Project Title	CECIC Zhangbei Dayangzhuang Wind Farm Project
Reference Number	Gold Standard: 514 (CDM: 1855)
Client Name	Carbon Resource Management Ltd.
Client Address	Suite 806, Hyundai Motor Tower No 38, Xiaoyun Road, Chaoyang District, Beijing, 100027, China

Gold Standard Pre-CDM Verification and Certification Report

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Version Control	Date
Version 01	10 November 2010 (Draft Verification Report)
Version 02	29 November 2010 (Final Verification Report)
Version 03	10 January 2011 (Final Verification Report after GS review)

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CER	Certified Emission Reduction(s)
CL	Clarification Request
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
ER	Emission Reduction
ERM CVS	ERM Certification and Verification Services
FAR	Forward Action Request
GHG	Greenhouse Gas
GS	Gold Standard
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MR	Monitoring Report
NCPG	North China Power Grid
PDD	Project Design Document
PP	Project Participant
Pre-CDM VERs	Gold Standard VERs issued to proposed CDM projects in respect of their operation prior to registration by the UNFCCC.
QA/QC	Quality Assurance / Quality Control
SD	Sustainable Development
UNFCCC	United Nations Framework Convention for Climate Change

1. Project information

Project Title	CECIC Zhangbei Dayangzhuang Wind Farm Project
Project reference	GS: 514 (CDM: 1855)
Project Location	Located in the southwest of Zhangbei County, Zhangjiakou City, Hebei Province, China.
Host Country	China
Project Parties	China, Switzerland
Project Participants	CECIC Wind Power (Zhangbei) Yunwei Co. Ltd, Vitol SA
Methodology used and version number	ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 07 of 30 November 2007). http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html

Final Monitoring Report date and version number	Version 3.0 dated 30 December 2010
Monitoring Period	1st Monitoring Period: 11 May 2008 to 26 October 2008, within 12 months prior to the proposed project's CDM registration date of 27 October 2008
Number of Emission Reductions	32 826 t CO_2e
Date(s) of Site Visit	27 September 2010

Date/version of Registered Annex to the PDD on GS Registry	Annex to the PDD Version 04,of 12 April 2010
Date/version of Registered PDD on UNFCCC	PDD Version 1.3 of 25 October 2008
Date of CDM Registration	27 October 2008
Date of GS CDM Registration	05 May 2010 under GS requirements 1.0
Project Operation Starting Date	11 May 2008

2. Verification Opinion and Certification Statement

ERM Certification and Verification Services (ERM CVS) was commissioned by Carbon Resource Management Ltd. to verify and certify the emissions reductions reported for the period 11 May 2008 to 26 October 2008 as set out in the monitoring report of the pre-CDM project activity CECIC Zhangbei Dayangzhuang Wind Farm Project under Gold Standard Version 1.

