



BEIJING GUANTING WIND POWER PROJECT PHASE II AND PHASE II ADDITION



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Summary:

LGAI Technological Center, S.A. (hereafter referred to as “Applus+ Certification”) has been commissioned by Climate Bridge (Shanghai) Ltd. to perform the verification of greenhouse gas emission reductions of the project activity “Beijing Guanting Wind Power Project Phase II and Phase II addition” (VCS Ref. No. 830, hereafter referred to as “the project activity”) reported in the monitoring report /1/ during monitoring period 01/07/2018 to 30/06/2021 which under 2 different crediting period, 23/12/2009 to 22/12/2019 as CP1 and 23/12/2019 to 22/12/2029 as CP2.

The project activity has been validated by TÜV Rheinland Japan Ltd. based on the CDM PDD /3/ version 05.4 dated 13/01/2011 and reported in the validation report No. 01 997 9105051138 /4/, version 04.1, completed on 24/01/2011. The project was successfully renewed by China Certification Center, Inc. based on the CDM PDD /3/ version 06.1 dated 31/07/2017 and reported in the validation report /4/, version 02, completed on 16/11/2017. The project activity was registered as a CDM project activity on 28/02/2011 and renewed on 26/10/2017 which is available at <https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1296190714.03/view>. A gap validation was performed by CQC. And the renewal of crediting period under VCS standard was under application performed by LGAI Technological Center, S.A. (Applus+ Certification). Both are available at <https://registry.terra.org/app/projectDetail/VCS/830>. The VCS PD for renewal of VCS would be the basis for this verification for CP2.

The project activity is a wind power project located at Huailai County, Hebei Province, P. R. China which is to use wind resource for electricity generation. The project involves the installation of 33 wind turbines with a unit capacity of 1,500 kW as Beijing Guanting Wind Power Project Phase II (Guanting Phase II) and another 24 wind turbines with a unit capacity of 1,500 kW as Beijing Guanting Wind Power Project Phase II addition (Phase II addition). The average annual power delivered to the grid by the project is expected to be 161,119 MWh. The project can reduce GHG emissions by replacing the electricity generated by fossil fuel fired power plants in North China Power Grid (NCPG). It's estimated that the proposed project could achieve GHG emission reductions of 153,099 tCO₂e under CP1 and 133,229 tCO₂e under CP2 annually.

The purpose and scope of this verification is to ensure that reported emission reductions are complete and accurate in accordance with applicable VCS standards and relevant UNFCCC requirements in order to be certified. A desk review and a site visit have been conducted to verify the data submitted in the monitoring report /1/. Applus+ Certification confirms the following has been reviewed:

- Monitoring plan included in the registered CDM PDD /3/ version 05.4 dated 13/01/2011;
- Monitoring plan included in the registered CDM PDD /3/ version 06.1 dated 31/07/2017;
- Gap VCS PD Version 01.0 /3/ dated 25/10/2011;
- VCS PD version 2.1 /3/ dated 25/08/2021;
- Validation report No. 01 997 9105051138 /4/, version 04.1, completed on 24/01/2011 by TÜV Rheinland Japan Ltd.;
- Validation report /4/, version 02, completed on 16/11/2017 by CCCL;
- Validation report No. CDM-VER-2011-0051 /4/, version 3.0, completed on 02/05/2012 by CQC;
- Validation report No. A+SH_SYST_VCS_VER_RCP_6321 /4/, Version 01.0.0, completed on 25/08/2021 by Applus+ Certification;
- Approved methodology, ACM0002 /7/, version 12.1.0, dated 17/09/2010;
- Approved methodology, ACM0002 /7/, version 20.0, dated 28/11/2019;
- VCS standards version 4.1 and guidance version 4.0, as well as relevant UNFCCC requirements;
- All information and references relevant to the project activity's resulting in emission reductions.

During this verification, no finding was identified related to the monitoring, implementation or operations of the project activity in relation to relevant VCS standards, guidance and UNFCCC requirements and relevant host party criteria and the applied baseline and monitoring methodology etc.

Applus+ Certification confirms that the project is implemented in accordance with the registered VCS PD /3/. The monitoring plan complies with the applied methodology ACM0002 /7/ version 12.1.0 and version 20.0 for different crediting period and the monitoring has been carried out in accordance with the registered VCS PD. The monitoring system is in place and the emission reductions are calculated without material misstatements. The level of assurance of the verification is reasonable. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information reviewed and evaluated Applus+ Certification confirms that the implementation of the project has resulted in 429,882 tCO_{2e} emission reductions during period 01/07/2018 to 30/06/2021.

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1 INTRODUCTION

1.1 Objective

LGA Technological Center, S.A. (Applus+ Certification) has been commissioned by Climate Bridge (Shanghai) Ltd. to perform the verification of greenhouse gas emission reductions of the project activity “Beijing Guanting Wind Power Project Phase II and Phase II addition” (VCS Ref. No. 830) reported in the Monitoring Report /1/ during monitoring period 01/07/2018 to 30/06/2021.

LGA Technological Center, S.A. (Applus+ Certification) as the verification body of the project activity has been accredited as a DOE by UNFCCC and also meets the competence requirements as set out in ISO 14065:2007.

The objective of verification is to have an independent review and ex post determination by a Validation and Verification Body (VVB) of the monitored reductions in GHG emissions that have occurred as a result of the registration of VCS project. Certification is the written assurance by the VVB that, during a specific time period, a proposed VCS project activity achieved the reductions in anthropogenic emissions by sources of GHGs as verified.

The objective of this verification/certification is to verify and certify emission reductions, reported for the “Beijing Guanting Wind Power Project Phase II and Phase II addition” in China for the period 01/07/2018 to 30/06/2021.

