresolved conflicts with local people.
Outcome of FPIC	The project site is waste land in absence of the project. No resident lived there before the project start date. Therefore, there is no relocation for local people. By stakeholders consultation, local stakeholders know that this project could not only provide clean energy to national grid, but also provide some long-term job opportunities,

	which is beneficial for national environment, economy and well-beings. And by some environment protection measures, the project could avoid negative environment impacts during the construction period. This could be demonstrated by the FSR and EIA approval.

2.1.4 Grievance Redress Procedure

Grievances received	Resolution and outcome
No grievance was raised in this monitoring period.	N/A The grievance book was put in the communication room at the main door of the wind plant. The local stakeholders can provide feedback there easily.

2.1.5 Public Comments

Summary of comments received	Actions taken
No comment was received outside the public comment period.	N/A Since no public comment was received, therefore, actions are not needed.

2.2 Risks to Stakeholders and the Environment

	Risk identified	Mitigation or preventative measure(s) taken
Risks to stakeholder participation	No risk	No risk exists for stakeholder's participation into the meeting
Working conditions	No risk	The project could provide clean working environment and safe equipment for employees.
Safety of women and girls	No risk	Protective equipment such as helmet and masks are provided to employees at the project site, including men and women.

		This project complies with national labor laws. Children is not permitted to work in the project. Sexual harassment is not allowed in the project.
Safety of minority and marginalized groups, including children	No risk	According to China's national law, Children is prohibited to work in the project. Minority employee in this project is equally treated in this project and payed. And safety measures are taken to make sure their safe.
Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)	During the construction period, the potential impacts include wastewater and solid wastes. During the operation period, the potential impact includes atmosphere, wastewater and solid wastes	In the construction period, the wastewater is collected and deposited and then recycled to clean the construction sites. And the sewage from construction staff is mainly used to green and fall dust. The construction wastes is treated on site and the household garbage is moved to a designated site to be disposed properly. In the operation period, the atmosphere impact means the emissions from restaurant. Through clean fuel and discharge after purification, no impact exists on local atmosphere. The wastewater is biochemically treated and then used to fall dust. The solid waste is mainly household garbage and is transported to the garbage collected site. The waste oil of wind turbine is recycled and disposed the manufacturer. Through the above measures, no negative impacts will be there on local environment.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

	Mitigation or preventative measure(s) taken
Discrimination and Sexual harassment	The company complies with China's Labor Law and International Labor Law, and every employee is equally treated. The company complies with China's Labor Law and International Labor Law, and protects women's rights. No sexual harassment would happen in the company.
Management experience	The project is owned and operated by Ningxia Zhongwei Aluminum New Energy Co., Ltd. Ningxia Zhongwei Aluminum New Energy Co., Ltd is a professional company, with business scope in investing, designing, construction and operation of wind power plants, solar power plants, electricity sales, etc. The management team has 65 people, and all the operation employees have the expertise on wind power plant operation and electricity generation. All of them have at least four years' working experience in wind power plants.
Gender equity in labor and work	Men and women are responsible for the work as per his or her expertise. And men and women are paid according to the workload equally. There are no gender discrimination issues.
Human trafficking, forced labor, and child labor	No human trafficking happens in this project. The company complies with China's Labor Law and International Labor Law. The company complies with China's Labor Law and International Labor Law. No child is employed in this project. The company complies with China's Labor Law and International Labor Law.

2.3.2 Human Rights

The project is located in the Zhongwei city. The project complies with national and international laws on human rights. There is no conflict with local residues, and the project would not impact local people's rights.

2.3.3 Indigenous Peoples and Cultural Heritage

The project is located in Zhongwei city. There is no cultural heritage nearby. Therefore, the project would not destroy cultural heritage.

2.3.4 Property Rights

Disputes over rights to territories and resources	**N/A**
Respect for property rights	The project is located in waste land, southwest of Zhongwei city. The project would not requisit local people's land and there are no property rights conflicts with local people.