Basis of verification	ERM CVS based its verification work on: ▪ The Gold Standard (V 1.0) Validation & Verification Manual for CDM Projects dated March 2007 ▪ The Gold Standard (V 1.0) Validation & Verification Manual for Voluntary Offset Projects dated June 2007 ▪ Gold Standard (V 1.0) Rules and Procedures Updates and Clarifications dated 17 December 2007 ▪ GS Annex to the PDD Version 04 dated 12 April 2010 ▪ Gold Standard Validation Report of CECIC Zhangbei Dayangzhuang Wind Farm Project issued by DNV dated 14 September 2009 ▪ The approved methodology applied in the registered project design document (PDD) ▪ The registered PDD and approved monitoring plan ▪ Previous verification reports (if applicable) ▪ UNFCCC criteria referred to in the Kyoto Protocol criteria and the CDM modalities and procedures as agreed in the Bonn Agreement and the Marrakech Accords ▪ Relevant decisions, guidance and clarifications of the CMP and CDM Executive Board and any other information and references relevant to the project activity's reported emission reductions ▪ The CDM Validation and Verification Manual
Responsibilities of ERM CVS	ERM CVS is responsible to provide an independent verification conclusion on the reported GHG emission reductions for the project during the relevant monitoring period. The verification activities included desk review, site visit, close out of open issues, preparation of report and technical review.
Responsibilities of Client	The client is responsible for the preparation of the information and GHG emissions data and the reported GHG emissions reductions of the project on the basis set out within the project monitoring plan contained in the registered PDD and GS Annex to the PDD.
ERM CVS Conclusion	Based on the verification activities undertaken, ERM CVS concludes that the project activity is implemented and operated as described in the registered PDD and GS Annex to the PDD. No changes have occurred that may have impact on the GS qualification of the project The GHG emissions reductions of CO_2e and the indicators of sustainable development were found to be appropriately measured and calculated in accordance with Gold Standard Version 1.0, the applied monitoring methodology ACM0002, Version 07, and the monitoring plan set out in the registered PDD Version 1.3 of 25 October 2008 and GS Annex to the PDD Version 04 of 12 April 2010. Based on the verification activities undertaken, ERM CVS concludes that the reported emission reductions are fairly stated.
Total GHG emission reductions certified	• Baseline emissions: 32 826 t CO_2 equivalent • Project emissions 0 t CO_2 equivalent • Leakage emissions: 0 t CO_2 equivalent **Emission reductions:** 32 826 **t CO_2**

Report approved by		**Signature**
Name: Melanie Eddis		
Date: 10 January 2010		

3. Introduction

This report sets out the methodology and conclusions of the verification process and the ERM CVS Certification Statement. ERM CVS assessed and verified whether the implementation of the project activity and the steps taken to report emission reductions comply with the Gold Standard and CDM criteria and relevant guidance provided by the CMP and the CDM Executive Board.

3.1. Verification Objectives

As set out in the Gold Standard Validation and Verification Manual (VVM), verification is the periodic independent review and ex post determination by the Designated Operational Entity (DOE) of the monitored reductions in anthropogenic emissions by sources of greenhouse gases that have occurred as a result of a registered CDM project activity during the verification period. Certification is the written assurance by the designated operational entity that, during a specified time period, a project activity achieved the reductions in anthropogenic emissions by sources of greenhouse gases as verified.

The objective of the verification is to determine whether sufficient evidence exists to provide reasonable assurance on the following:

- Whether the project activity has been implemented and is being operated as per the registered GS Annex and CDM PDD and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project activity are in place.
- Changes to the key sustainable development indicators
- Achievement and implementation of mitigation/compensation measures, according to the success indicators as established in the Monitoring Plan
- Changes that have occurred since validation that have impact on the claimed emission reductions.
- The GS monitoring report and other supporting documents provided are complete and verifiable and in accordance with the monitoring plan and applicable monitoring requirements.
- Whether the emission reductions as set out in the Monitoring Report have been measured, calculated and reported in accordance with the monitoring plan set out in the registered GS Annex and PDD (or subsequent approved monitoring plan revision if applicable)
- Whether the reported data meet the key principles of data quality and that this date is complete, reliable, consistent, accurate, valid, transparent and conservative.
- In addition, the verifier shall check whether any changes have occurred that may have impact on the GS qualification of the project, particularly with reference to any potential changes in key parameters leading to an overall positive impact on sustainable development of the project.

3.2. Scope and basis of verification work

The verification is an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the DOE.

Based on the key project information as set on page 2, the verification addresses the implementation and operation of the project activity as set out in the registered GS Annex and PDD, and the information and reported emission reductions set out in the monitoring report prepared by the project participant for this monitoring period.