1.2 Scope and Criteria

The verification scope is defined as an independent and objective review of the registered PD and PDD, the Project’s baseline study and Monitoring Report (MR) and other relevant documents. The information in these documents is reviewed against VCS Version 4.0 requirements, UNFCCC rules and associated interpretations.

The verification is not meant to provide any consulting towards the client. However, stated requests for forward actions and/or corrective actions may provide input for improvement of the Project monitoring towards reductions in the GHG emissions.

1.3 Level of Assurance

The verification report is based on the VCS PD, CDM PDD, supporting evidences made available to the verifier and information collected through performing interviews and during the on-site assessment.

The verification conclusion is assured a reasonable level of assurance.

1.4 Summary Description of the Project

Project title	Beijing Guanting Wind Power Project Phase II and Phase II addition
VCS reference number	830
Project Participants	Beijing Jingneng Clean Energy Co., Ltd. (Project Owner, host country, P. R. China)
Location of the project	Huailai County, Hebei Province, People's Republic of China Geographic coordinates: Guanting Phase II: North latitude 40.3192°~40.3507° and East Longitude 115.6112°~115.6999° Phase II addition: North latitude 40.3263°~40.3499° and East Longitude 115.5734°~115.6144°
Project start date	Construction date: 20/06/2009 (Guanting Phase II); 01/07/2009 (Phase II addition) Operation start date: 23/12/2009
Version of VCS PD or CDM PDD	Version 01.0, dated 25/10/2011 (VCS PD) for CP1 Version 2.1, dated 25/08/2021 (VCS PD) for CP2
Monitoring period	01/07/2018 to 30/06/2021 01/07/2018 to 22/12/2019 (CP1) 23/12/2019 to 30/06/2021 (CP2)
First monitoring report	Version 01.0, dated 25/08/2021
Final monitoring report	Version 02.0, dated 06/09/2021
Applied Methodology/Version	ACM0002, version 12.1.0, dated 17/09/2010 ACM0002, version 20.0, dated 28/11/2019

Scope/Technical Area	1/1.2
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The project activity is a wind power project located at Huailai County, Hebei Province, P. R. China which is to use wind resource for electricity generation. The project involves the installation of 33 wind turbines with a unit capacity of 1,500 kW as Beijing Guanting Wind Power Project Phase II (Guanting Phase II) and another 24 wind turbines with a unit capacity of 1,500 kW as Beijing Guanting Wind Power Project Phase II addition (Phase II addition). The average annual power delivered to the grid by the project is expected to be 161,119 MWh. The project can reduce GHG emissions by replacing the electricity generated by fossil fuel fired power plants in North China Power Grid (NCPG). It's estimated that the proposed project could achieve GHG emission reductions of 153,099 tCO₂e under CP1 and 133,229 tCO₂e under CP2 annually.

The project activity has been validated by TÜV Rheinland Japan Ltd. based on the CDM PDD /3/ version 05.4 dated 13/01/2011 and reported in the validation report No. 01 997 9105051138 /4/, version 04.1, completed on 24/01/2011. The project was successfully renewed by China Certification Center, Inc. based on the CDM PDD /3/ version 06.1 dated 31/07/2017 and reported in the validation report /4/, version 02, completed on 16/11/2017. The project activity was registered as a CDM project activity on 28/02/2011 and renewed on 26/10/2017 which is available at <https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1296190714.03/view>. A gap validation was performed by CQC. And the renewal of crediting period under VCS standard was under application performed by LGAI Technological Center, S.A. (Applus+ Certification). Both are available at <https://registry.terra.org/app/projectDetail/VCS/830>. The VCS PD for renewal of VCS would be the basis for this verification for CP2.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification was conducted using Applus+ Certification's procedures in line with the requirements specified in the VCS Standard version 4.1, CDM M&P, the latest version of the CDM Validation and Verification Standard, and relevant UNFCCC requirements and applying standard auditing techniques.

Applus+ Certification completed a strategic review and risk assessment of the projects activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report.

Applus+ Certification verified the implementation of the monitoring plan and the data presented in the Monitoring Report /1/ for the period in question. This involved a site visit and a desk review of the Monitoring Report. This Verification Report describes the findings of this assessment.

The information of the assessment team is included in below:

Assessment team

According to the sectoral scopes / technical area and experiences in the sectoral or national business environment, Applus+ Certification has composed a project assessment team in accordance with the appointment rules in Applus+ Certification. The composition of assessment team has to be approved by the Applus+ Certification ensuring that the required skills are covered by the team. The four qualification levels for team members that are assigned by formal appointment rules as below:

- Leader Auditor (LA)
- Auditor (A)/ Auditor Trainee (AiT)

- Technical Reviewer (TR)
- Technical Experts (TE)

Name	Qualification	Coverage of scope	Coverage of Technical Area	Host country experience
<i>Doris Dai</i>	<i>LA/TE</i>	<i>Y (1.2)</i>	<i>Y</i>	<i>Y</i>
<i>Simon Shen</i>	<i>TR</i>	<i>Y (1.2)</i>	<i>Y</i>	<i>Y</i>

Doris Dai (Master's Degree in Environmental Sciences, Bachelor's Degree in Environmental Technology) is an Auditor appointed by Applus+ LGAI for the GHG project assessment and auditing. She has more than 6 years of work experience in CDM/VCS project assessment. Before she joined Applus+ LGAI, she has been working for CTI Certification as senior GHG Auditor for 3.5 years.

Simon Shen (Master's Degree in Thermal Energy Engineering, Bachelor's Degree in Environmental Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment, auditing and technical review. He has more than 6 years of work experience in CDM/GS4GG/VCS project assessment and review with Applus+, apart from the years of experience working as GHG Auditor and ISO 9001/14001 in TUV SUD before he joined Applus+ for 3.5 years. Mr. Simon Shen has extensive experience also as former Applus+ Shanghai CDM Technical Manager.

