HEBEI SHIRENSHAN WIND POWER PROJECT

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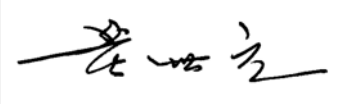
Prepared By	China Classification Society Certification Co., Ltd. (CCSC)
Contact	40, Dong Huang Cheng Gen Nan Jie, Beijing, 100006, P.R. China, Tel: + 86 10 5631 3492 Email: ccscbj_yf@c.ccs.org.cn www.ccs-c.com.cn
Approved By	Mr. Huang Shiyuan, Chairman of the Board 
Work Carried Out By	Team Leader: Sun Chunlin Team Member: Ma Yuxiang, Chen Chongying Technical Reviewer: Liu Ruyun, Piao Lijing

Summary:

China Classification Society Certification Co., Ltd. (CCSC), commissioned by Longyuan (Beijing) Carbon Asset Management Technology Co., Ltd., has performed the verification of Hebei Shirenshan Wind Power Project (hereafter referred to as "the project") covering the monitoring period from 01/05/2012 - 17/02/2018, on the basis of requirements of Verified Carbon Standard (VCS) Version 4.3.

The project is located in Taolizhuang village, Shangyi County, Zhangjiakou City, Hebei Province, North China. The project proposes to install 33 sets of 1500 KW wind turbines, for a total installed capacity of 49.5 MW. Shangyi County where the project is located has relative rich wind resources. It is estimated that the annual generation of the project will be 113.85GWh. As a result, 122,445 tonnes of CO_2 emission reduction will be generated annually.The project began to construct on 09/07/2007. The first turbine has been operated on 18/02/2008. The whole wind turbines were put into operation on 18/06/2008.

The project has been registered as a VCS project (VCS Project ID: 277) under VCS Standard Version 2007.1 using approved CDM methodology ACM0002 (Version 06) "Consolidated methodology for grid-connected electricity generation from renewable sources", with the first renewable crediting period from 18/02/2008 to 17/02/2018. The VCS monitoring report of this monitoring period has been reviewed against the relevant criteria and decisions by the VERRA Board, including the approved baseline and monitoring methodology ACM0002 (Version 06).

The verification process includes three phases:

1) Desk review of documents;

2) On-site visit and follow-up interviews;

3) Issuance of the final verification report and opinion.

CCSC appointed a qualified verification team in accordance with internal procedures to perform the verification. During the verification, 1 Clarification Request (CL), no Corrective Action Requests (CARs) and no forward request (FAR) were raised.

As a result of this verification, the verification team confirms that:

-All operations of the project are implemented and installed as planned and described in the validated Project Description;

-The registered monitoring plan is in accordance with the applied approved CDM methodology, i.e., ACM0002 (Version 06) ;

-The implementation of monitoring follows the registered monitoring plan;

-The monitoring system is in place and functional;

-The installed equipment for measuring parameters required for calculating emission reductions are calibrated appropriately.

Based on the information observed and evaluated, the verification team confirms that the emission reductions are correctly calculated in the MR (version 1.1 dated 06/08/2022).

In conclusion, it is CCSC's opinion that the project activity "Hebei Shirenshan Wind Power Project", as described in the MR (version 1.1 dated 06/08/2022), meets all relevant requirements for VCS and all relevant host Party criteria. Hence, CCSC is able to certify that the emission reductions from the project during the monitoring period from 01/05/2012 to 17/02/2018 amount to 614,637 tCO_2e and requests issuance of the equivalent VCUs.

CONTENTS

1 INTRODUCTION

1.1 Objective

Longyuan (Beijing) Carbon Asset Management Technology Co., Ltd., has commissioned CCSC to verify and provide a verification statement of the emission reductions of the Hebei Shirenshan Wind Power Project (hereafter referred to as "the project"), which is located in Shangyi County, Zhangjiakou City, Hebei Province of China. of China for the monitoring period from 01/05/2012 to 17/02/2018, based on requirement of VCS Standard (version 4.3) /11/ as well as criteria to provide for consistent project operations, monitoring and reporting.

CCSC as the validation/verification body (VVB) of the project has been accredited as a DOE by UNFCCC and meets the competence requirements as set out in ISO 14065:2020.

Verification of emission reductions from a project activity is the independent review and ex post determination by VVB of the monitored reductions in GHG emissions during the reported monitoring period. The objectives of verification are to:

a) Ensure that the project activity has been implemented and operated as per the registered CDM-PDD /3/ and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;

b) Ensure that the monitoring report and other supporting documents provided are complete in accordance with the latest applicable version of Registration and Issuance Process /15/ and in accordance with the additional requirements stated by the VERRA;

c) Ensure that actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology /12/;

d) Evaluate the data recorded and stored as per the monitoring methodology /12/.

1.2 Scope and Criteria

The verification scope encompasses an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the CCSC. The verification scope covers the relevant documents (e.g. the CDM-PDD /3/, the monitoring plan, the VCS monitoring report (VCS-MR) /1/, the emission reduction calculation spreadsheet /2/, supporting documents available to the verifier and information collected through performing interviews and during the on-site assessment, VERRA's requirements publicly available, relevant rules, including the host country legislation, etc.) to be independently reviewed, the project geographical locations to be visited on-site, the related project local stakeholders to be interviewed with, and processes that are necessary to acquire objective evidence for the evaluation of the project compliance to the VCS requirements and associated interpretations.

The above verification activities are conducted according to the VERRA's requirements. In doing so, the principles of accuracy and completeness, relevance, reliability and credibility were followed.

The verification is not meant to provide any consulting service towards the PPs. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project.

1.3 Level of Assurance

CCSC has undertaken a reasonable assurance engagement in accordance with VCS Standard (version 4.3) /11/. It requires a reasonable level of assurance in verification that GHG assertions are free of material errors, omissions and misrepresentations. The verification conclusion is based on the CDM-PDD /3/, VCS-MR /1/, and supporting evidences made available to the verifier and information collected through performing interviews and during the on-site inspection.

1.4 Summary Description of the Project

The project is located in Taolizhuang village, Shangyi County, Zhangjiakou City, Hebei Province, North China. The project proposes to install 33 sets of 1500 KW wind turbines, for a total installed capacity of 49.5 MW. Shangyi County where the project is located has relative rich wind resources. It is estimated that the annual generation of the project will be 113.85GWh. As a result, 122,445 tonnes of CO2 emission reduction will be generated annually. The project began to construct on 09/07/2007. The first turbine has been operated on 18/02/2008. The whole wind turbines were put into operation on 18/06/2008.

The project was registered as a CDM project on 29/12/2008 (UNFCCC registration reference number of 2067), and registered as a VCS project as well (VCS ID 277). The issued credits are listed as follow.

Start Date	End Date	GHG Emission Reduction (tCO_2e)	Credit	Program
18/02/2008	28-Dec-2008	79,435	VCU	VCS
29-Dec-2008	30-Jun-2009	87,442	CER	CDM
01-Jul-2009	30-Jun-2010	120,497	CER	CDM
01-Jul-2010	30-Jun-2011	124,613	CER	CDM
01-Jul-2011	30-Apr-2012	81,386	CER	CDM

During the monitoring period from 01/05/2012 to 17/02/2018, the total GHG emission reductions generated by the project are 614,637 tCO_2e.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using CCSC internal procedures.

CCSC verified the project against the requirements set in VCS/11//13//14//15/, and other relevant VCS requirements.

The following sections outline each step in more detail.

2.2 Document Review

A desk review of the registered CDM-PDD /3/, the registered validation report /4/, the previous verification reports /5/, the applied monitoring methodology /12/, the VCS monitoring report (VCS-MR) /1/ and supporting documents was conducted by the verification team. The aim of the desk review of the documentation was to verify the completeness of the data and the information presented, to carry out the compliance check of the VCS-MR

/1/ with respect to the monitoring plan and the applied methodology /12/. Particular attention was given to the quality of the metering equipment including calibration requirements /9//10/, the monitored data and its evidence, and the emission reduction calculation. The evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions was also conducted.

Appendix B of this report contains a complete list of all documents and proofs reviewed by the verification team.

2.3 Interviews

On 18/07/2022, CCSC performed an on-site assessment at the physical site of the project. The verification team verified that the actual implementation of the project was in compliance with that described in the CDM-PDD /3/, VCS-MR /1/. This included the review of the project operation based on the evidence of on-site observation and presented documents.

During the on-site assessment, the verification team has interviewed with key personnel from the project owner (the project proponent) and the consultancy.

The assessment content and topics/the persons interviewed at the on-site assessment were provided in the following table.