2.3.5 Benefit Sharing

Summary of the benefit sharing plan	**N/A**
Benefit sharing during the monitoring period	N/A

2.4 Ecosystem Health

	Risk identified	Mitigation or preventative measure(s) taken during the monitoring period
Impacts on biodiversity and ecosystems	No risk identified	The project is located in southwest of Zhongwei city. The project site is located in waste land. Therefore, the project would not impact local biodiversity and ecosystems.
Soil degradation and soil erosion	No risk identified	The project is located in the southwest of Zhongwei city. This is wind power project. It would not cause soil degradation and soil erosion.

Water consumption and stress	No risk identified	This is a wind power project and it will not consume a lot of water. The daily water consumption for the employees is not an extra stress, in absence of this project, all the employees would also consume water. Therefore, there is no significant added water stress for local area.
Usage of fertilizers	No risk identified	This is a wind power project. It does not include fertilizer usage.

2.4.1 Rare, Threatened, and Endangered species

Species or habitat	**The project is located in the southwest of Zhongwei city. It is more than 52km from Zhongwei city to the project site. And the project is located in the natural grassland. And there is no habitats and habitat connectivity nearby for rare, threatened, or endangered species nearby.**

2.4.2 Introduction of species

Species introduced	Classification	Justification for use	Adverse effects and mitigation
N/A			

Existing invasive species	Mitigation measures to prevent the spread or continued existence of invasive species
N/A	

2.4.3 Ecosystem conversion

N/A

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The proposed project is to utilize wind resources for electricity generation in Zhongwei city, Ningxia Autonomous Region, P. R. China. The project involves the installation of 265 sets of 1,500 kW wind turbines. The total installed capacity of the project is 397.5MW. Estimated

annual power generation is 948,633.8MWh. The estimated annual operation hours are 2,386.5h and the estimated plant load factor is 27.2%. Technical parameters of the wind turbines employed by the Project are illustrated in Table 1.

Table 1. Key parameters of main equipment

Wind turbine	
Rated capacity	1,500kW
Impeller diameter	82~89m
Wheel hub height	70m
Cut-in wind speed	3.0m/s
Rated wind speed	10.5m/s
Cut-out wind speed	25m/s
Max design wind speed	52.5m/s
Rated voltage	690V
Manufacturer	Dongfang Electric Corporation Dongfang Turbine Co., Ltd
Designed lifetime	20 years

The technologies employed in the project activity are domestic technologies, and no technology transfer activity involved. The project started construction on 01/11/2016 and starts commercial operation on 15/04/2017.

This monitoring period covers from 01/09/2022 to 31/08/2024. During this monitoring period, the Project was implemented in line with the monitoring plan. And in this monitoring period, the wind farm runs well, no equipment is overhauled or replaced. No events or emergency which may impact the emission reductions and monitoring occurred during this monitoring period.

3.2 Deviations

3.2.1 Methodology Deviations

There is no methodology deviation in this monitoring period.

3.2.2 Project Description Deviations

The buyer is added as a participant in section 1.5 of this monitoring report

3.3 Grouped Projects

N/A

3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes ☒ No

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO_2/GJ
Description	Build margin CO_2 emission factor in year y
Source of data	National public data
Value applied	0.3232, the calculation process is shown in section 3.1 of registered PD
Justification of choice of data or description of measurement methods and procedures applied	The data source is from public data of China DNA.
Purpose of data	Calculation of baseline emissions
Comments	/

Data / Parameter	$EF_{grid,OM,y}$
Data unit	tCO_2/GJ
Description	Operating margin CO_2 emission factor in year y
Source of data	National public data
Value applied	0.9155, the calculation process is shown in section 3.1 of registered Joint PD & MR.
Justification of choice of data or description of measurement methods and procedures applied	The data source is from public data of China DNA.
Purpose of data	Calculation of baseline emissions
Comments	/