2.2 Document Review

The VCS monitoring report /1/ Version 01.0 dated 25/08/2021, version 02.0 dated 06/09/2021 and the emission reduction calculations spreadsheet /2/, were assessed as part of the verification. In addition, the registered PDD /3/ version 05.4 dated 13/01/2011, gap VCS PD dated 25/10/2011 /3/, renewed CDM PDD /3/ version 06.1 dated 31/07/2017 and VCS PD for renewal /3/ version 2.1 dated 25/08/2021 in particular the baseline estimations and the monitoring plan, the CDM validation report /4/ version 04.1 dated 24/01/2011, the CDM validation report /4/ version 02 dated 16/11/2017 and the VCS Validation Report /4/ dated 25/08/2021, as well as relevant documents, were reviewed. A detailed document reviewed are listed in Appendix 1 of the report.

2.3 Interviews

The key personnel interviewed are summarized in the table below:

Interviewed personnel	Role	Organization	Subject
Mr. Liu Xulong	General Manager	Beijing Jingneng Clean Energy Co., Ltd.	Operation of the project activity;
Ms. Meng Xiuli	Operation Chief	Beijing Jingneng Clean Energy Co., Ltd.	Implementation of the monitor plan of the project activity;
Mr. Lin Keming	Project manager	Climate Bridge (Shanghai) Ltd.	Data collection and data achievement; Calibration of meters and equipment maintenance. Data collection and ER calculation.

2.4 Site Inspections

The assessment team performed the on-site verification (Huailai County, Hebei Province, P. R. China) on 20/08/2021. The interviewed personnel and objective are listed in above table.

2.5 Resolution of Findings

As an outcome of the verification process, the team can raise different types of findings.

Where a non-conformance arises the assessment team shall raise a Corrective Action Request (CAR). A CAR is issued, where:

- Non-compliance with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;
- Modifications to the implementation, operation and monitoring of the project activity has not been sufficiently documented by the project participants;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

The assessment team shall raise a Clarification Request (CL) if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

All CARs and CLs raised during verification shall be resolved prior to submitting a request for issuance.

There is no CARs and CLs raised for this monitoring period for the project.

2.5.1 Forward Action Requests

None FAR was raised during the verification process. Also there are no remaining from former validation.

2.6 Eligibility for Validation Activities

Not applicable as LGAI Technological Center, S.A. holds the accreditation for the validation and verification for projects under scope 1.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

Through reviewing the registered PDD /3/ and validation report /4/, it was validated that the project has been registered as a CDM project with reference No. 4413 first and successfully renewed which is available at <https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1296190714.03/view>. Then the project has been registered as VCS project which is available at <https://registry.terra.org/app/projectDetail/VCS/830>. The project does not participate in the other emissions trading program by checking public information on Internet, interviewing with project owner and statement issued by project owner.

During the period from 23/12/2009 to 22/12/2019 as the first VCS crediting period and 23/12/2019 to 22/12/2029 as the second VCS crediting period, the project would claim only for VCU or CERs. But VCUs and CERs will not be claimed in the same period. Also, for period 28/02/2011 to 27/07/2012, the project has applied for the issuance of CERs.

Therefore, Applus+ Certification consider the project is eligible to participate under the VCS Program as there is no double counting for the emission reduction during any period.

3.2 Methodology Deviations

As plant specific fuel consumption and electricity generation data are not publicly available in China, the Guidance caused by DNV's request for deviation of Chinese project activities for the baseline methodology AM0005 has been applied for calculating the build margin (BM) emission factor of this project activity. Moreover, the result of BM and OM are sourced from local government.

Applus+ Certification consider the deviation has no impact on conservativeness of the quantification of GHG emission reductions or removals.

3.3 Project Description Deviations

The project is registered under VCS Version 3.1 and completed validation before 19/03/2020. thus, it remains eligible to apply the crediting period requirements under VCS version 3.1 which shall be a maximum of ten years and may be renewed at most twice, so the 1st renewable crediting period of the project should be updated from 23/12/2009 to 27/02/2011 into 23/12/2009 to 22-12-2019. And the 2nd crediting period is from 23/12/2019 to 22/12/2029.

Applus+ Certification consider this deviation is in line with the requirement of VCS Standard.

In the registered CDM-PDD, the electricity supplied to the No. 2 main transformer by the Project ($EG_{PJtotrans,y}$) is monitored by 10 electricity meters (M9/M9' – M13/M13') installed at line 1-line 5 of the project. And $EG_{PJtotrans,y}$ is calculated as follows:

$$EG_{PhaselItotrans,y} = EG_{Line1totrans,y} + EG_{Line2totrans,y} + EG_{Line3totrans,y}$$

$$EG_{Phaselldtotrans,y} = EG_{Line4totrans,y} + EG_{Line5totrans,y}$$

$$EG_{PJtotrans,y} = EG_{PhaselItotrans,y} + EG_{Phaselldtotrans,y}$$

Where

$EG_{Line1totrans,y}$ is the electricity supply by line 1 of the Guanting Phase II measured by M9/M9';

$EG_{Line2totrans,y}$ is the electricity supply by line 2 of the Guanting Phase II measured by M10/M10';

$EG_{Line3totrans,y}$ is the electricity supply by line 3 of the Guanting Phase II measured by M11/M11';

$EG_{Line4totrans,y}$ is the electricity supply by line 4 of the Phase II addition measured by M12/M12';

$EG_{Line5totrans,y}$ is the electricity supply by line 5 of the Phase II addition measured by M13/M13'.

However, the readings of the 10 electricity meters (M9/M9' – M13/M13') were not recorded during this monitoring period, hence alternative measure is adopted for the monitoring of $EG_{PJtotrans,y}$ during this monitoring period.