The verification tests the data and assertions set out in the monitoring report prepared for this monitoring period by the project participants and is based on:

- The Gold Standard (V 1.0) Validation & Verification Manual for CDM Projects dated March 2007 /22/
- The Gold (V 1.0) Validation & Verification Manual for Voluntary Offset Projects dated June 2007 /23/
- Gold Standard (V 1.0) Rules and Procedures Updates and Clarifications dated 17 December 2007 /24/

- GS Annex to the PDD Version 04 dated 12 April 2010 /25/
- The approved methodology applied in the registered project design document (PDD) /7/
- The registered PDD and approved monitoring plan /3/
- Previous verification reports (if applicable) /33//34/
- UNFCCC criteria referred to in the Kyoto Protocol criteria and the CDM modalities and procedures as agreed in the Bonn Agreement and the Marrakech Accords /35/
- Relevant decisions, guidance and clarifications of the CMP and CDM Executive Board and any other information and references relevant to the project activity's reported emission reductions /35/
- The CDM Validation and Verification Manual /6/

The verification considers both quantitative and qualitative information on emission reductions. The monitoring report is assessed using a rules based approach, against the principles of accuracy, relevance, credibility, reliability, completeness, consistency, and transparency. Conservativeness is applied throughout the process to ensure that emission reductions are not overstated.

ERM CVS conducts all its work under strict rules to safeguard impartiality and ensure the independence of the verification team. The verification does not provide any consulting or recommendations for the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

3.3. Description of Project Activity

The project activity is a grid connected energy generation project utilising the wind resources to generate zero carbon emission electricity for the North China Power Grid (NCPG), located in Zhangbei County, Hebei Province, People's Republic of China, and supplying electricity to the NCPG. /1/ /3/.

The project activity has an installed capacity of 49.5 MW, consisting of 66 wind turbines of 750 kW each unit. Based on the registered PDD, the annual estimated electricity delivered to the grid is 96 530 MWh, and the project is expected to reduce CO_2 emissions by an estimated 103 796 tCO_2 annually during the first crediting period.

3.4. Appointment of Team Members and Technical Reviewer

Based on ERM CVS's review of the project a verification team was established that takes into account the coverage of the technical area(s), sectoral scope(s) and relevant host country experience for verifying the ER achieved by the project activity in the relevant monitoring period for this verification.

Personnel who undertook this verification were:

Verification Team	Role	Coverage of sectoral scope	Coverage of technical area	Host country	Participated in site visit?
Dong Nan	Lead Verifier	√	√	√	**Yes**
Xiang Le	Verifier	√	√	√	**Yes**

Technical Review	Role	Coverage of sectoral scope	Coverage of technical area	Host country	Participated in site visit?
Miguel Cortes	Technical Reviewer	√	√	√	No

Dong Nan is a Lead Auditor based in Beijing with experience in the validation and verification of more than 30 CDM projects, including wind power, hydro power and energy efficiency projects. He also received training in emission reduction monitoring and financial analysis. He is fully competent as a lead validator and verifier in the Gold Standard and Renewable energy (Wind

power) sectors. Dong Nan has attended a one day GS academy on 7 September 2010 in Beijing, China.

Xiang Le has five years of experience in environmental protection and 1 year experience in CDM. Her experience includes wind farm, hydropower and waste energy recovery projects as well as WCD assessments for hydropower projects in China.

Miguel Cortes has five years of experience in CDM projects, nine years as an Environmental Manager in the Cement Industry and two years of academic research in Environmental Studies. Miguel is highly qualified for technical assessments and handling of GHG emission reduction and carbon offset projects in Energy, Manufacturing, Mining and Waste Water Management. He has in-depth knowledge of Organizational Environment Management Systems including air emission and waste water monitoring, air quality and noise characterization, audit processes for law compliance and performance, community stakeholder relationship management and land-cover restorations. Miguel is also an Expert in the design of Clean Development Mechanism (CDM) methodologies and administrator of technical, professional and economic resources for environmental projects. Since joining ERM CVS Mr. Cortes has worked as a Technical Reviewer and GHG auditor on numerous CDM validations. His CDM and Gold Standard experience entails:

- Design and development of CDM methodology AM0040 “Baseline and monitoring methodology for project activities using alternative raw materials that contain carbonates in clinker manufacturing in cement kilns” (The methodology was consolidated with AM0033 under ACM0015)
- GHG and CDM project analyses in China, Mexico, Brazil, India, Argentina, Colombia, Bolivia, Macedonia, Egypt, Thailand and the Middle East
- Ttechnical Reviewer and project developer of many coal mine methane, waste heat recovery, waste water management and renewable CDM projects
- Technical Director of environmental impacts, stakeholders management and legal compliance for manufacturing process and open mining activities in Latin America
- Development of applicability conditions analysis for Gold Standard of renewable and biomass projects in Mexico and China.

Miguel Cortes has attended a GS DOE training workshop in Panama during May of 2010.

4. Verification activities

The verification approach is based on the approach depicted in the Gold Standard Validation & Verification Manual for CDM Projects and Gold Standard Validation and Verification Manual for Voluntary Offset Projects /22//23/.

4.1. Desk review

A detailed desk review was undertaken prior to the site visit. This included the registered PDD and GS Annex to the PDD, including the monitoring plan and the corresponding validation report, the applied monitoring methodology, previous verification reports, relevant external data and reports, on-site documents, relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board. All monitoring procedures were discussed prior to the site visit.

A complete list of all documents reviewed is contained in Annex 1.

4.2. Site Visit

A site visit to the project activity was undertaken on 27 September 2010 to assess the implementation and operation of the project activity, review evidence and interview key personnel to confirm evidence associated with the data generation, aggregation, calculation, and reporting of the monitoring parameters.

The site visit addressed:

- Assessment of the project implementation as per the registered PDD (including site walk through to confirm the physical existence and operation of project components) and GS Annex to the PDD;
- Practical implementation of all aspects of the monitoring plan and conformance with the methodology
- Changes to the key sustainable development indicators
- Achievement and implementation of mitigation/compensation measures according to the success indicators as established in the monitoring plan
- 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 monitoring plan. A list of all interviewees is included in Annex 2
- Cross-check between information provided in the Monitoring Report and data from other sources such as log books to establish the existence of a clear audit trail and records that validate or invalidate the stated data
- Check monitoring equipment including calibration performance and observations of the monitoring practices against the requirements of the PDD and the selected methodology
- Review calculations and assumptions made in determining the GHG data and emission reductions
- Review of on-site documentation, spreadsheets, protocols and IT systems (for example Quality Assurance Procedures, Data Handling Protocol, Data Flow chart, Calibration reports, PIMS graphs and data SAP reports, Production reports and Log Sheets, Suppliers information, Equipment documentation, Calibration standards, Supply Chain data)
- Identification of quality control and quality control procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters

4.3. Reporting

After the site visit, a draft report is prepared with the preliminary findings of the verification. Where it is not possible to confirm compliance with the monitoring plan and/or methodology, ERM CVS will issue:

- Clarification Request (CL): where information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met

- Corrective Action Request (CAR): This is issued where:
    - Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient
    - Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions
    - Issues identified in a Forward Action Request (FAR) during validation (or previous verification) to be verified have not been resolved by the project participants

The verification process may be stopped until this information has been made available to the verifiers' satisfaction. Failure to address a CL may result in the CAR. Information or clarification provided as a result of a CL may also lead to a CAR.

Forward Action Requests (FAR) may also be raised for actions if the monitoring and reporting require attention and/or adjustment for the next verification period. These have no impact upon the completion of the current verification activity.

After satisfactory close out of CARs and CLs the final report presents the verification activities undertaken, the issues raised and explains how these issues have been closed out to enable the final verification conclusions to be made.

4.4. Independent technical review

The verification activities and content of the report are subject to a review by an independent technical reviewer. The role of the Technical Reviewer is to provide oversight that all procedures have been followed by the verification team and all conclusions justified and supported by evidence. The Technical Reviewer will either accept or reject the recommendations made by the verification team.