Data / Parameter	$EF_{grid,CM,y}$

Data unit	tCO_2/GJ
Description	Combined margin CO_2 emission factor in year y
Source of data	National public data
Value applied	0.7674, the calculation process is shown in section 3.1 of registered Joint PD & MR.
Justification of choice of data or description of measurement methods and procedures applied	The data source is from public data of China DNA.
Purpose of data	$EF_{grid,CM,y}$
Comments	/

4.2 Data and Parameters Monitored

Data / Parameter	$EG_{facility,y}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the Project to the grid in year y
Source of data	Meter Recordings
Description of measurement methods and procedures to be applied	Grid-connected electricity generated by the project is monitored through electricity meters installed at the transform substation and recorded monthly. The project owner is responsible for the monitoring activities. The accuracy of the meters are 0.2s.
Frequency of monitoring/recording	Measured continuously and recorded monthly
Value monitored	01/09/2022-31/08/2024: 1,887,318.076MWh
Monitoring equipment	The information of the electricity meters are shown in the following table. The main information of the meters is shown below:

Meter No.	Type	Serial No.	Accuracy	Calibration Date	Valid Date
M522 (main meter)	DSSD8848	080002009870	0.2S	09/03/2022	08/03/2023
				03/03/2023	02/03/2024
				28/02/2024	27/02/2025
	DSSD8848	080002009822	0.2S	09/03/2022	08/03/2023

	M533 (main meter)				03/03/2023 28/02/2024	02/03/2024 27/02/2025
	M523 (backup meter)	DSSD8848	080002009875	0.2S	09/03/2022 03/03/2023 28/02/2024	08/03/2023 02/03/2024 27/02/2025
	M534 (backup meter)	DSSD8848	080002009872	0.2S	09/03/2022 03/03/2023 28/02/2024	08/03/2023 02/03/2024 27/02/2025
QA/QC procedures to be applied	The electricity meters are calibrated annually by qualified entity according to national standards so that the metering equipments shall have sufficient accuracy. The electricity records are crosschecked with Electricity Transaction Note (ETN).					
Purpose of the data	Calculation of baseline emissions					
Calculation method	Measured directly by electricity meters. The exact data were the electricity delivered to the power grid minus the electricity supplied by the power grid. The data were measured continuously and recorded monthly.					
Comments	/					

4.3 Monitoring Plan

1. Monitoring objective

The objective of this monitoring plan is to ensure the complete, consistent, clear, and accurate monitoring and calculation of the project emission reductions during the entire crediting period. The project owner is responsible for the implementation of the monitoring plan, and the grid company cooperates with the project owner.

2. Monitoring System Organization Chart

The Project owner will set up an Emission Reduction monitoring team and the team manager of which will be assigned accordingly. The team is charge of collecting, monitoring and verifying the data. The operational and management structure is as follows:

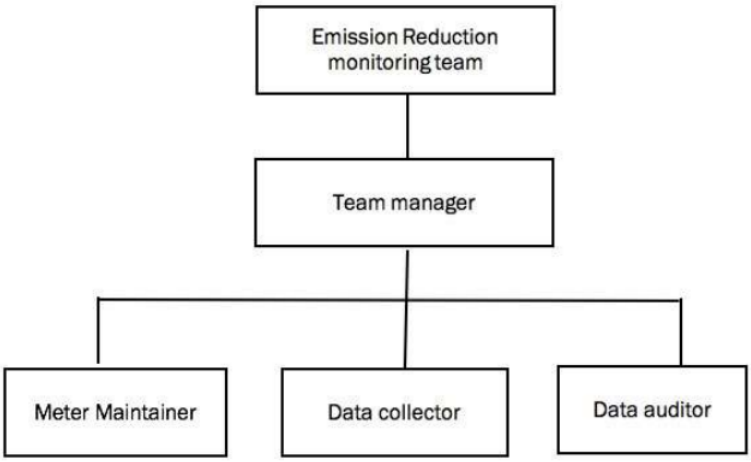

Figure 2. Monitoring structure

3. The monitoring method and equipments installation

Power generated by the project are fed into the Ningxia Power Grid through transmission line. Four bi-directional electricity meters (two main meters and two backup meters) are installed on the transform substation to directly and continuously measure the exported and imported electricity by the project activity. To be conservative, the net power supplied to grid by the project is calculated as "$EG_{facility,y}$= $EG_{export,y}$ - $EG_{import,y}$" during the monitoring period. $EG_{export,y}$ is electricity exported to the grid by the project (MWh) and $EG_{import,y}$ is electricity imported to the project activity by the grid.

The monthly readings of electricity meters are recorded at 24:00 of the last day of each month. The ETN is prepared by the grid company according to the meters and confirmed by the project owner. The meter records are cross checked by the ETN. The conservative data between the meter readings and ETN are used to calculate ERs during this monitoring period.

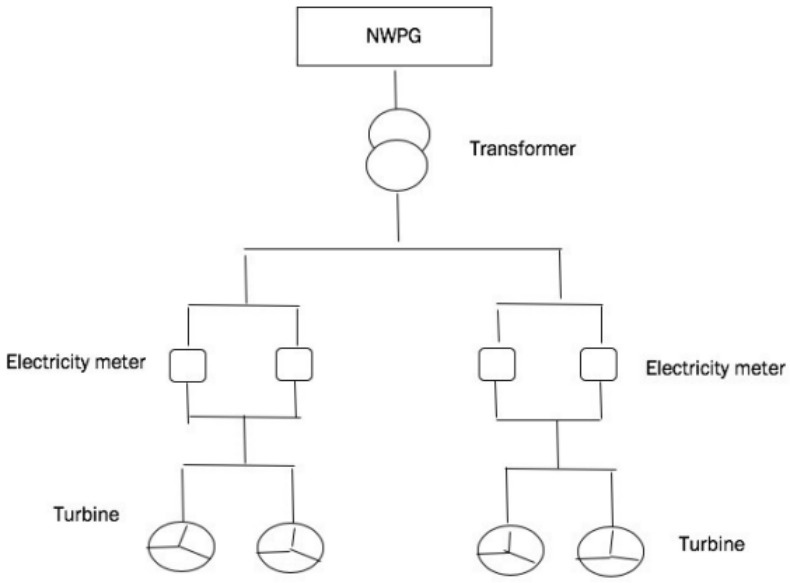

Figure 3. Line Diagram

4. Quality Assurance and Quality Control (QA/QC)

1) Calibration

The electricity meters will be calibrated annually. The electric meters will be calibrated by an accredited calibration agency. Calibration certificates of the accredited calibration agency and the relevant calibration documents will be collected by the QA/QC department and transferred to technical department for archiving. The accuracy of electricity meter(s) is 0.2s.

2) Corrective actions

If problems which can affect the quality of data occur, the QA/QC department will initiate and supervise the implementation of corrective actions.

3) Internal audit

Internal audit is independent. Internal audit procedure will be initiated under any of the following circumstances:

· modification of the monitoring system

· prior to verification

The monitoring system will be checked on whether the monitoring system runs properly and whether the monitored results are correct. Secondly, spot check of daily/monthly data report will be undertaken.

5. Data management

All the data are continuously monitored, recorded by the data collector monthly and aggregated yearly for emission reduction calculations. These data are reviewed by the data auditor and checked by team manager. The file documents are copied and kept in specific place. All digital files are copied by hard disk. These documents will be provided to DOE for verification and kept until 2 years after the end of the crediting period.