Electricity generated by the project and Yanqing project is supplied to the grid through No. 2 main transformer. Electricity meters M7/M8 with accuracy of 0.2s have been installed at the outlet of No. 2 main transformer to measure the total electricity supplied by the project and Yanqing project ($EG_{PJ+Yqtotrans,y}$). Meters M14/M14' with accuracy of 0.5s have been installed at the transmission line (line 6) of the Yanqing project to measure the electricity supplied to No. 2 main transformer by Yanqing project ($EG_{Yanqingtotrans,y}$), hence the electricity supplied to No. 2 main transformer by the project ($EG_{PJtotrans,y}$) is calculated as the difference of $EG_{PJ+Yqtotrans,y}$ and $EG_{Yanqingtotrans,y}$, shown as below:

$$EG_{PJtotrans,y} = EG_{PJ+Yqtotrans,y} - EG_{Yanqingtotrans,y}$$

The 10 electricity meters (M9/M9' – M13/M13') are no longer included in the monitoring system of the project during this monitoring period, calibration information of the 10 meters does not need to be reported in this monitoring report.

The monitoring of remaining data and parameters in the registered PD during this monitoring period is in compliance with the registered monitoring plan.

Applus+ Certification consider this deviation from the registered monitoring plan does not impacts the applicability of the methodology, additionality or the appropriateness of the baseline scenario. The deviation also does not lower the accuracy and conservativeness of the monitoring system and the project remains in compliance with VCS Program rules.

3.4 Grouped Project

Not applicable as not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

By means of on-site visit, the assessment team confirms that all physical features of the proposed CDM project activity proposed in the registered VCS PD and CDM PDD /3/ are in place and the PP has operated the project as per registered CDM PDD and VCS PD /3/. The installed capacity of the project is 85.5 MW, consisting of 57 sets of wind turbines with unit capacity of 1,500 kW. The electricity generated is transmitted to the local Power Grid via a newly built transformer station, which was then exported to the NCPG. The project activity was expected to supply 161,119 MWh of electricity to the grid. The construction of the project started on 20/06/2009 (Guanting Phase II) and 01/07/2009 (Phase II addition), the first wind turbine of the project has been put into operation on 23/12/2009 verified by checking information on the UNFCCC website. There are no changes on the key equipment and technology since the validation of the project. No special event which would affect the monitoring of the project has been observed during the monitoring period.

The project would contribute to sustainable development in as below:

- Compared to conventional power generation, reducing the emission of other pollutants resulting from the power generation industry in China, the preliminary estimate of which can reach pollutant reduction of 1,932.9 ton of SO₂, 768.33 ton of NO_x;
- Helping to stimulate the growth of the wind power industry in China, encouraging and promoting the technological progress and commercial popularization of renewable energy generating technologies in China;
- Creating local employment opportunities during assembling and installing the generating equipment and during the project construction and operation period as well as simulating the development of local tourism industry;
- Providing 20 long-term positions during the operation of the Project.

The technical parameters have been verified with the nameplates /9 / as below:

Item		Unit	Data
Wind turbine	Type	-	Goldwind 82/1500
	Rated power	kW	1,500
	Blade number	-	3
	Rotor diameter	m	82

	Rotor swept area	m ²	5,282
	Cut in wind speed	m/s	3
	Rated wind speed	m/s	10.3
	Cut out wind speed	m/s	22
	Survival wind speed	m/s	37.5
	Hub height	m	65
	Quantity	-	57
Generator	Type	-	Permanent-magnet synchronous generator
	Rated power	kW	1,500
	Power factor	-	~0.95
	Rated voltage	V	690
	Quantity	-	57

By comparing the actual ER claimed in this monitoring period with the estimate in the registered PD, Under CP1, the actual emission reductions (205,381 tCO₂e) are 9.33% lower than what is stated in the registered PD (i.e. 226,503 tCO₂e, equals to annual emission reductions, 153,099 tCO₂e multiplied by the actual operational days (540 days) then divided by 365 days). Under CP2, the actual emission reductions (224,501 tCO₂e) are 10.82% higher than what is stated in the registered PD (i.e. 202,581 tCO₂e, equals to annual emission reductions, 133,229 tCO₂e multiplied by the actual operational days (556 days) then divided by 365 days). For the whole crediting period, the actual emission reductions (429,882 tCO₂e) are 0.19% higher than what is stated in the registered PD (429,084 tCO₂e). Therefore, the assessment team consider this variation is acceptable.

Therefore, the assessment team confirmed the ER in this monitoring period is not overestimated.

The assessment team confirmed that there is no proposed or actual change to the project design 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 main 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 PD and PDD, it is confirmed that wind power is green power and the impact caused by wind power on the surrounding ecosystem and residents, water, and atmosphere etc. is very little, there would be no net harm caused due to the project activity. Also, the EIA of the project are approved by the government.

Also, no potential environment or social economic matter was found during the site visit. 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

A survey was carried out in August 2009 through the information publication, distributing and collecting responses to questionnaires targeting on local residents, builders and members of the local authorities. The project owner introduced the proposed project, and then a survey was arranged through a one-page questionnaire, which was designed to be easily filled in. The opinions expressed by the stakeholders were recorded and are available on request.

The stakeholder meeting and the survey showed that the proposed project receives strong support from the local community. They all believe the proposed project will promote local economic development and agree with the project development and construction.

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 site visit and check registered PDD.