5. Findings of the desk review and site visit

5.1. Status of open issues from previous verifications (if applicable)

There is no FAR raised in the Gold Standard Validation Report of CECIC Zhangbei Dayangzhuang Wind Farm Project issued by DNV /4/ and this monitoring period is the first periodic verification period.

There were 3 FARs raised in the CDM verification report for the monitoring period of 27 October 2008 to 31 May 2009 (which followed the monitoring period that is under verification for the Gold Standard), and the FARs were closed in the CDM verification report of 1 June 2009 to 30 April 2010 /34/.

5.2. Project Implementation in accordance with the registered PDD and GS Annex to the PDD

The project activity is a grid connected energy generation project utilising the wind resources to generate zero carbon emission electricity for the North China Power Grid (NCPG), located in Zhangbei County, Hebei Province, People's Republic of China, and supplying electricity to the NCPG. /1/ /3/.

The project activity has an installed capacity of 49.5 MW, consisting of 66 wind turbines of 750 kW each. Based on the registered PDD, the annual estimated electricity delivery to the grid is 96,530 MWh, the project is expected to reduce CO_2 emissions by an estimated 103,796 tCO_2 average annually during the first crediting period.

At the site visit 27 September 2010, it was confirmed that the total metering system of the project consists of two parts as below:

- There is one bidirectional main meter (Serial No. 200407007Z0071) installed in the 220kV Zhangbei substation of NCPG, which monitors the total power exported to the grid (EG_{total}) and the total power imported from the grid (EG_{import}), respectively. NCPG is in charge of the meter reading and maintenance of the metering system. The accuracy level of the meter is 0.2s which was confirmed through the review of the calibration report. The proposed project shares the main meter with another project, i.e. Gaojialiang project.
- Two meters are installed at the onsite substation for the monitoring of the electricity exported to the grid by the project (E_I, meter Serial No. 30087147) and for monitoring of electricity exported to the grid by the other project, Gaojialiang project, which shares the same main meter with the project, (E_{II}, meter Serial No. 30087146). The accuracy level of both of these onsite meters is 0.5s which was confirmed through review of calibration reports. Based on the verifier's site visit, the project implementation and equipment installation were verified to be consistent with the description in the registered PDD /3/. ERM CVS is able to confirm that the accuracy of the onsite meters fulfils the requirements of the Technical Administrative Code of Electric Energy Metering DL/T 448-2000 /17/.

The installation of the equipment during this monitoring period was confirmed to be the same as described in the registered PDD /3/.

The verification team confirms that the project activity is completely operational and has been implemented in accordance with the registered PDD. No findings are raised.

The implementation of the proposed project was demonstrated to create about 17 positions during the operational period /25//32/, improve the employment quality by providing training to the staff, and reduces the emissions of soot, SO_2 and NO_2, as well as the amount of water consumed /25//32/.

Compliance question	Verification activities undertaken	Findings	Conclusion (OK/CAR/CL)
Are all physical features of the project activity in place as per the registered PDD and GS Annex to the PDD?	During the ERM CVS site visit, the verification team visited the project site and inspected the turbines, generators and the monitoring meters installed in the power plant.	The project has been implemented and equipment installed and operated as described in the registered PDD *and GS Annex to the PDD.*	*OK*
Is the project activity operated as per the registered PDD and GS Annex to the PDD?	The project activity has an installed capacity of 49.5 MW, consisting of 66 wind turbines of 750 kW each. The monitoring system is operated as described in the registered PDD and GS Annex to the PDD. The	The project has been operated as described in the registered PDD and GS Annex to the PDD.	*OK*

	monitoring parameters are all monitored and recorded which are consistent with the registered PDD. The staff roster and 17 copies of labour contracts were verified to confirm the created job positions during the operation period /10//27/.		
Has there been any variance in the data and variables provided in the monitoring report compared with the registered PDD and GS Annex to the PDD that has caused an increase in emission reductions or change the Sustainable Development contribution from the Project Activity implementation?	Based on the document review, on site visit and interviews with key staff the project is implemented as per the registered PDD and GS Annex to the PDD.	There is no variance in the data and no change may cause the increase of emission reductions or any change to the Sustainable Development contribution as a result of the implementation of the Project Activity.	*OK*