6. Procedure of emergency handling

In case the main meter is out of order, it shall be inspected, repaired, or replaced immediately by the professional staff and quantity of net electricity generation supplied by the Project to the grid shall be jointly determined by the Project Owner and the power grid company. A conservative and reasonable estimate of the readings shall be determined and conservative values shall be used to estimate emission reductions.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The baseline emissions are to be calculated as follows:

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

Where:

BE_y = baseline emissions in year y (tCO_2e)

$EG_{PJ,y}$ =Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the VCS project activity in year y (MWh/yr);

$EF_{grid, CM,y}$ =Combined margin CO2 emission factor for grid connected power generation in year y. It is calculated using the latest version of the Tool to calculate the emission factor for an electricity system. And the result is fixed in the crediting period (tCO_2e/MWh). According to the registered PD, $EF_{grid, CM,y}$=0.7674 tCO_2e/MWh.

Calculation of $EG_{PJ,y}$

The calculation of $EG_{PJ,y}$ is different for (a) greenfield plants, (b) retrofits and replacements, and (c) capacity additions. The project activity is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, then

$$EG_{PJ,y}=EG_{facility,y}$$

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the VCS project activity in year y (MWh/yr)

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

The yearly electricity volume is listed in the following table 1 and 2. And the baseline emissions are listed in following table 3.

Table 1. Monitoring data of $EG_{export,y}$

Monitoring Period	Meter reading records (M522)	Meter reading records (M533)	Total in meter reading records	Total in ETNs	Electricity exported to the grid by

					the project ($EG_{export,y}$)
	MWh	MWh	MWh	MWh	MWh
	A	B	C=A+B	D	E=Min(C,D)
01/09/2022-30/09/2022	37,621.276	38,882.284	76503.560	76,503.560	76503.560
01/10/2022-31/10/2022	36,023.358	35,791.364	71814.722	71,814.722	71814.722
01/11/2022-30/11/2022	36,493.380	35,896.574	72389.954	72,389.954	72389.954
01/12/2022-31/12/2022	39,846.842	35,506.478	75353.320	75,353.320	75353.320
01/01/2023-31/01/2023	37,137.828	36,321.110	73458.938	73,458.938	73458.938
01/02/2023-28/02/2023	41,625.934	39,600.092	81226.026	81,226.026	81226.026
01/03/2023-31/03/2023	41,016.388	38,764.054	79780.442	79,780.442	79780.442
01/04/2023-30/04/2023	40,684.070	40,510.610	81194.680	81,194.680	81194.680
01/05/2023-31/05/2023	39,728.430	39,323.578	79052.008	79,052.008	79052.008
01/06/2023-30/06/2023	36,158.318	38,591.812	74750.130	74,750.130	74750.130
01/07/2023-31/07/2023	41,893.082	39,911.970	81805.052	81,805.052	81805.052
01/08/2023-31/08/2023	39,154.668	40,111.204	79265.872	79,265.872	79265.872
01/09/2023-30/09/2023	34,843.732	42,544.838	77388.570	77,388.570	77388.570
01/10/203-31/10/2023	41,815.046	42,908.866	84723.912	84,723.912	84723.912
01/11/2023-30/11/2023	41,768.216	40,005.994	81774.210	81,774.210	81774.210
01/12/2023-31/12/2023	42,856.058	36,431.892	79287.950	79,287.950	79287.950
01/01/2024-31/01/2024	41,160.518	42,167.790	83328.308	83,328.308	83328.308
01/02/2024-29/02/2024	40,456.402	42,194.782	82651.184	82,651.184	82651.184
01/03/2024-31/03/2024	42,441.126	43,033.620	85474.746	85,474.746	85474.746
01/04/2024-30/04/2024	39,794.510	35,643.342	75437.852	75,437.852	75437.852
01/05/2024-31/05/2024	39,163.852	41,649.216	80813.068	80,813.068	80813.068
01/06/2024-30/06/2024	37,301.222	41,216.308	78517.530	78,517.530	78517.530
01/07/2024-31/07/2024	43,390.340	42,879.060	86269.400	86,269.400	86269.400
01/08/2024-31/08/2024	37,837.352	36,102.318	73939.670	73,939.670	73939.670