4.3 AFOLU-Specific Safeguards

Not applicable as non-AFOLU project.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The monitoring has been carried out in accordance with the monitoring plan contained in the VCS PD /3/. All parameters were monitored and determined as per the monitoring plan which is listed in below table:

Data / Parameter:	$EG_{\text{facility},y}$
Data unit:	MWh
Description:	Quantity of net electricity generation supplied by the project plants/units to the grid in year y
Purpose of the data:	Calculation of baseline emissions
Parameter value:	487,639.323
Source of data used:	The parameter are calculated by electricity supplied to the grid by the Project and other projects in year y ($EG_{\text{totalto grid},y}$), electricity supplied to No. 2 main transformer by the Project in year y ($EG_{\text{PJtotrans},y}$), electricity supplied by the Project and the Yanqing Project in year y ($EG_{\text{PJ+Yqtotrans},y}$), electricity supplied by Guanting project in year y ($EG_{\text{Guantingtotrans},y}$) and quantity of electricity consumed by the Project and other projects from the grid in year y ($EG_{\text{gridtotal},y}$) as below: $EG_{\text{facility},y} = EG_{\text{totalto grid},y} * EG_{\text{PJtotrans},y} / (EG_{\text{PJ+Yqtotrans},y} + EG_{\text{Guantingtotrans},y}) - EG_{\text{gridtotal},y}$
Information flow:	The parameter are calculated by electricity supplied to the grid by the Project and other projects in year y ($EG_{\text{totalto grid},y}$), electricity supplied to No. 2 main transformer by the Project in year y ($EG_{\text{PJtotrans},y}$), electricity supplied by the Project and the Yanqing Project in year y ($EG_{\text{PJ+Yqtotrans},y}$), electricity supplied by Guanting project in year y ($EG_{\text{Guantingtotrans},y}$) and quantity of

	electricity consumed by the Project and other projects from the grid in year y ($EG_{gridtotal,y}$) as below: $EG_{facility,y} = EG_{totaltogrid,y} * EG_{PJtotrans,y} / (EG_{PJ+Ytotrans,y} + EG_{Guantingtotrans,y}) - EG_{gridtotal,y}$
Monitoring method, frequency and equipments:	Not applicable
Calibration:	Not applicable
QA/QC procedure:	Data record will be archived for a period of 2 years after the crediting period to which the records pertain.
Means of verification:	Not applicable

Data / Parameter:	$EG_{Yanqingtotrans,y}$										
Data unit:	MWh										
Description:	Electricity supplied to No. 2 main transformer by Yanqing project in year y										
Purpose of the data:	Calculation of baseline emissions										
Parameter value:	77,280.000										
Source of data used:	Electricity supplied to No. 2 main transformer by Yanqing project in year y is all sourced from Meter Reading Record (MRRs) /10/ issued by the project owner.										
Information flow:	The data of 2 electricity meters installed at the transmission line (line 6) of the Yanqing project (M14 as main and M14' as backup) were measured continuously, recorded daily and archived electronically. At 24:00 hr of each day, the staff from project owner will record main meter's readings and form Meter Reading Records (MRRs). The data for MRRs have been sent to the CDM consulting company for reporting of GHG emission reduction.										
Monitoring method, frequency and equipments:	The parameter was measured continuously and recorded daily by 2 electricity meters installed at the transmission line (line 6) of the Yanqing project during the monitoring period verified by site visit. See below for the information of 2 electricity meters verified by site visit and checking calibration certificates /12/: <table border="1"> <thead> <tr> <th>Meter</th><th>Type</th><th>Serial Number</th><th>Accuracy</th></tr> </thead> <tbody> <tr> <td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>			Meter	Type	Serial Number	Accuracy				
Meter	Type	Serial Number	Accuracy								

	M14	ZMD	96716065	0.5s
	M14’	ZMD	96716082	0.5s
	The type, serial number and accuracy have been confirmed by site visit.			
Calibration:	The calibration information are shown as below /12/:			
	Meter	Calibration date		Valid until
	M14 and M14’	17/01/2018		16/01/2019
		13/12/2018		12/12/2019
		12/11/2019		11/11/2020
		10/10/2020		09/10/2021
	The calibration was conducted by an accredited third party which is Electric Energy Measurement Centre of Jibei Electric Power Corporation was accredited by Quality and Technical Supervision Bureau of Hebei Province valid from 30/12/2017 to 29/12/2020 /13/.			
QA/QC procedure:	Data record will be archived for a period of 2 years after the crediting period to which the records pertain.			
Means of verification:	Data of the parameter was verified by checking MRRs. All data is in line with MRRs;			
	Information flow was verified by checking MRRs, and all information are consistent;			
	Monitoring method was verified by site visit, checking calibration certificates, all monitoring method meets the description in the PD; Calibration was verified by checking calibration certificate and Accreditation certificate, all calibration of monitoring equipment meets the requirement indicated in the PD.			

Data / Parameter:	EGGuantingtotrans,y
Data unit:	MWh
Description:	Electricity supplied by Guanting project in year y
Purpose of the data:	Calculation of baseline emissions
Parameter value:	259,586.600