Conclusion

Based on the verifier's site visit, all physical features of the project activity have been fully implemented in accordance with the registered PDD and GS Annex to the PDD. The monitoring equipment was installed as described in the approved Monitoring Plan. ERM CVS confirmed, through the visual inspection that all physical features of the proposed Gold Standard project activity have been implemented in accordance with the registered PDD and GS Annex to the PDD. The project activity is also confirmed to be fully operational in accordance with the registered PDD and GS Annex to the PDD.

ERM CVS confirmed during the site visit that:

- the installed capacity and number of units have not changed
- no component has been added or the technology extended
- the project is still a single site activity
- the scale of the project has not changed
- the applicability criteria of the methodology is maintained
- there are no changes to the key sustainable development indicators compared with the GS Annex to the PDD
- mitigation/compensation measures have been implemented according to the success indicators as established in the monitoring plan

5.3. Compliance of the monitoring plan with the CDM monitoring methodology

The verification team reviewed the monitoring plan against the requirements of the approved monitoring methodology.

Compliance question	Verification activities undertaken	Findings	Conclusion (OK/CAR/CL)
Is the monitoring plan in compliance with the applied CDM methodology?	Three meters are installed to monitor the electricity exported to the grid by the proposed project and the electricity imported from the grid by the proposed project.	All parameters which are required by the methodology are all monitored and recorded, which is consistent with the monitoring plan in the registered PDD.	*OK*

Conclusion:

The monitoring plan is in accordance with the approved methodology applied by the CDM project activity. No requests were made to the CDM Executive Board for deviation from the approved methodology.

5.4. Compliance of monitoring with the monitoring plan

At the time of site visit 27 September 2010, it is confirmed that total metering system of the project consists of two parts as below:

- There is one bidirectional main meter (Serial No. 200407007Z0071) installed in the 220kV Zhangbei substation of NCPG, which monitors the total power exported to the grid (EG_{total}) and the total power imported from the grid (EG_{import}). NCPG is in charge of the meter reading and maintenance of the metering system. The accuracy level of the meter is 0.2s which was confirmed through the review of the calibration report. The proposed project shares the main meter with another project, i.e. Gaojialiang project.
- Two meters are installed at the onsite substation for monitoring of the electricity exported to the grid by the project (E_I, meter Serial No. 30087147) and for monitoring of electricity exported to the grid by the other project, Gaojialiang project, which shares the same main meter with the project, (E_{II}, meter Serial No. 30087146). The accuracy level of both of these onsite meters is 0.5s which was confirmed through review of calibration reports. Based on the verifier's site visit, the project implementation and equipment installation were verified to be consistent with the description in the registered PDD /3/. ERM CVS is able to confirm that the accuracy of the onsite meters fulfils the requirements of the Technical Administrative Code of Electric Energy Metering DL/T 448-2000 /17/.

The installation of the monitoring equipment during this monitoring period is the same as described in the monitoring plan in the registered PDD /3/ and the accuracies of electricity meters are in line with the Technical Administrative Code of Electric Energy Metering (DL/T 448-2000) /23/.

The verification team confirms that the project activity is completely operational and has been implemented in accordance with the registered PDD and GS Annex to the PDD. No findings are raised.

The data were continuously measured and recorded monthly, the daily running records were verified and deemed to be in order /30//31/, the monitoring and recording frequency are in line with the requirements of methodology ACM0002 Version 07 which is applied to this project as stated in the registered PDD.