Date: 18/07/2022	
Interview topics	**Interviewed Organizations and persons**
--The status of VCS project implementation. -- Any changes of the VCS project. -- The project on-site inspection -- The evidences of construction status and operation of key equipment, parameters monitoring and data processing activities, monitor equipment and calibration. -- Monitoring data. -- Quality Management; organizational structure, responsibilities and competencies; Internal QA/QC Management procedures and document control. -- Compliance with National Laws and Regulations.	Longyuan (Zhangjiakou) Wind Power Co., Ltd. Wang Xi, Director of the plant Song Fei, Operation Staff
-- The impact of the project activity. -- The complaint by local stakeholders. -- The stakeholder consultation during the operation of the project activity.	Ma Tao, Shangyi Ecology and Environment Protection Bureau Li Jianguo, local resident of Taolizhuang Wen Chunyan, local resident of Taolizhuang Liu Yunmei, local resident of Taolizhuang

Date: 18/07/2022	
Interview topics	**Interviewed Organizations and persons**
-- Preparation of Monitoring Report. -- Compliance of the monitoring plan with the monitoring methodology. -- Compliance of monitoring with the monitoring plan -- Assessment of data and calculation of GHG emission reductions.	Longyuan (Beijing) Carbon Asset Management Technology Co., Ltd., Ms. Liang Limei, Project Manager

2.4 Site Inspections

The on-site assessment involved following activities,

An assessment of the implementation and operation of the project activity as per the CDM-PDD /3/;

A review of information flows for generating, aggregating and reporting the monitoring parameters;

Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the approved monitoring plan;

A cross-check between information provided in the monitoring report /1/ and data from other sources such as operational records or similar data sources;

A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the CDM-PDD /3/ and the selected methodology /12/;

A review of calculations and assumptions made in determining the GHG data and emission reductions;

An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

2.5 Resolution of Findings

During the verification of a project activity, to identify issues that need to be further elaborated upon, researched or added to in order to confirm that the project activity meets the VERRA's requirements and can achieve credible emission reductions, the verification team will issue a Corrective Action Request (CAR), a Clarification Request (CL) or a Forward Action Request (FAR) depending on different situations.

The objective of this phase of the verification is to resolve issues related to the monitoring, implementation and operations of the registered project activity that could impair the capacity of the registered project activity to achieve emission reductions or influence the monitoring and reporting of emission reductions prior to CCSC's positive conclusion on the GHG emission reduction calculation.

Findings established during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

A Corrective Action Request (CAR) will be raised if one of the following occurs:

a) Non-compliance with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the project proponents, or if the evidence provided to prove conformity is insufficient;

b) Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project proponents;

c) Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;

d) Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project proponents.

A Clarification Request (CL) will be raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

A Forward Action Request (FAR) will be raised, for actions if the monitoring and reporting require attention and/or adjustment for the next verification period.

1 Clarification Request (CL) has been raised during the current verification.

2.6 Forward Action Requests

No Forward Action Requests were raised during the current verification.

2.7 Eligibility for Validation Activities

The VVB of "China Classification Society Certification Co., Ltd. " commissioned by the project proponent is one of eligible VVBs listed on the VERRA website (https://verra.org/project/vcs-program/validation-verification/), and it holds the accreditation for validation/verification for the sectoral scope: "1. Energy (renewable/non-renewable)", to which the project activity belongs. Therefore, CCSC is eligible for the validation/verification of the project activity.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project was validated by TÜV SÜD on 22/12/2008 under CDM scheme for registration /4/. CCSC only performed verification activities on the proposed monitoring period for the project according to the VCS Program Guide.

3.2 Methodology Deviations

No deviation from the methodology is needed to be submitted.

3.3 Project Description Deviations

Another wind power project was put into operation on 10-Jul-2010 and shared the main meter M1 with the project. Thus, the monitoring plan was revised. The revised monitoring plan has been validated by DNV and approved by CDM EB on 13-Feb-2012.

The electricity exported to the grid measured by meter M1 is the sum of the electricity exported by the project and the other project. The power supplied to the grid by the project can be measured by meter M2 located at the project site, while the power supplied to the grid by the other project can be measured by meter M3 located in the other project's site. The electricity imported both for the project and the other project through the backup line can be measured by meter M4. The verification team confirms that the deviation has been described in the MR/1/. The monitoring plan in the MR/01/ is consistent with the revised monitoring plan/26/.

There is another deviation for the crediting period as well. As described in previous MR/5/ version 02 dated 13/05/2009, only emission reductions achieved from 18/02/2008 to 28/12/2008 will be considered as VCUs. Thus, the crediting period was from 18/02/2008 to 28/12/2008.

A deviation is requested for the project crediting period. The first crediting period has been replaced from 18/02/2008-28/12/2008 to 18/02/2008-17/02/2018 as the deviation.

As per Appendix 3 of VCS standard version 4.3, Registered projects and projects that complete validation on or before 19 March 2020 remain eligible to apply the crediting period requirements under VCS standard version 3. The project is registered under VCS Standard Version 2007.1 and completed validation before 19/03/2020. Thus the crediting period requirements under VCS standard version 3 has been applied by the project.

As per section 3.8 of VCS Standard version 3. The project crediting period shall be a maximum of ten years and may be renewed at most twice for non-AFOLU projects. Projects registered under other GHG programs are not eligible for VCU issuance beyond the end of the total project crediting period under those programs. Renew validation report shall be issued after the end of the (previous) project crediting period but within two years after the end of the (previous) project crediting period. The project started operation on 18/02/2008. The end date of the CDM 3*7 crediting period of the project is 28/12/2029. Thus, the total VCS crediting period was determined from 18/02/2008 to 28/12/2029, of which the first VCS crediting period is from 18/02/2008~17/02/2018. Since the project did not conduct the validation of crediting period renewal within the two years after the end of the first VCS crediting period, the VCS crediting period of the project ends on 17/02/2018.

According to the information collected during on-site visit and the relevant evidence provided by project owner, CCSC can confirm that both the deviations don't impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario, and the project remains in compliance with the applied methodology, the deviation has been appropriately described and justified in the monitoring report and will be described in all subsequent monitoring reports, and the project remains in compliance with the VCS Program rules.

3.4 Grouped Project

Not applicable as the project activity is not grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

4.1.1 Project Implementation in accordance with the registered PDD

The project has been registered as VCS project activity with the Project ID 277 (https://registry.verra.org/app/projectDetail/VCS/277).

The project is located in Taolizhuang village, Shangyi County, Zhangjiakou City, Hebei Province, North China. The project proposes to install 33 sets of 1500 KW wind turbines, for a total installed capacity of 49.5 MW. Shangyi County where the project is located has relative rich wind resources. It is estimated that the annual generation of the project will be 113.85GWh. As a result, 122,445 tonnes of CO_2 emission reduction will be generated annually.The project began to construct on 09/07/2007. The first turbine has been operated on 18/02/2008. The whole wind turbines were put into operation on 18/06/2008.

Through the on-site visit, the power generating technology, installed capacity, technical specifications of wind turbine and generator, and power delivering systems indicated in the CDM-PDD are in place and the project has been operated as per the CDM-PDD /3/. The verification team confirms the project has been implemented as per the registered CDM-PDD /3/. During this monitoring period, the monitoring of this project activity was in compliance with the registered CDM-PDD and revised monitoring plan/26/.

The major technical specifications of the project have been verified during the site visit and listed in the following table and the verification team confirmed they are consistent with the registered CDM-PDD /3/.

Table 4-1 The main technical parameters of wind turbines

Parameters	Data
Rotor Diameter:	76.662m
Capacity:	1.5MW
Cut-in wind speed:	3m/s
Cut-out wind speed	25m/s
Rated wind speed	11m/s

According to the registered CDM-PDD /3/, revised monitoring plan /26/ and the emission reductions calculation spreadsheet /2/, quantity of net electricity generation supplied by the project plant to the grid is 571,493.016 MWh during this monitoring period. All the data and the calculated process in the emission reductions calculation spreadsheet /2/ have been checked by the verification team and it is correctly and in accordance with both the monthly reading records/7/ and Electricity Transaction Notes (ETNs)/8/. Therefore, the verification team confirmed there are no changes of the project that cause increase of emission reductions.

By checking UNFCCC website (https://cdm.unfccc.int/Projects/DB/TUEV-SUED1218467437.87/view), it is confirmed by CCSC that the project has been registered as CDM project activity on 29/12/2008 with reference No. 2067. GHG emission reductions have been issued as CERs from 29/12/2008 - 30/04/2012 under CDM scheme. There are no CDM issuance during this monitoring period. Furthermore, CCSC checked public information from the REC Mechanism database of China, IREC Mechanism database, JI database, Chinese Emission Trading System, Gold Standard Registry and interviewed with project owner during site visit, it is confirmed that except CDM and VCS scheme, the project has not been participated or been rejected under any other GHG programs since validation or previous verification.