Total in this monitoring period	950211.948	945989.156	1896201.104	1896201.104	1896201.104

Table 2. Monitoring data of $EG_{import,y}$

Monitoring Period	Meter reading records (M522)	Meter reading records (M533)	Total in meter reading records	Total in ETNs	Electricity imported to the grid by the project ($EG_{import,y}$)
	MWh	MWh	MWh	MWh	MWh
	F	G	H=F+G	I	J=max(H,I)
01/09/2022-30/09/2022	168.994	163.002	331.996	331.996	331.996
01/10/2022-31/10/2022	184.002	214.004	398.006	398.006	398.006
01/11/2022-30/11/2022	195.006	175.000	370.006	370.006	370.006
01/12/2022-31/12/2022	184.996	202.006	387.002	387.002	387.002
01/01/2023-31/01/2023	203.994	160.006	364.000	364.000	364.000
01/02/2023-28/02/2023	170.996	203.994	374.990	374.990	374.990
01/03/2023-31/03/2023	207.998	210.994	418.992	418.992	418.992
01/04/2023-30/04/2023	179.004	181.006	360.010	360.010	360.010
01/05/2023-31/05/2023	170.002	184.002	354.004	354.004	354.004
01/06/2023-30/06/2023	167.006	195.006	362.012	362.012	362.012
01/07/2023-31/07/2023	189.994	151.004	340.998	340.998	340.998
01/08/2023-31/08/2023	161.000	151.004	312.004	312.004	312.004
01/09/2023-30/09/2023	153.006	214.998	368.004	368.004	368.004
01/10/203-31/10/2023	191.002	200.998	392.000	392.000	392.000
01/11/2023-30/11/2023	212.002	177.996	389.998	389.998	389.998
01/12/2023-31/12/2023	146.006	168.000	314.006	314.006	314.006
01/01/2024-31/01/2024	144.004	205.996	350.000	350.000	350.000
01/02/2024-29/02/2024	168.000	221.998	389.998	389.998	389.998
01/03/2024-31/03/2024	210.994	170.002	380.996	380.996	380.996
01/04/2024-30/04/2024	195.006	210.000	405.006	405.006	405.006

01/05/2024-31/05/2024	154.994	217.994	372.988	372.988	372.988
01/06/2024-30/06/2024	144.004	168.994	312.998	312.998	312.998
01/07/2024-31/07/2024	202.006	203.000	405.006	405.006	405.006
01/08/2024-31/08/2024	207.004	221.004	428.008	428.008	428.008
Total in this monitoring period	4311.020	4572.008	8883.028	8883.028	8883.028

Table 3. Calculation of BE_y

Monitoring Period	Electricity exported to the grid by the project ($EG_{export,y}$)	Electricity imported from the grid ($EG_{import,y}$)	Net electricity supplied to the grid ($EG_{facility,y}$)	$EF_{grid,CM,y}$	Baseline emission (BE_y)
	E	J	K=E-J	L	M=L*K
	MWh	MWh	MWh	tCO_2/MWh	tCO_2e
01/09/2022-30/09/2022	76,503.560	331.996	76,171.564	0.7674	58,454
01/10/2022-31/10/2022	71,814.722	398.006	71,416.716	0.7674	54,805
01/11/2022-30/11/2022	72,389.954	370.006	72,019.948	0.7674	55,268
01/12/2022-31/12/2022	75,353.320	387.002	74,966.318	0.7674	57,529
Total in 2022	296,061.556	1,487.010	294,574.546		226,056
01/01/2023-31/01/2023	73,458.938	364.000	73,094.938	0.7674	56,093
01/02/2023-28/02/2023	81,226.026	374.990	80,851.036	0.7674	62,045
01/03/2023-31/03/2023	79,780.442	418.992	79,361.450	0.7674	60,901
01/04/2023-30/04/2023	81,194.680	360.010	80,834.670	0.7674	62,032
01/05/2023-31/05/2023	79,052.008	354.004	78,698.004	0.7674	60,392
01/06/2023-30/06/2023	74,750.130	362.012	74,388.118	0.7674	57,085
01/07/2023-31/07/2023	81,805.052	340.998	81,464.054	0.7674	62,515
01/08/2023-31/08/2023	79,265.872	312.004	78,953.868	0.7674	60,589
01/09/2023-30/09/2023	77,388.570	368.004	77,020.566	0.7674	59,105
01/10/203-31/10/2023	84,723.912	392.000	84,331.912	0.7674	64,716