Source of data used:	Electricity supplied by Guanting project in year y is all sourced from Meter Reading Record (MRRs) /10/ issued by the project owner.												
Information flow:	The data of 2 electricity meters installed at the outlet of No. 1 main transformer (M5 as main and M6 as backup) were measured continuously, recorded daily and archived electronically. At 24:00 hr of each day, the staff from project owner will record main meter’s readings and form Meter Reading Records (MRRs). The data for MRRs have been sent to the CDM consulting company for reporting of GHG emission reduction.												
Monitoring method, frequency and equipments:	The parameter was measured continuously and recorded daily by 2 electricity meters installed at the outlet of No. 1 main transformer during the monitoring period verified by site visit. See below for the information of 2 electricity meters verified by site visit and checking calibration certificates /12/: <table><tr><th>Meter</th><th>Type</th><th>Serial Number</th><th>Accuracy</th></tr><tr><td>M5</td><td>DTSD341</td><td>2005665309</td><td>0.2s</td></tr><tr><td>M6</td><td>DTSD341</td><td>2005665308</td><td>0.2s</td></tr></table> The type, serial number and accuracy have been confirmed by site visit.	Meter	Type	Serial Number	Accuracy	M5	DTSD341	2005665309	0.2s	M6	DTSD341	2005665308	0.2s
Meter	Type	Serial Number	Accuracy										
M5	DTSD341	2005665309	0.2s										
M6	DTSD341	2005665308	0.2s										
Calibration:	The calibration information are shown as below /12/: <table><tr><th>Meter</th><th>Calibration date</th><th>Valid until</th></tr><tr><td rowspan="4">M5 and M6</td><td>17/01/2018</td><td>16/01/2019</td></tr><tr><td>13/12/2018</td><td>12/12/2019</td></tr><tr><td>12/11/2019</td><td>11/11/2020</td></tr><tr><td>10/10/2020</td><td>09/10/2021</td></tr></table> The calibration was conducted by an accredited third party which is Electric Energy Measurement Centre of Jibei Electric Power Corporation was accredited by Quality and Technical Supervision Bureau of Hebei Province valid from 30/12/2017 to 29/12/2020 /13/.	Meter	Calibration date	Valid until	M5 and M6	17/01/2018	16/01/2019	13/12/2018	12/12/2019	12/11/2019	11/11/2020	10/10/2020	09/10/2021
Meter	Calibration date	Valid until											
M5 and M6	17/01/2018	16/01/2019											
	13/12/2018	12/12/2019											
	12/11/2019	11/11/2020											
	10/10/2020	09/10/2021											
QA/QC procedure:	Data record will be archived for a period of 2 years after the crediting period to which the records pertain.												
Means of verification:	Data of the parameter was verified by checking MRRs. All data is in line with MRRs;												

	Information flow was verified by checking MRRs, and all information are consistent; Monitoring method was verified by site visit, checking calibration certificates, all monitoring method meets the description in the PD; Calibration was verified by checking calibration certificate and Accreditation certificate, all calibration of monitoring equipment meets the requirement indicated in the PD.
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Data / Parameter:	EGPJ+Yqtotrans,y														
Data unit:	MWh														
Description:	Electricity supplied by the Project and the Yanqing Project in year y														
Purpose of the data:	Calculation of baseline emissions														
Parameter value:	578,586.400														
Source of data used:	Electricity supplied by the Project and the Yanqing Project in year y is all sourced from Meter Reading Record (MRRs) /10/ issued by the project owner.														
Information flow:	The data of 2 electricity meters installed at the outlet of No. 2 main transformer (M7 as main and M8 as backup) were measured continuously, recorded daily and archived electronically. At 24:00 hr of each day, the staff from project owner will record main meter’s readings and form Meter Reading Records (MRRs). The data for MRRs have been sent to the CDM consulting company for reporting of GHG emission reduction.														
Monitoring method, frequency and equipments:	The parameter was measured continuously and recorded daily by 2 electricity meters installed at the outlet of No. 2 main transformer during the monitoring period verified by site visit. See below for the information of 2 electricity meters verified by site visit and checking calibration certificates /12/: <table><tr><th>Meter</th><th>Type</th><th>Serial Number</th><th>Accuracy</th></tr><tr><td>M7</td><td>DTSD341</td><td>2005665307</td><td>0.2s</td></tr><tr><td>M8</td><td>DTSD341</td><td>2005665310</td><td>0.2s</td></tr></table> The type, serial number and accuracy have been confirmed by site visit.			Meter	Type	Serial Number	Accuracy	M7	DTSD341	2005665307	0.2s	M8	DTSD341	2005665310	0.2s
Meter	Type	Serial Number	Accuracy												
M7	DTSD341	2005665307	0.2s												
M8	DTSD341	2005665310	0.2s												

Calibration:	The calibration information are shown as below /12/:		
	Meter	Calibration date	Valid until
	M7 and M8	17/01/2018	16/01/2019
		13/12/2018	12/12/2019
		12/11/2019	11/11/2020
		10/10/2020	09/10/2021
	The calibration was conducted by an accredited third party which is Electric Energy Measurement Centre of Jibei Electric Power Corporation was accredited by Quality and Technical Supervision Bureau of Hebei Province valid from 30/12/2017 to 29/12/2020 /13/.		
QA/QC procedure:	Data record will be archived for a period of 2 years after the crediting period to which the records pertain.		
Means of verification:	Data of the parameter was verified by checking MRRs. All data is in line with MRRs; Information flow was verified by checking MRRs, and all information are consistent; Monitoring method was verified by site visit, checking calibration certificates, all monitoring method meets the description in the PD; Calibration was verified by checking calibration certificate and Accreditation certificate, all calibration of monitoring equipment meets the requirement indicated in the PD.		

Data / Parameter:	EGPJtotrans,y
Data unit:	MWh
Description:	Electricity supplied to No. 2 main transformer by the Project in year y
Purpose of the data:	Calculation of baseline emissions
Parameter value:	501,306.400
Source of data used:	Electricity supplied to No. 2 main transformer by the Project in year y (EGPJtotrans,y) are calculated by electricity supplied by the Project and the Yanqing Project in year y (EGPJ+Yqtotrans,y) and electricity supplied to No. 2 main transformer by Yanqing project in year y (EGYanqingtotrans,y) as below: $EGPJtotrans,y = EGPJ+Yqtotrans,y - EGYanqingtotrans,y$
Information flow:	Electricity supplied to No. 2 main transformer by the Project in year y (EGPJtotrans,y) are calculated by electricity supplied by the Project and the

	Yanqing Project in year y ($EG_{PJ+Yqtotrans,y}$) and electricity supplied to No. 2 main transformer by Yanqing project in year y ($EG_{Yanqingtotrans,y}$) as below: $EG_{PJtotrans,y} = EG_{PJ+Yqtotrans,y} - EG_{Yanqingtotrans,y}$
Monitoring method, frequency and equipments:	Not applicable
Calibration:	Not applicable
QA/QC procedure:	Data record will be archived for a period of 2 years after the crediting period to which the records pertain.
Means of verification:	Not applicable