Furthermore, as per “Notice on Strengthening Enterprise Greenhouse Gas Emission Report Management” issued by Ministry of Ecology and Environment of P.R.China, China has a national emissions trading scheme only cover the high-emission industries, including 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 CO_2e/year. By checking “List of key emissions in the national carbon emissions transaction quota management in 2019-2020” issued by Ministry of Ecology and Environment of P.R.China, the project owner is not included in the mandatory emission control scheme and thus no emission cap was enforced for the project activity.

Therefore, the verification team confirmed that the project only applies CERs and VCUs under CDM and VCS, and no rejection from CDM and VCS occurs, there are no other forms of environmental credits applied or issued for the project activity, the emission reduction

resulted from the project during this monitoring period would only apply for VCUs.

By checking China's National Plan on Implementation of the 2030 Agenda for Sustainable Development/16/ and 17 SDGs defined by UNDP, and interviewing with stakeholders during site visit, CCSC confirmed that the project would contribute to sustainable development as follow.

- **SDG 13:** Reducing greenhouse gas emissions compared to a business-as-usual scenario. During this monitoring period, the emission reductions achieved were 614,637tCO_2e. By checking UNFCCC website (https://cdm.unfccc.int/Projects/DB/TUEV-SUED1218467437.87/view) and VERRA website (https://registry.verra.org/app/projectDetail/ VCS/277), it is confirmed that the cumulative Contributions Over Project Lifetime were 614,637tCO_2e achieved emission reductions since it is the first time that the project submits the SD contributions.

- **SDG 7:** Providing clean and renewable energy source and displacing the power generation of fossil fuel power plants, reducing pollution emissions caused by coal burning significantly, thus mitigating the air pollution and its adverse impacts on human health, promoting sustainable economic development in local area. During this monitoring period, the renewable energy supplied to NCPG was 571,493.016MWh. By checking UNFCCC website (https://cdm.unfccc.int/Projects/DB/TUEV-SUED121846743 7.87/view) and VERRA website (https://registry.verra.org/app/projectDetail/VCS/277), it is confirmed that the cumulative Contributions Over Project Lifetime was 571,493.016 MWh renewable energy supplied to NCPG since it is the first time that the project submits the SD contributions.

- **SDG 8:** Providing direct and indirect employment opportunities during construction and operation period, which promotes sustained, inclusive and sustainable economic growth, full and productive employment and decent work for local residents. By checking Statement on the annual income of employees /25/, it is confirmed that 12 people have been employed by the project in 2012. 13 people have been employed by the project in 2013 and 2015. 14 people have been employed by the project in 2016. 15 people have been employed by the project in 2014,2017 and 2018.

As per Instructions for Completing the Monitoring Report (Version 4.1), the cumulative impact should be calculated by summing the current project contributions with all impacts included in previously approved VCS monitoring reports or Sustainable Development Contribution Reports. Hence, **CL-1** was raised requesting PP to update Table 1 of the MR accordingly. In the updated MR, cumulative SDG impacts of the project activity has been updated which is in line with Instructions for Completing the Monitoring Report (Version 4.1). Therefore, **CL-1** was closed.

In conclusion, according to the information collected during site visit and the relevant evidence provided by project owner, CCSC can confirm that:

a) No project design change occurred during this monitoring period and the project was implemented in accordance the registered CDM-PDD /3/;

b) The project contributes to sustainable development including: creating job opportunities in the project area, displacing part of the electricity generated by coal-fired power plants, and generating emission reductions;

c) The GHG emission reductions or removals generated by the project have not included in an emissions trading program or any other mechanism that includes GHG allowance trading;

d) The project has not sought or received another form of GHG-related environmental credit, including renewable energy certificates, during this monitoring period. None of the credits will be claimed in the same period;

e) The GHG emission reductions generated by the project during this monitoring period (01/05/2012~17/02/2018) will be only claimed under VCS program as VCUs for the project to avoid double counting.

4.1.2 Compliance of monitoring with the monitoring plan

The verification team has assessed the implementation of monitoring by the project owner against the registered monitoring plan. A short summary on the verification of every parameter listed in the monitoring plan and used for emission reduction calculation is provided as follow.

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in the monitoring plan of PD):	EG_y Net electricity delivered to the grid by the proposed project
Measuring frequency:	Continuously measurement
Reporting frequency:	Monthly recorded
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Type of monitoring equipment:	Calculated parameter. The type of monitoring equipment refered in the equation please see Table 4-2.
Is accuracy of the monitoring equipment as stated in the PD? If the PD does not specify the accuracy of the	Yes. Accuracy level of monitoring meters is as described in the revised monitoring plan /26/.

monitoring equipment, does the monitoring equipment represent good monitoring practise?	For details see Table 4-2.
Calibration frequency /interval:	Annually as per relevant sectoral standards in China
Is the calibration interval in line with the monitoring plan of the PD? If the PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Yes
Company performing the calibration:	See Table 4-2
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes
Is(are) calibration(s) valid for the whole reporting period?	Yes. For details see Table 4-2.
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data has been cross-checked with Electricity Transaction Notes in line with revised monitoring plan /26/.
How were the values in the monitoring report verified?	The verification details have been reported in Section 4.4 of this report.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not applicable.

According to the revised monitoring plan/26/, Quantity of net electricity generation supplied by the project plant to the grid in year y (EG_y) is calculated as follow.

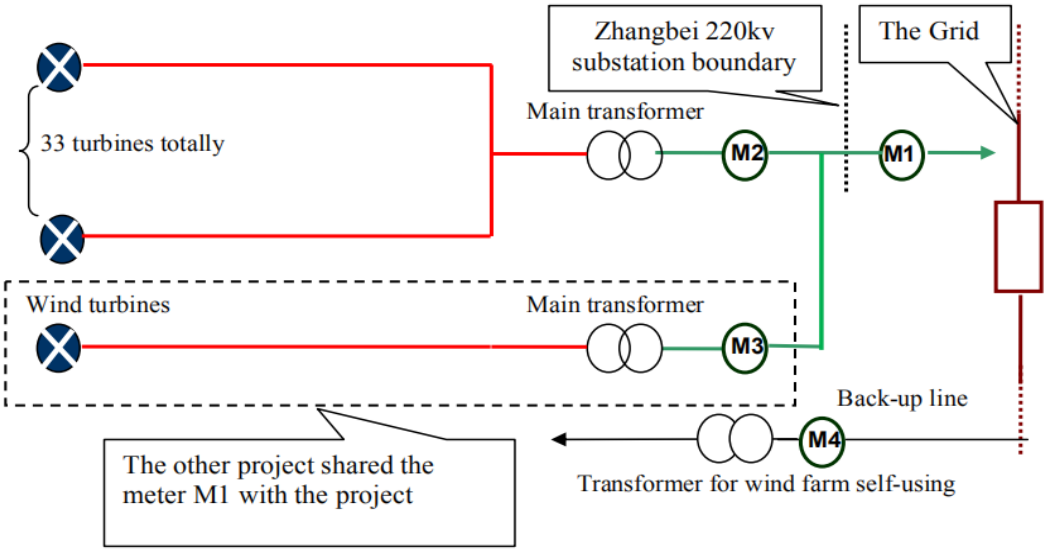


Figure 1 Location of the meters

As the figure 1 indicated, the line supplying electric power to the grid can also deliver power from the grid to the wind farm, and the metering equipments installed on the line run in two directions.

Monitoring of Electricity exported ($EG_{exported,y}$):

The power supplied to the grid can be measured by the project entity at the point where meter M2 installed. Meter M3 is for the measurement of the electricity exchanged between the grid and the other project shared the meter M1 with the project. The electricity exported to the grid measured by meter M1 is the sum of the electricity exported by the project and the other project shared the meter M1 with the project. Then the transmission loss of the electricity exported can be calculated as the following formula indicated:

$$EG_{loss,y} = (EG_{M2,exported,y} + EG_{M3,exported,y}) - EG_{M1,exported,y} \qquad (1)$$

where:

$EG_{loss,y}$ is the total transmission loss of the electricity exported to the grid by the project and the shared project in year y.

$EG_{M1,exported,y}$ is the electricity exported measured by meter M1 in year y.

$EG_{M2,exported,y}$ isthe electricity exported measured by meter M2 in year y.

$EG_{M3,\ exported,y}$ isthe electricity exported measured by meter M3 in year y.

In order to be conservative, the electricity exported by the project used for the emission reduction calculation is achieved as the formula 2 indicated:

$$EG_{exported,y} = EG_{M2,exported,y} - EG_{loss,y} = EG_{M1,exported,y} - EG_{M3,exported,y} \qquad (2)$$

Electricity imported through 110kv line ($EG_{imported,\ main\ line,y}$):

As the figure above indicated, the electricity imported from the grid measured by meter M1 is the sum of the electricity imported by the project and the other project shared the meter M1 with the project.

Electricity imported through back-up line ($EG_{imported,\ back\text{-}up\ line,y}$):

Meanwhile the electricity imported through the back-up line can be measured by the meter M4 installed on the back-up line.