01/11/2023-30/11/2023	81,774.210	389.998	81,384.212	0.7674	62,454
01/12/2023-31/12/2023	79,287.950	314.006	78,973.944	0.7674	60,604
Total in 2023	953,707.790	4,351.018	949,356.772		728,531
01/01/2024-31/01/2024	83,328.308	350.000	82,978.308	0.7674	63,677
01/02/2024-29/02/2024	82,651.184	389.998	82,261.186	0.7674	63,127
01/03/2024-31/03/2024	85,474.746	380.996	85,093.750	0.7674	65,300
01/04/2024-30/04/2024	75,437.852	405.006	75,032.846	0.7674	57,580
01/05/2024-31/05/2024	80,813.068	372.988	80,440.080	0.7674	61,729
01/06/2024-30/06/2024	78,517.530	312.998	78,204.532	0.7674	60,014
01/07/2024-31/07/2024	86,269.400	405.006	85,864.394	0.7674	65,892
01/08/2024-31/08/2024	73,939.670	428.008	73,511.662	0.7674	56,412
Total in 2024	646,431.758	3,045.000	643,386.758		493,731
Total in this monitoring period	1,896,201.104	8,883.028	1,887,318.076		1,448,318

5.2 Project Emissions

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

5.3 Leakage Emissions

No leakage is included in the project. Therefore, LE_y=0

5.4 GHG Emission Reductions and Carbon Dioxide Removals

Vintage period	Baseline emissions (tCO_2e)	Project emissions (tCO_2e)	Leakage emissions (tCO_2e)	Reduction VCUs (tCO_2e)	Removal VCUs (tCO_2e)	Total VCUs (tCO_2e)
01/09/2022 to 31/12/2022	226,056	0.000	0.000	226056	/	226,056
01/01/2023 - 31/12/2023	728,531	0.000	0.000	728,531	/	728,531

01/01/2024 - 31/08/2024	493,731	0.000	0.000	493,731	/	493,731
Total	1,448,318	0.000	0.000	1,448,318	/	1,448,318

Vintage period	Ex-ante estimated reductions/ removals	Achieved reductions/ removals	Percent difference	Explanation for the difference
01/09/2022 to 31/12/2022	243,325	226,056	-7.37%	The actual electricity generation is 7.37% less than the estimation of PD. This mainly because the wind volume and operation time is less than the estimation of PD.
01/01/2023-31/12/2023	727,982	728,531	0.08%	The actual electricity generation is 0.08% more than the estimation of PD. This mainly because the wind volume and operation time is less than the estimation of PD.
01/01/2024-31/08/2024	486,650	493,731	1.46%	The actual electricity generation is 1.46% less than the estimation of PD. This mainly because the wind volume and operation time is less than the estimation of PD.
Total	1,457,958	1,448,318	-0.66%	The actual electricity generation is 0.66% less than the estimation of PD. This mainly because the wind volume and operation time is less than the estimation of PD.

APPENDIX 1: EMPLOYEE LIST

This is the internal information of the project owner, which is commercially sensitive. And the employee list has been verified by DOE.