Data / Parameter:	$EG_{totaltoGrid,y}$
Data unit:	MWh
Description:	Electricity supplied to the grid by the Project and other projects in year y
Purpose of the data:	Calculation of baseline emissions
Parameter value:	828,933.600
Source of data used:	Electricity supplied to the grid by the Project and other projects in year y is all sourced from Meter Reading Record (MRRs) /10/ issued by the project owner, Electricity Transaction Notes (ETNs) /11/ issued by power grid company and Statement issued by the power grid company /14/.
Information flow:	The data of 2 electricity meters installed at the 110 kV substation (M1 as main and M3 as backup) were measured continuously, recorded monthly and archived electronically. At 24:00 hr of last day of each month, the staff from project owner and power grid company will record main meter's readings and form Meter Reading Records (MRRs). The staff from power grid company then transcribes the data into Electricity Transaction Notes (ETNs), then after the confirmation of the project owner for the ETNs, the project owner will issue the invoice. For the data on 22/12/2019 was determined through Statement issued by the power grid company. The data for MRRs, ETNs along with Statement issued by the power grid company have been sent to the CDM consulting company for reporting of GHG emission reduction. The conservative one would be used for ER calculation.

Monitoring method, frequency and equipments:	The parameter was measured continuously and recorded monthly by 2 electricity meters installed at the 110 kV substation during the monitoring period verified by site visit. See below for the information of 2 electricity meters verified by site visit and checking calibration certificates /12/: <table><tr><th>Meter</th><th>Type</th><th>Serial Number</th><th>Accuracy</th></tr><tr><td>M1</td><td>DTSD51</td><td>2001124467</td><td>0.2s</td></tr><tr><td>M3</td><td>DTSD51</td><td>2001124470</td><td>0.2s</td></tr></table> The type, serial number and accuracy have been confirmed by site visit.	Meter	Type	Serial Number	Accuracy	M1	DTSD51	2001124467	0.2s	M3	DTSD51	2001124470	0.2s
Meter	Type	Serial Number	Accuracy										
M1	DTSD51	2001124467	0.2s										
M3	DTSD51	2001124470	0.2s										
Calibration:	The calibration information are shown as below /12/: <table><tr><th>Meter</th><th>Calibration date</th><th>Valid until</th></tr><tr><td rowspan="4">M1 and M3</td><td>17/01/2018</td><td>16/01/2019</td></tr><tr><td>13/12/2018</td><td>12/12/2019</td></tr><tr><td>12/11/2019</td><td>11/11/2020</td></tr><tr><td>10/10/2020</td><td>09/10/2021</td></tr></table> The calibration was conducted by an accredited third party which is Electric Energy Measurement Centre of Jibei Electric Power Corporation was accredited by Quality and Technical Supervision Bureau of Hebei Province valid from 30/12/2017 to 29/12/2020 /13/.	Meter	Calibration date	Valid until	M1 and M3	17/01/2018	16/01/2019	13/12/2018	12/12/2019	12/11/2019	11/11/2020	10/10/2020	09/10/2021
Meter	Calibration date	Valid until											
M1 and M3	17/01/2018	16/01/2019											
	13/12/2018	12/12/2019											
	12/11/2019	11/11/2020											
	10/10/2020	09/10/2021											
QA/QC procedure:	Data record will be archived for a period of 2 years after the crediting period to which the records pertain.												
Means of verification:	Data of the parameter was verified by checking MRRs. All data is in line with MRRs; Information flow was verified by checking MRRs, ETNs and Statement issued by the power grid company, and all information are consistent; Monitoring method was verified by site visit, checking calibration certificates, all monitoring method meets the description in the PD; Calibration was verified by checking calibration certificate and Accreditation certificate, all calibration of monitoring equipment meets the requirement indicated in the PD.												

Data / Parameter:	EGGridtotal,y
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Data unit:	MWh												
Description:	Electricity consumed by the Project and other projects from the grid in year y												
Purpose of the data:	Calculation of baseline emissions												
Parameter value:	8,113.600												
Source of data used:	Electricity consumed by the Project and other projects from the grid in year y is all sourced from Meter Reading Record (MRRs) /10/ issued by the project owner, Electricity Transaction Notes (ETNs) /11/ issued by power grid company and Statement issued by the power grid company /14/.												
Information flow:	The data of 2 electricity meters installed at the 110 kV substation (M2 as main and M4 as backup) were measured continuously, recorded monthly and archived electronically. At 24:00 hr of last day of each month, the staff from project owner and power grid company will record main meter's readings and form Meter Reading Records (MRRs). The staff from power grid company then transcribes the data into Electricity Transaction Notes (ETNs), then after the confirmation of the project owner for the ETNs, the power grid company will issue the invoice. For the data on 22/12/2019 was determined through Statement issued by the power grid company. The data for MRRs, ETNs along with Statement issued by the power grid company have been sent to the CDM consulting company for reporting of GHG emission reduction. The conservative one would be used for ER calculation.												
Monitoring method, frequency and equipments:	The parameter was measured continuously and recorded monthly by 2 electricity meters installed at the 110 kV substation during the monitoring period verified by site visit. See below for the information of 2 electricity meters verified by site visit and checking calibration certificates /12/: <table><tr><th>Meter</th><th>Type</th><th>Serial Number</th><th>Accuracy</th></tr><tr><td>M2</td><td>DTSD51</td><td>2001124469</td><td>0.2s</td></tr><tr><td>M4</td><td>DTSD51</td><td>2001124468</td><td>0.2s</td></tr></table> The type, serial number and accuracy have been confirmed by site visit.	Meter	Type	Serial Number	Accuracy	M2	DTSD51	2001124469	0.2s	M4	DTSD51	2001124468	0.2s
Meter	Type	Serial Number	Accuracy										
M2	DTSD51	2001124469	0.2s										
M4	DTSD51	2001124468	0.2s										
Calibration:	The calibration information are shown as below /12/:												