Net electricity used for emission reduction calculation:

The net electricity (EG_y) used for the calculation of the emission reduction is obtained through the exported generation subtract the imported generation.

$$EG_y = EG_{exported,y} - EG_{imported,mainline,y} - EG_{imported,back-upline,y} \qquad (3)$$

Furthermore, the verification team has verified that the accuracy of measure of the monitoring equipment was set according to the requirements and all calibration procedures were carried out according to the revised monitoring plan/26/ and manufacturer specifications. The calibration information of the monitoring meters /10/ in this monitoring period has been listed in Table 4-2. The monitoring equipment has been installed in the project in line with the revised monitoring plan /26/.

In summary, the verification team is able to verify that the accuracy the monitoring equipment was set according to the revised monitoring plan /26/ and relevant sectoral standard of China.

Table 4-2 Verified calibration information of monitoring meters

Meter	Type	Serial number	Accuracy	Frequency	Calibration date	Valid until	Calibration Entity
M1 (Main meter)	DTSD341	20070743010001	0.2S	Annually	07-Jul-2011 05-Jul-2012 03-Jul-2013 01-Jul-2014 29-Jun-2015 27-Jun-2016 25-Jun-2017	06-Jul-2012 04-Jul-2013 02-Jul-2014 30-Jun-2015 28-Jun-2016 26-Jun-2017 24-Jun-2018	North China Electric Power Research Institute Co. LTD
M2	DTSD566	707960315	0.2S	Annually			
M3	DTSD341	20070743010002	0.2S	Annually	19-Jul-2011 05-Jul-2012 03-Jul-2013 01-Jul-2014 29-Jun-2015 27-Jun-2016 25-Jun-2017	18-Jul-2012 04-Jul-2013 02-Jul-2014 30-Jun-2015 28-Jun-2016 26-Jun-2017 24-Jun-2018	
M4(back-up line)	DTSD341	812403003856	0.5S	Annually	07-Jul-2011 05-Jul-2012 03-Jul-2013 01-Jul-2014 29-Jun-2015 27-Jun-2016	06-Jul-2012 04-Jul-2013 02-Jul-2014 30-Jun-2015 28-Jun-2016 26-Jun-2017	
	DSZ331	1630001000000012451398 0	0.2S	Annually	27-Jun-2016 25-Jun-2017	26-Jun-2017 24-Jun-2018	

The verification team confirmed that there is no proposed or actual change to revised monitoring plan /26/ during this monitoring period. All required equipments and procedures are available and implemented in an appropriate manner. All necessary monitoring instruments are installed. All required instruments including standby and operating procedures for the same have been implemented in an appropriate manner. The project is completely operational and the same has been confirmed on-site. Neither mistakes nor malfunction on meters have been observed during this monitoring period.

4.2 Safeguards

4.2.1 No Net Harm

By checking the EIA summary and conclusion provided in the registered CDM-PDD, it is confirmed that wind power is green power and the impact caused by wind power on the surrounding ecosystem and residents, wastewater, solid waste and atmosphere etc. is very little, there would be no net harm caused due to the project activity. Besides, the EIA of the project are approved by the government.

Also, no potential environment or social economic matter was found during on-site assessment. The project is renewable energy project and thus no net harm observed in air or water quality on-site.

4.2.2 Local Stakeholder Consultation

As per the registered CDM-PDD, the stakeholder consultation meeting was announced well in advance, to ensure that all interested parties could participate in the meeting. Longyuan (Zhangjiakou) Wind Power Co., Ltd. published a bulletin on the bulletin board in the public place of the village around the wind farm. Through the bulletin, all potential stakeholders could obtain the detailed information about the project and VCS. Meanwhile the project owner has established a mail box at the gate of their office building to accept comments from any stakeholders.

On 05-Jul-2007, under the support of local government, the project owner successfully held a stakeholder meeting in Shangyi County. The project owner and the consultant invited the participants in the meeting to express their comments and concerns about the project. At this stage, no critical comments were made; the overall finding was that the local residents and local government officials expected that the local people would benefit from the project. To further determine there are no negative impacts by the project, the consultant distributed 50 copies of questionnaire among the local residents after the meeting. The survey shows that the project receives strong support from local people, which is closely linked to the fact that the majority of local villagers have some understandings with wind power projects.

Communications with Local stakeholders was being carried out at periodic intervals. There are no negative comments received for the project.

All such conclusion has been verified through on-site assessment and check registered CDM-PDD.

4.3 AFOLU-Specific Safeguards

The project is not AFOLU project, and thus this section is not applicable for the project.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

4.4.1 Parameters and information flow

The parameters required by the monitoring plan and the way CCSC has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values) in the monitoring report are described as follow.

Monitoring of Electricity exported ($EG_{exported,y}$):

The power supplied to the grid can be measured by the project entity at the point where meter M2 installed. Meter M3 is for the measurement of the electricity exchanged between the grid and the other project shared the meter M1 with the project. The electricity exported to the grid measured by meter M1 is the sum of the electricity exported by the project and the other project shared the meter M1 with the project. Then the transmission loss of the electricity exported can be calculated as the following formula indicated:

$$EG_{loss,y} = (EG_{M2,exported,y} + EG_{M3,exported,y}) - EG_{M1,exported,y} \qquad (4)$$

where:

$EG_{loss,y}$ is the total transmission loss of the electricity exported to the grid by the project and the shared project in year y.

$EG_{M1,exported,y}$ is the electricity exported measured by meter M1 in year y.

$EG_{M2,exported,y}$ isthe electricity exported measured by meter M2 in year y.

$EG_{M3,\ exported,y}$ isthe electricity exported measured by meter M3 in year y.

In order to be conservative, the electricity exported by the project used for the emission reduction calculation is achieved as the formula 2 indicated:

$$EG_{exported,y} = EG_{M2,exported,y} - EG_{loss,y} = EG_{M1,exported,y} - EG_{M3,exported,y} \qquad (5)$$

Electricity imported through 110kv line ($EG_{imported,\ main\ line,y}$):

As the figure above indicated, the electricity imported from the grid measured by meter M1 is the sum of the electricity imported by the project and the other project shared the meter M1 with the project.

Electricity imported through back-up line ($EG_{imported,\ back\text{-}up\ line,y}$):

Meanwhile the electricity imported through the back-up line can be measured by the meter M4 installed on the back-up line.

Net electricity used for emission reduction calculation:

The net electricity (EG_y) used for the calculation of the emission reduction is obtained through the exported generation subtract the imported generation.

$$EG_{y} = EG_{exported,y} - EG_{imported,mainline,y} - EG_{imported,back-upline,y} \quad (6)$$

The monthly monitoring records of the project have been verified during on-site assessment.

The verification team has cross-checked $EG_{exported,y}$, $EG_{imported,\ main\ line,y}$, and $EG_{imported,\ back\text{-}up\ line,y}$ in the emission reductions calculation spreadsheet /2/ with Electricity Transaction Notes /8/ of the project from the grid company. By the on-site assessment, the values in emission reductions calculation spreadsheet /2/ is in line with Electricity Transaction Notes /8/ during this period.

Parameter determined ex-ante:

$EF_{grid,CM,y}$: The combined baseline emission factor of the Northwest Power Grid.

According to the registered CDM-PDD /3/, the $EF_{grid,CM,y}$ is ex-ante determined as 1.0755 tCO_2/MWh for Northwest Power Grid over the first crediting period. The emission factors used in this monitoring report have been verified against the registered CDM-PDD /3/ and found them to be consistent.

4.4.2 Assessment Data and Calculation

It was verified that the project is a newly built wind power plant. Therefore, the project emission of the project is zero under ACM0002 (Version 06) /12/ (PE_y=0).

The project is a new wind power plant. Therefore, no leakage needs to be considered for the project activity according to the methodology /12/. (LE_y=0).

Since the project emission and the leakage emission has been justified as zero under ACM0002 (Version 06) /12/, the calculation of the emission reductions simply involves the calculation of the baseline emissions.

Formula 1:

$ER_y=BE_y-0-0=EG_y \times EF_{grid,CM,y}$ (7)

Where:

ER_y: Emission reductions in year y (tCO_2/yr)

BE_y: The baseline emissions (tCO_2/yr)

EG_y: Quantity of net electricity generation supplied by the project plant to the grid in year y (MWh)

$EF_{grid,CM,y}$: The combined baseline emission factor of the Northwest Power Grid (tCO_2/MWh)

Following the approach described in section 4.1 above, The parameters are verified as follow.

Table 4-3 The verified electricity exported to grid by the project(MWh)

Period		Meter reading records (M1)	Meter reading records (M3)	The electricity exported to grid
From	To	MWh	MWh	MWh
01-May-2012	31-May-2012	17,535.936	7,051.824	10,484.112
01-Jun-2012	30-Jun-2012	14,267.880	5,384.575	8,883.305
01-Jul-2012	31-Jul-2012	10,749.816	3,916.422	6,833.394
01-Aug-2012	31-Aug-2012	8,029.824	3,207.805	4,822.019
01-Sep-2012	30-Sep-2012	9,444.996	3,815.463	5,629.533
01-Oct-2012	31-Oct-2012	11,144.892	4,270.009	6,874.883
01-Nov-2012	30-Nov-2012	10,873.632	4,486.290	6,387.342
01-Dec-2012	31-Dec-2012	27,690.643	10,427.500	17,263.143
Subtotal-2012		**109,737.619**	**42,559.888**	**67,177.731**
01-Jan-2013	31-Jan-2013	7,413.968	3,265.131	4,148.837
01-Feb-2013	28-Feb-2013	15,508.574	4,287.371	11,221.203
01-Mar-2013	31-Mar-2013	15,726.586	4,026.885	11,699.701
01-Apr-2013	30-Apr-2013	20,474.652	5,372.872	15,101.780
01-May-2013	31-May-2013	16,107.036	4,778.553	11,328.483
01-Jun-2013	30-Jun-2013	16,413.672	4,068.604	12,345.068
01-Jul-2013	31-Jul-2013	9,658.176	2,549.625	7,108.551
01-Aug-2013	31-Aug-2013	8,738.532	2,812.295	5,926.237
01-Sep-2013	30-Sep-2013	10,207.164	3,298.727	6,908.437
01-Oct-2013	31-Oct-2013	13,931.544	4,278.482	9,653.062
01-Nov-2013	30-Nov-2013	18,506.268	5,339.044	13,167.224
01-Dec-2013	31-Dec-2013	17,197.488	6,322.317	10,875.171
Subtotal-2013		**169,883.660**	**50,399.906**	**119,483.754**

01-Jan-2014	31-Jan-2014	19,641.072	5,747.407	13,893.665
01-Feb-2014	28-Feb-2014	5,398.040	2,411.001	2,987.039
01-Mar-2014	31-Mar-2014	18,557.721	5,272.995	13,284.726
01-Apr-2014	30-Apr-2014	12,030.744	3,838.366	8,192.378
01-May-2014	31-May-2014	18,486.864	6,198.387	12,288.477
01-Jun-2014	30-Jun-2014	10,854.624	3,547.839	7,306.785
01-Jul-2014	31-Jul-2014	8,757.804	2,876.713	5,881.091
01-Aug-2014	31-Aug-2014	8,879.508	2,837.903	6,041.605
01-Sep-2014	30-Sep-2014	9,121.068	3,004.657	6,116.411
01-Oct-2014	31-Oct-2014	12,512.676	4,140.549	8,372.127
01-Nov-2014	30-Nov-2014	18,834.526	4,373.901	14,460.625
01-Dec-2014	31-Dec-2014	21,596.652	6,234.762	15,361.890
Subtotal-2014		**164,671.299**	**50,484.480**	**114,186.819**
01-Jan-2015	31-Jan-2015	12,047.270	4,667.932	7,379.338
01-Feb-2015	28-Feb-2015	11,029.656	3,486.468	7,543.188
01-Mar-2015	31-Mar-2015	16,041.960	4,751.558	11,290.402
01-Apr-2015	30-Apr-2015	13,301.244	3,688.062	9,613.182
01-May-2015	31-May-2015	12,284.052	3,759.708	8,524.344
01-Jun-2015	30-Jun-2015	8,406.024	2,847.356	5,558.668
01-Jul-2015	31-Jul-2015	4,057.944	941.839	3,116.105
01-Aug-2015	31-Aug-2015	5,090.712	1,470.995	3,619.717
01-Sep-2015	30-Sep-2015	8,059.260	3,041.959	5,017.301
01-Oct-2015	31-Oct-2015	10,725.792	4,200.784	6,525.008
01-Nov-2015	30-Nov-2015	5,801.928	2,042.155	3,759.773
01-Dec-2015	31-Dec-2015	4,435.807	816.906	3,618.901
Subtotal-2015		**111,281.649**	**35,715.722**	**75,565.927**

01-Jan-2016	31-Jan-2016	11,390.597	3,785.491	7,605.106
01-Feb-2016	29-Feb-2016	8,045.664	2,579.138	5,466.526
01-Mar-2016	31-Mar-2016	12,965.212	4,025.101	8,940.111
01-Apr-2016	30-Apr-2016	14,582.436	4,297.406	10,285.030
01-May-2016	31-May-2016	14,311.176	4,648.915	9,662.261
01-Jun-2016	30-Jun-2016	9,156.344	3,013.227	6,143.117
01-Jul-2016	31-Jul-2016	9,117.326	2,930.239	6,187.087
01-Aug-2016	31-Aug-2016	7,708.140	2,504.473	5,203.667
01-Sep-2016	30-Sep-2016	7,588.548	2,587.435	5,001.113
01-Oct-2016	31-Oct-2016	12,654.444	4,451.042	8,203.402
01-Nov-2016	30-Nov-2016	18,139.572	6,058.054	12,081.518
01-Dec-2016	31-Dec-2016	15,179.472	5,126.293	10,053.179
Subtotal-2016		**140,838.931**	**46,006.814**	**94,832.117**
01-Jan-2017	31-Jan-2017	15,965.558	5,538.020	10,427.538
01-Feb-2017	28-Feb-2017	15,074.400	5,081.594	9,992.806
01-Mar-2017	31-Mar-2017	13,222.704	5,046.235	8,176.469
01-Apr-2017	30-Apr-2017	17,679.156	7,106.396	10,572.760
01-May-2017	31-May-2017	13,642.411	4,214.643	9,427.768
01-Jun-2017	30-Jun-2017	8,004.480	2,586.320	5,418.160
01-Jul-2017	31-Jul-2017	7,360.320	2,323.200	5,037.120
01-Aug-2017	31-Aug-2017	9,630.720	3,143.360	6,487.360
01-Sep-2017	30-Sep-2017	8,551.840	2,875.840	5,676.000
01-Oct-2017	31-Oct-2017	9,065.804	3,400.320	5,665.484
01-Nov-2017	30-Nov-2017	18,094.560	6,912.400	11,182.160
01-Dec-2017	31-Dec-2017	14,935.404	5,798.320	9,137.084
Subtotal-2017		**151,227.357**	**54,026.648**	**97,200.709**

01-Jan-2018	31-Jan-2018	16,177.920	6,200.480	9,977.440
01-Feb-2018	17-Feb-2018	0.000	0.000	0.000
Subtotal-2018		**16,177.920**	**6,200.480**	**9,977.440**
Total		**863,818.435**	**285,393.938**	**578,424.497**

By checking Electricity Transaction Notes /8/ during this period, it is confirmed that the transaction date of $EG_{export,y}$ and $EG_{import,y}$ is 24:00 of last day of each month. The electricity data from 01-Feb-2018 to 28-Feb-2018 was recorded and from 01-Feb-2018 to 17-Feb-2018 was not recorded. A conservative method has been taken by the MR. 0 was adopted as the electricity exported to the grid from 01-Feb-2018 to 17-Feb-2018.

EG_y is calculated as:

Table 4-4 The verified $EG_{exported,y}$ of the Project (Unit: MWh)

Period		Meter reading records (M1) $EG_{M1,exported,y}$	Meter reading records (M3) $EG_{M3,exported,y}$	The electricity exported to grid $EG_{exported,y}$	ETN	Conservative value applied
From	To	A	B	C=A-B	D	E=MIN(C,D)
01-May-2012	31-May-2012	17,535.936	7,051.824	10,484.112	10,484.112	10,484.112
01-Jun-2012	30-Jun-2012	14,267.880	5,384.575	8,883.305	8,883.305	8,883.305
01-Jul-2012	31-Jul-2012	10,749.816	3,916.422	6,833.394	6,833.394	6,833.394
01-Aug-2012	31-Aug-2012	8,029.824	3,207.805	4,822.019	4,822.019	4,822.019
01-Sep-2012	30-Sep-2012	9,444.996	3,815.463	5,629.533	5,629.533	5,629.533
01-Oct-2012	31-Oct-2012	11,144.892	4,270.009	6,874.883	6,874.883	6,874.883
01-Nov-2012	30-Nov-2012	10,873.632	4,486.290	6,387.342	6,387.342	6,387.342
01-Dec-2012	31-Dec-2012	27,690.643	10,427.500	17,263.143	17,263.143	17,263.143
Subtotal-2012		**109,737.619**	**42,559.888**	**67,177.731**	**67,177.731**	**67,177.731**
01-Jan-2013	31-Jan-2013	7,413.968	3,265.131	4,148.837	4,148.837	4,148.837
01-Feb-2013	28-Feb-2013	15,508.574	4,287.371	11,221.203	11,221.203	11,221.203
01-Mar-2013	31-Mar-2013	15,726.586	4,026.885	11,699.701	11,699.701	11,699.701
01-Apr-2013	30-Apr-2013	20,474.652	5,372.872	15,101.780	15,101.780	15,101.780
01-May-2013	31-May-2013	16,107.036	4,778.553	11,328.483	11,328.483	11,328.483
01-Jun-2013	30-Jun-2013	16,413.672	4,068.604	12,345.068	12,345.068	12,345.068
01-Jul-2013	31-Jul-2013	9,658.176	2,549.625	7,108.551	7,108.551	7,108.551
01-Aug-2013	31-Aug-2013	8,738.532	2,812.295	5,926.237	5,926.237	5,926.237
01-Sep-2013	30-Sep-2013	10,207.164	3,298.727	6,908.437	6,908.437	6,908.437