	Meter	Calibration date	Valid until
	M2 and M4	17/01/2018	16/01/2019
		13/12/2018	12/12/2019
		12/11/2019	11/11/2020
		10/10/2020	09/10/2021
The calibration was conducted by an accredited third party which is Electric Energy Measurement Centre of Jibei Electric Power Corporation was accredited by Quality and Technical Supervision Bureau of Hebei Province valid from 30/12/2017 to 29/12/2020 /13/.			
QA/QC procedure:	Data record will be archived for a period of 2 years after the crediting period to which the records pertain.		
Means of verification:	Data of the parameter was verified by checking MRRs. All data is in line with MRRs; Information flow was verified by checking MRRs, ETNs and Statement issued by the power grid company, and all information are consistent; Monitoring method was verified by site visit, checking calibration certificates, all monitoring method meets the description in the PD; Calibration was verified by checking calibration certificate and Accreditation certificate, all calibration of monitoring equipment meets the requirement indicated in the PD.		

Parameters available at validation stage:

Below data has been verified against the data sources and the PDD.

Parameter title	Description	Data	Source
EF_{grid,CM,y^*}	Combined margin CO ₂ emission factor of the power grid in year y	0.950225 (CP1)	Notification on 2009 baseline emission factors for regional power grids in China issued by China on 02/09/2009 /15/.
EF_{grid,CM,y^*}	Combined margin CO ₂ emission factor of the power grid in year y	0.8269 (CP2)	Notification on 2019 baseline emission factors for regional power grids in China, issued by China on 29/12/2020 /15/.

* $EF_{grid,CM,y}$ is not directly available in the registered PDD but calculated based on the ex-ante data fixed in the registered PDD.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The monitoring has been carried out in accordance with the registered VCS PD /3/ dated 25/10/2011 and VCS PD /3/ dated 25/08/2021.

As a result of verification of the ER calculation process, the assessment team confirmed that all the parameters required for the determination of the emission reductions have been included in the MR Report and ER Calculation Spreadsheet /2/ and are consistent with the applied methodology ACM0002 version 12.1.0, version 20.0 and the monitoring plan. The parameters are complete in this monitoring period.

After verifying the reported figures with the raw data sources, it's confirmed that the values of the parameters from the raw data sources are consistent with those quoted in the ER Calculation Spreadsheet and the MR Report. The verification process for the same has been clearly described above in section 4.4 of the report.

4.6 Non-Permanence Risk Analysis

Not applicable as a renewable project.

5 VERIFICATION CONCLUSION

Applus+ Certification has been commissioned by Climate Bridge (Shanghai) Ltd. to perform the verification of greenhouse gas emission reductions of the project activity “Beijing Guanting Wind Power Project Phase II and Phase II addition” (VCS Ref. No. 830).

The management of Beijing Jingneng Clean Energy Co., Ltd. is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project’s Monitoring Plan in the registered VCS PD /3/ dated 25/10/2011 and VCS PD /3/ dated 25/08/2021.

Our verification approach was based on the requirements as defined under the applicable VCS standards and relevant UNFCCC requirements. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. The verification can confirm that:

- the project is implemented and operated as per the registered PDD and PD;
- the monitoring plan in the registered PDD is as per the applied methodology;
- the monitoring complies with the registered PDD and PD;
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS and CDM requirements;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.

In our opinion, the GHG emission reductions for “Beijing Guanting Wind Power Project Phase II and Phase II addition” during the monitoring period 01/07/2018 to 30/06/2021 as reported in Monitoring Report, prepared on the basis of the project’s Monitoring Plan are fairly stated. Based on the information we have seen and evaluated, we confirm the following statement:

Verification period: From 01/07/2018 to 30/06/2021 (divided into 4 vintage periods). Verified GHG emission reductions or removals in the above reporting period:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2018	65,844	0	0	65,844
2019	143,763	0	0	143,763
2020	136,530	0	0	136,530
2021	83,745	0	0	83,745
Total	429,882	0	0	429,882

APPENDIX 1: REFERENCE LIST

1. Monitoring report, Version 01.0, dated 25/08/2021; version 02.0, dated 06/09/2021
2. ER calculation spreadsheet
3. Registered CDM PDD, version 05.4, dated 13/01/2011;
Registered VCS Gap PD, dated 25/10/2011;
Registered CDM PDD, version 06.1, dated 31/07/2017;
Registered VCS PD, dated 25/08/2021
4. Validation report, No. 01 997 9105051138, version 04.1, completed by TÜV Rheinland Japan Ltd.;
Validation report, version 02, completed by CCCI;
VCS Validation report, completed on 02/05/2012 by CQC
VCS Validation report, completed on 25/08/2021 by Applus+ Certification
5. VCS standard version 4.1, dated on 22/04/2021
6. Statement issued by project owner
7. Approved methodology ACM0002, version 12.1.0, dated 17/09/2010
Approved methodology ACM0002, version 20.0, dated 28/11/2019
8. CDM Monitoring procedure
9. Nameplate of the equipment
10. Meter Reading Record (MRRs) for Meters
11. Electricity Transaction Notes covering the monitoring period

- 12 Calibration certificates of meters covering the whole monitoring period issued by Electric Energy Measurement Centre of Jibei Electric Power Corporation
- 13 Accreditation certificates for Electric Energy Measurement Centre of Jibei Electric Power Corporation issued by Quality and Technical Supervision Bureau of Hebei Province
- 14 Statement from Power Grid Company
- 15 Notification on 2009 baseline emission factors for regional power grids in China issued by China on 02/09/2009;

Notification on 2019 baseline emission factors for regional power grids in China issued by China on 29/12/2020