Period		Meter reading records (M1) $EG_{M1,exported,y}$	Meter reading records (M3) $EG_{M3,exported,y}$	The electricity exported to grid $EG_{exported,y}$	ETN	Conservative value applied
01-Oct-2013	31-Oct-2013	13,931.544	4,278.482	9,653.062	9,653.062	9,653.062
01-Nov-2013	30-Nov-2013	18,506.268	5,339.044	13,167.224	13,167.224	13,167.224
01-Dec-2013	31-Dec-2013	17,197.488	6,322.317	10,875.171	10,875.171	10,875.171
Subtotal-2013		**169,883.660**	**50,399.906**	**119,483.754**	**119,483.754**	**119,483.754**
01-Jan-2014	31-Jan-2014	19,641.072	5,747.407	13,893.665	13,893.665	13,893.665
01-Feb-2014	28-Feb-2014	5,398.040	2,411.001	2,987.039	2,987.039	2,987.039
01-Mar-2014	31-Mar-2014	18,557.721	5,272.995	13,284.726	13,284.726	13,284.726
01-Apr-2014	30-Apr-2014	12,030.744	3,838.366	8,192.378	8,192.378	8,192.378
01-May-2014	31-May-2014	18,486.864	6,198.387	12,288.477	12,288.477	12,288.477
01-Jun-2014	30-Jun-2014	10,854.624	3,547.839	7,306.785	7,306.785	7,306.785
01-Jul-2014	31-Jul-2014	8,757.804	2,876.713	5,881.091	5,881.091	5,881.091
01-Aug-2014	31-Aug-2014	8,879.508	2,837.903	6,041.605	6,041.605	6,041.605
01-Sep-2014	30-Sep-2014	9,121.068	3,004.657	6,116.411	6,116.411	6,116.411
01-Oct-2014	31-Oct-2014	12,512.676	4,140.549	8,372.127	8,372.127	8,372.127
01-Nov-2014	30-Nov-2014	18,834.526	4,373.901	14,460.625	14,460.625	14,460.625
01-Dec-2014	31-Dec-2014	21,596.652	6,234.762	15,361.890	15,361.890	15,361.890
Subtotal-2014		**164,671.299**	**50,484.480**	**114,186.819**	**114,186.819**	**114,186.819**
01-Jan-2015	31-Jan-2015	12,047.270	4,667.932	7,379.338	7,379.338	7,379.338
01-Feb-2015	28-Feb-2015	11,029.656	3,486.468	7,543.188	7,543.188	7,543.188
01-Mar-2015	31-Mar-2015	16,041.960	4,751.558	11,290.402	11,290.402	11,290.402

Period		Meter reading records (M1) $EG_{M1,exported,y}$	Meter reading records (M3) $EG_{M3,exported,y}$	The electricity exported to grid $EG_{exported,y}$	ETN	Conservative value applied
01-Apr-2015	30-Apr-2015	13,301.244	3,688.062	9,613.182	9,613.182	9,613.182
01-May-2015	31-May-2015	12,284.052	3,759.708	8,524.344	8,524.344	8,524.344
01-Jun-2015	30-Jun-2015	8,406.024	2,847.356	5,558.668	5,558.668	5,558.668
01-Jul-2015	31-Jul-2015	4,057.944	941.839	3,116.105	3,116.105	3,116.105
01-Aug-2015	31-Aug-2015	5,090.712	1,470.995	3,619.717	3,619.717	3,619.717
01-Sep-2015	30-Sep-2015	8,059.260	3,041.959	5,017.301	5,017.301	5,017.301
01-Oct-2015	31-Oct-2015	10,725.792	4,200.784	6,525.008	6,525.008	6,525.008
01-Nov-2015	30-Nov-2015	5,801.928	2,042.155	3,759.773	3,759.773	3,759.773
01-Dec-2015	31-Dec-2015	4,435.807	816.906	3,618.901	3,618.901	3,618.901
Subtotal-2015		**111,281.649**	**35,715.722**	**75,565.927**	**75,565.927**	**75,565.927**
01-Jan-2016	31-Jan-2016	11,390.597	3,785.491	7,605.106	7,605.106	7,605.106
01-Feb-2016	29-Feb-2016	8,045.664	2,579.138	5,466.526	5,466.526	5,466.526
01-Mar-2016	31-Mar-2016	12,965.212	4,025.101	8,940.111	8,940.111	8,940.111
01-Apr-2016	30-Apr-2016	14,582.436	4,297.406	10,285.030	10,285.030	10,285.030
01-May-2016	31-May-2016	14,311.176	4,648.915	9,662.261	9,662.261	9,662.261
01-Jun-2016	30-Jun-2016	9,156.344	3,013.227	6,143.117	6,143.117	6,143.117
01-Jul-2016	31-Jul-2016	9,117.326	2,930.239	6,187.087	6,187.087	6,187.087
01-Aug-2016	31-Aug-2016	7,708.140	2,504.473	5,203.667	5,203.667	5,203.667
01-Sep-2016	30-Sep-2016	7,588.548	2,587.435	5,001.113	5,001.113	5,001.113
01-Oct-2016	31-Oct-2016	12,654.444	4,451.042	8,203.402	8,203.402	8,203.402

Period		Meter reading records (M1) $EG_{M1,exported,y}$	Meter reading records (M3) $EG_{M3,exported,y}$	The electricity exported to grid $EG_{exported,y}$	ETN	Conservative value applied
01-Nov-2016	30-Nov-2016	18,139.572	6,058.054	12,081.518	12,081.518	12,081.518
01-Dec-2016	31-Dec-2016	15,179.472	5,126.293	10,053.179	10,053.179	10,053.179
Subtotal-2016		**140,838.931**	**46,006.814**	**94,832.117**	**94,832.117**	**94,832.117**
01-Jan-2017	31-Jan-2017	15,965.558	5,538.020	10,427.538	10,427.538	10,427.538
01-Feb-2017	28-Feb-2017	15,074.400	5,081.594	9,992.806	9,992.806	9,992.806
01-Mar-2017	31-Mar-2017	13,222.704	5,046.235	8,176.469	8,176.469	8,176.469
01-Apr-2017	30-Apr-2017	17,679.156	7,106.396	10,572.760	10,572.760	10,572.760
01-May-2017	31-May-2017	13,642.411	4,214.643	9,427.768	9,427.768	9,427.768
01-Jun-2017	30-Jun-2017	8,004.480	2,586.320	5,418.160	5,418.160	5,418.160
01-Jul-2017	31-Jul-2017	7,360.320	2,323.200	5,037.120	5,037.120	5,037.120
01-Aug-2017	31-Aug-2017	9,630.720	3,143.360	6,487.360	6,487.360	6,487.360
01-Sep-2017	30-Sep-2017	8,551.840	2,875.840	5,676.000	5,676.000	5,676.000
01-Oct-2017	31-Oct-2017	9,065.804	3,400.320	5,665.484	5,665.484	5,665.484
01-Nov-2017	30-Nov-2017	18,094.560	6,912.400	11,182.160	11,182.160	11,182.160
01-Dec-2017	31-Dec-2017	14,935.404	5,798.320	9,137.084	9,137.084	9,137.084
Subtotal-2017		**151,227.357**	**54,026.648**	**97,200.709**	**97,200.709**	**97,200.709**
01-Jan-2018	31-Jan-2018	16,177.920	6,200.480	9,977.440	9,977.440	9,977.440
01-Feb-2018	17-Feb-2018	0.000	0.000	0.000	0.000	0.000
Subtotal-2018		**16,177.920**	**6,200.480**	**9,977.440**	**9,977.440**	**9,977.440**
Total		**863,818.435**	**285,393.938**	**578,424.497**	**578,424.497**	**578,424.497**

Table 4-5 The verified electricity imported from the grid (Unit: MWh)

Period		Electricity Imported from the grid by the project					
		$EG_{imported, main line, y}$			$EG_{imported, back-up line, y}$		
From	To	Meter reading records (M1)	ETN	Conservative values applied	Meter reading records (M4)	ETN	Conservative values applied
		F	*G*	*H=max (F, G)*	*I*	*J*	*K=max (I, J)*
01-May-2012	31-May-2012	17.160	17.160	17.160	0	0	0
01-Jun-2012	30-Jun-2012	17.556	17.556	17.556	0	0	0
01-Jul-2012	31-Jul-2012	31.548	31.548	31.548	0	0	0
01-Aug-2012	31-Aug-2012	0.000	0.000	0.000	34.980	34.980	34.980
01-Sep-2012	30-Sep-2012	52.800	52.800	52.800	0	0	0
01-Oct-2012	31-Oct-2012	54.648	54.648	54.648	0	0	0
01-Nov-2012	30-Nov-2012	37.488	37.488	37.488	0	0	0
01-Dec-2012	31-Dec-2012	0.000	0.000	0.000	0	0	0
Subtotal-2012		**211.200**	**211.200**	**211.200**	**34.980**	**34.980**	**34.980**
01-Jan-2013	31-Jan-2013	10.956	10.956	10.956	0	0	0
01-Feb-2013	28-Feb-2013	25.212	25.212	25.212	0	0	0
01-Mar-2013	31-Mar-2013	42.768	42.768	42.768	0	0	0
01-Apr-2013	30-Apr-2013	19.800	19.800	19.800	0	0	0
01-May-2013	31-May-2013	31.944	31.944	31.944	0	0	0

01-Jun-2013	30-Jun-2013	34.980	34.980	34.980	0	0	0
01-Jul-2013	31-Jul-2013	0.000	0.000	0.000	40.788	40.788	40.788
01-Aug-2013	31-Aug-2013	36.960	36.960	36.960	0	0	0
01-Sep-2013	30-Sep-2013	42.768	42.768	42.768	0	0	0
01-Oct-2013	31-Oct-2013	48.180	48.180	48.180	0	0	0
01-Nov-2013	30-Nov-2013	12.144	12.144	12.144	0	0	0
01-Dec-2013	31-Dec-2013	0.000	0.000	0.000	0	0	0
Subtotal-2013		**305.712**	**305.712**	**305.712**	**40.788**	**40.788**	**40.788**
01-Jan-2014	31-Jan-2014	11.088	11.088	11.088	0	0	0
01-Feb-2014	28-Feb-2014	242.530	242.530	242.530	0	0	0
01-Mar-2014	31-Mar-2014	18.348	18.348	18.348	0	0	0
01-Apr-2014	30-Apr-2014	66.792	66.792	66.792	0	0	0
01-May-2014	31-May-2014	14.520	14.520	14.520	0	0	0
01-Jun-2014	30-Jun-2014	78.144	78.144	78.144	0	0	0
01-Jul-2014	31-Jul-2014	42.504	42.504	42.504	0	0	0
01-Aug-2014	31-Aug-2014	0.000	0.000	0.000	50.028	50.028	50.028
01-Sep-2014	30-Sep-2014	50.028	50.028	50.028	0	0	0
01-Oct-2014	31-Oct-2014	0.000	0.000	0.000	0	0	0
01-Nov-2014	30-Nov-2014	69.828	69.828	69.828	0	0	0
01-Dec-2014	31-Dec-2014	26.928	26.928	26.928	0	0	0
Subtotal-2014		**620.710**	**620.710**	**620.710**	**50.028**	**50.028**	**50.028**
01-Jan-2015	31-Jan-2015	46.521	46.521	46.521	0	0	0

01-Feb-2015	28-Feb-2015	0.000	0.000	0.000	0	0	0
01-Mar-2015	31-Mar-2015	131.116	131.116	131.116	0	0	0
01-Apr-2015	30-Apr-2015	79.261	79.261	79.261	0	0	0
01-May-2015	31-May-2015	26.400	26.400	26.400	0	0	0
01-Jun-2015	30-Jun-2015	2,735.801	2,735.801	2,735.801	0	0	0
01-Jul-2015	31-Jul-2015	0.000	0.000	0.000	81.703	81.703	81.703
01-Aug-2015	31-Aug-2015	599.970	599.970	599.970	0	0	0
01-Sep-2015	30-Sep-2015	69.558	69.558	69.558	0	0	0
01-Oct-2015	31-Oct-2015	33.000	33.000	33.000	0	0	0
01-Nov-2015	30-Nov-2015	257.092	257.092	257.092	0	0	0
01-Dec-2015	31-Dec-2015	48.800	48.800	48.800	0	0	0
Subtotal-2015		**4,027.519**	**4,027.519**	**4,027.519**	**81.703**	**81.703**	**81.703**
01-Jan-2016	31-Jan-2016	186.013	186.013	186.013	0	0	0
01-Feb-2016	29-Feb-2016	304.434	304.434	304.434	0	0	0
01-Mar-2016	31-Mar-2016	29.958	29.958	29.958	0	0	0
01-Apr-2016	30-Apr-2016	61.013	61.013	61.013	0	0	0
01-May-2016	31-May-2016	17.160	17.160	17.160	0	0	0
01-Jun-2016	30-Jun-2016	40.314	40.314	40.314	0	0	0
01-Jul-2016	31-Jul-2016	0.000	0.000	0.000	52.566	52.566	52.566
01-Aug-2016	31-Aug-2016	59.417	59.417	59.417	0	0	0
01-Sep-2016	30-Sep-2016	67.322	67.322	67.322	0	0	0
01-Oct-2016	31-Oct-2016	43.608	43.608	43.608	0	0	0

01-Nov-2016	30-Nov-2016	14.755	14.755	14.755	0	0	0
01-Dec-2016	31-Dec-2016	78.980	78.980	78.980	0	0	0
Subtotal-2016		**902.974**	**902.974**	**902.974**	**52.566**	**52.566**	**52.566**
01-Jan-2017	31-Jan-2017	64.687	64.687	64.687	0	0	0
01-Feb-2017	28-Feb-2017	34.254	34.254	34.254	0	0	0
01-Mar-2017	31-Mar-2017	72.460	72.460	72.460	0	0	0
01-Apr-2017	30-Apr-2017	18.444	18.444	18.444	0	0	0
01-May-2017	31-May-2017	27.666	27.666	27.666	0	0	0
01-Jun-2017	30-Jun-2017	54.015	54.015	54.015	0	0	0
01-Jul-2017	31-Jul-2017	63.305	63.305	63.305	0	0	0
01-Aug-2017	31-Aug-2017	38.112	38.112	38.112	0	0	0
01-Sep-2017	30-Sep-2017	0.000	0.000	0.000	40.050	40.050	40.050
01-Oct-2017	31-Oct-2017	85.269	85.269	85.269	0	0	0
01-Nov-2017	30-Nov-2017	6.460	6.460	6.460	0	0	0
01-Dec-2017	31-Dec-2017	19.379	19.379	19.379	0	0	0
Subtotal-2017		**484.051**	**484.051**	**484.051**	**40.050**	**40.050**	**40.050**
01-Jan-2018	31-Jan-2018	64.680	64.680	64.680	0	0	0
01-Feb-2018	17-Feb-2018	14.520	14.520	14.520	0	0	0
Subtotal-2018		**79.200**	**79.200**	**79.200**	**0**	**0**	**0**
Total		**6,631.366**	**6,631.366**	**6,631.366**	**300.115**	**300.115**	**300.115**

Table 4-6 The verified EG_y of the Project (Unit: MWh)

Year	$EG_{exported,y}$	$EG_{imported,mainline,y}$	$EG_{imported,back\_upline,y}$	EG_y
	E	H	K	L=E-H-K
01-May-2012~31-Dec-2012	67,177.731	211.200	34.980	66,931.551
01-Jan-2013~31-Dec-2013	119,483.754	305.712	40.788	119,137.254
01-Jan-2014~31-Dec-2014	114,186.819	620.710	50.028	113,516.081
01-Jan-2015~31-Dec-2015	75,565.927	4,027.519	81.703	71,456.705
01-Jan-2016~31-Dec-2016	94,832.117	902.974	52.566	93,876.577
01-Jan-2017~31-Dec-2017	97,200.709	484.051	40.050	96,676.608
01-Jan-2018~17-Feb-2018	9,977.440	79.200	0	9,898.240
Total	**578,424.497**	**6,631.366**	**300.115**	**571,493.016**

Table 4-7 Verified Baseline Emission during this monitoring period

Year	EG_y (MWh)	$EF_{grid,CM,y}$ (tCO_2/MWh)	BE_y (tCO_2)
	L	M	N=L*M
01-May-2012~31-Dec-2012	66,931.551	1.0755	71,984
01-Jan-2013~31-Dec-2013	119,137.254	1.0755	128,132
01-Jan-2014~31-Dec-2014	113,516.081	1.0755	122,086
01-Jan-2015~31-Dec-2015	71,456.705	1.0755	76,851
01-Jan-2016~31-Dec-2016	93,876.577	1.0755	100,964
01-Jan-2017~31-Dec-2017	96,676.608	1.0755	103,975
01-Jan-2018~17-Feb-2018	9898.240	1.0755	10,645
Total	**571,493.016**		**614,637**

The verification team has confirmed the emission reductions of the project have been conservatively calculated in line with above mentioned Formula 6 in the emission reduction calculation spreadsheet /2/. The verification team has checked and confirmed the emission reduction is to be correctly accounted. The total emission reduction is as follow:

Table 4-8 Verified Emission Reductions during this monitoring period

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)
01-May-2012~31-Dec-2012	71,984	0	0	71,984
01-Jan-2013~31-Dec-2013	128,132	0	0	128,132
01-Jan-2014~31-Dec-2014	122,086	0	0	122,086
01-Jan-2015~31-Dec-2015	76,851	0	0	76,851
01-Jan-2016~31-Dec-2016	100,964	0	0	100,964
01-Jan-2017~31-Dec-2017	103,975	0	0	103,975
01-Jan-2018~17-Feb-2018	10,645	0	0	10,645
Total	614,637	0	0	614,637

4.4.3 Comparison of ERs

Based on the above assessment, CCSC can conclude that the emission reduction during the monitoring period from 01/05/2012 to 17/02/2018 have been quantified correctly in accordance with the project description and applied methodology /12/, and the emission reduction during this monitoring period is verified as 614,637 tCO2e. Compared with the estimated emission reductions under the same days of 2119 from 01/05/2012 to 17/02/2018 in the registered CDM-PDD /3/, 710,852 (equals to 122,445*2119/365) tCO_2e, the verified emission reduction is 13.54% less than the estimated value. CCSC considers the value of verified emission reduction is conservative.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The evidences used to determine the GHG emission reductions are assessed as follows:

Assessment of the Evidence Quality	
Parameters monitored	EG_y
Monitoring method	Quantity of net electricity generation supplied by the project plant to the grid in year y (EG_y) is calculated as formula 1-3.
Measuring/Reading/Recording frequency	The parameters are continuously measured and monthly recorded.
Calibration frequency/ interval	See Table 4-2 Verified calibration information of monitoring meters. Through on-site assessment and checking the calibration records of meters, the team confirmed that all the monitoring meters meet the rated accuracy level and the calibration frequency fulfils the requirement as described in the monitoring plan.
Calibration cover the monitoring period	The verification team confirms that the validity period of all conducted calibrations covers this monitoring period from 01/05/2012 to 17/02/2018.
Data reported	Through cross checking with Electricity Transaction Notes /8/, the monitored data can be confirmed as acceptable to calculate emission reductions.

In conclusion, all necessary documentation is collected, referenced and is easily accessible in hard-copy or electronic format. The data pertaining to the monitored parameters are maintained in the identified internal records and consistent with the values stated in the Monitoring Report /1/ and ER calculation spreadsheet /2/. Monitoring data have been cross-checked with Electricity Transaction Notes.

4.6 Non-Permanence Risk Analysis

The project is not AFOLU project, and thus non-permanence risk analysis is not applicable for the project.

5 VERIFICATION CONCLUSION

CCSC has carried out the verification of the project "Hebei Shirenshan Wind Power Project". The verification was performed based on the requirements set by Voluntary Carbon Standard (VCS) version 4.3 /11/, as well as criteria given to provide for consistent project operations, monitoring and reporting. This verification covers the period from 01/05/2012 to 17/02/2018 inclusive.

In the course of the verification 1 Clarification Request (CL), no Corrective Action Requests (CARs) and no forward request (FAR) was raised. The verification is based on the VCS-MR /1/, the CDM-PDD /3/, ER calculation spread sheet /2/ and supporting documents available to CCSC.

As the result of the verification, CCSC confirms that:

- The project has been implemented and operated as per the registered CDM-PDD /3/ and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
- The VCS-MR /1/ and other supporting documents provided are complete in accordance with the latest applicable version of the VCS Registration & Issuance Process /15/ and in accordance with the additional requirements stated by the VERRA;
- The actual monitoring systems and procedures comply with the monitoring systems and procedures described in the revised monitoring plan /26/ and the approved methodology i.e. ACM0002 (Version 06) /12/;
- The GHG emission reductions are calculated without material misstatements and in a conservative and appropriate manner.

Based on the evidence and information that are considered necessary to guarantee that GHG emission reductions are appropriately calculated, CCSC confirms the following statement:

Verification period: From 01/05/2012 to 17/02/2018

Verified GHG emission reductions and removals in the above verification period:

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)
01-May-2012~31-Dec-2012	71,984	0	0	71,984
01-Jan-2013~31-Dec-2013	128,132	0	0	128,132
01-Jan-2014~31-Dec-2014	122,086	0	0	122,086
01-Jan-2015~31-Dec-2015	76,851	0	0	76,851
01-Jan-2016~31-Dec-2016	100,964	0	0	100,964
01-Jan-2017~31-Dec-2017	103,975	0	0	103,975
01-Jan-2018~17-Feb-2018	10,645	0	0	10,645
Total	614,637	0	0	614,637

APPENDIX A: ABBREVIATIONS

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CL	Clarification request
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
CCSC	China Classification Society Certification Co., Ltd.
DOE	Designated Operational Entity
DNA	Designated National Authority
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reduction
ETN	Electricity Transaction Note
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
MR	Monitoring Report
NCPG	Northwest China Power Grid
PD	Project Description
PDD	Project Design Document
PP	Project Proponent
UNFCCC	United Nations Framework Convention on Climate Change
VVB	Validation/Verification Body
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit

APPENDIX B: REFERENCE

Documents provided by the Project proponent and relevant background documents have been reviewed or referenced for the periodic verification conclusions.

Ref no.	Reference Document
/1/	Monitoring report version 01 dated 22/06/2022, version 1.1 dated 06/08/2022
/2/	ER calculation spreadsheet version 01 dated 22/06/2022, version 1.1 dated 06/08/2022
/3/	Registered CDM PDD
/4/	Registered Validation Report
/5/	Previous Verification Report and corresponding MR
/6/	Project Proponent Registration Representation
/7/	Monthly reading records
/8/	Electricity Transaction Notes (ETNs) issued by the grid company for this monitoring period
/9/	Qualification certificate of the meter calibration entity
/10/	Calibration reports of the meters
/11/	VERRA, VCS Standard, version 4.3
/12/	CDM Executive Board, ACM0002 (Version 06) Consolidated methodology for grid-connected electricity generation from renewable sources
/13/	VERRA, Monitoring Report Template Form version 4.1
/14/	VERRA, VCS Program Guide version 4.2
/15/	VERRA, Registration & Issuance Process version 4.2
/16/	China's National Plan on Implementation of the 2030 Agenda for Sustainable Development

/17/	Chinese DNA, Notification on Determining Baseline Emission Factor of China's Grid issued on 02/07/2009
/18/	China National Economic Trading Commission, Technical Administrative Code of Electric Energy Metering, DL/T 448-2016
/19/	The State Bureau of Quality and Technical Supervision, Technical Norm of the Calibration of AC Watthour Meters at place of installation, JJG 1055-1997
/20/	Business License
/21/	Power purchase agreement
/22/	Electrical primary wiring diagram
/23/	Training Records
/24/	Questionnaire survey
/25/	Notice on Strengthening Enterprise Greenhouse Gas Emission Report Management
/26/	Revised monitoring plan
/27/	Validation report of revised monitoring plan dated 23/11/2011 by DNV
/28/	VERRA, VCS Standard, version 2007

APPENDIX C: RESOLUTION OF CLARIFICATION REQUESTS AND CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS

Table 1. CL from this verification

CL ID	CL-1	**Section no.**	4.1.1	**Date:** 13/07/2022
Description of CL				
As per Instructions for Completing the Monitoring Report (Version 4.1), the cumulative impact should be calculated by summing the current project contributions with all impacts included in previously approved VCS monitoring reports or Sustainable Development Contribution Reports. Please update Table 1 of the MR accordingly.				
Project proponent response				**Date:** 18/07/2022
The calculation of cumulative impact of the project has been revised in the updated MR, please refer to the Table 1 in Section 1.11.				
Documentation provided by project proponent				
updated MR				
VVB assessment				**Date:** 18/07/2022
In the updated MR, cumulative SDG impacts of the project activity has been updated which is in line with Instructions for Completing the Monitoring Report (Version 4.1). Therefore, **CL-1** was closed.				

Table 2. CAR from this verification

CAR ID	N/A	**Section no.**	N/A	**Date:** N/A
Description of CAR				
N/A				
Project proponent response				**Date:** N/A
N/A				

Documentation provided by project proponent	
N/A	
VVB assessment	**Date:** N/A
N/A	

Table 3. FAR from this verification

FAR ID	N/A	**Section No.**	N/A	**Date:** N/A
Description of FAR				
N/A				
Project proponent response				**Date:** N/A
N/A				
Documentation provided by project proponent				
N/A				
VVB assessment				**Date:** N/A
N/A				