Technical training for operation is provided, and the certificates of operation personnel were verified by the verification team /9/. The CDM related procedures, which include monitoring, recording and reporting, are introduced by Carbon Resource Management Ltd. /11/.

For the monitoring parameters in the monitoring plan of the GS Annex to the PDD:

- The number of jobs additional to the baseline is monitored by checking the staff roster and employment contracts /10/
- The employment quality is monitored by checking the training records for installation and operation, security training and rescue training
- Emission reductions of soot, SO_2 and NO_x are monitored by monitoring the net supplied power during the monitoring period
- Water quantity is monitored by monitoring the net supplied power during the monitoring period
- Mitigation measures are considered by ERM CVS to have been implemented by checking Environmental Test and Acceptance report /8/

The monitoring parameters in the monitoring plan have been checked and are in line with the monitoring plan of the GS Annex to the PDD.

5.4.1. Monitoring parameters for GHG emission reduction

The verification team evaluated the monitoring of each parameter stated in the monitoring plan, which included:

- Project emission parameters
- Baseline emission parameters
- Leakage parameters

A: List of Parameters – Baseline emissions

ID	*Parameters*		*Data Unit*	*Parameter Description*	*Source of data*			*Calculated Parameters*
					Direct measurement	*Sampling*	*External Source*	
A 1	EG_{Export}		MWh	*Electricity exported to the*				*Calculated as*

				grid by the project				$EG_{total}* \frac{E_I}{E_I + E_{II}}$
A 2		EG_{total}	MWh	*Electricity exported to the grid by the project and the other project which share the same main meter with the project*	Electricity meter in the Zhangbei Substation			
A 3		E_I:	MWh	*Electricity exported to the grid by the proposed project*	Electricity meter in the proposed project			
A 4		E_{II}	MWh	*Electricity exported to the grid by the other project (Gaojialiang project), which shares the same main meter with the project*	Electricity meter in the Gaojialiang project			
A 5	EG_{import}		MWh	Electricity imported from the grid by the proposed project	Electricity meter in the Zhangbei Substation			

B: List of Parameters – Project emissions

ID	***Parameters***		***Data Unit***	***Parameter Description***	***Source of data***			***Calculated Parameters***
					Direct measurement	***Sampling***	***External Source***	
N/A								

.

C: List of Parameters – Leakage emissions

ID	***Parameters***		***Data Unit***	***Parameter Description***	***Source of data***			***Calculated Parameters***
					Direct measurement	***Sampling***	***External Source***	
N/A								

5.4.2. Monitoring parameters for Sustainable Development

The verification team evaluated the monitoring of each parameter stated in the monitoring plan, which included the monitoring parameters with regard to sustainable development in the GS Annex to the PDD. The parameters used are listed below and a full description of each of these parameters and the verification activities associated with the monitoring of each one is included in Section 6.

D: List of Parameters – Sustainable development

ID	Parameters	Data Unit	Parameter Description	Source of data			Calculated Parameters
				Direct measurement	Sampling	External Source	
D.1	Number of jobs additional to the baseline	person	Jobs created by the proposed project, during operation of the project.	Staff roster 17 copies of labour contracts			
D.2	Employment quality		The project will offer training for employees operating the wind farm.	1.Technical training records and certificates of operation personnel /9/ 2.Security Training records for 2008 /16/ 3.The photos for rescue training /29/ 4. Sanitation training certificates issued by Hebei Red Cross /15/			
D.3	ER_{soot}	t	Emission reduction of soot				Calculated as 3.27 t/GWh * ($EG_{Export,y}$-$EG_{import,y}$)
D.4	ER_{SO_2}	t	Emission reduction of NOx				Calculated as 5.82 t/GWh * (EG_{Export}-EG_{import})
D.5	ER_{NOx}	t	Emission reduction of NO_x				Calculated as 3.27 t/GWh * (EG_{Export}-EG_{import})
D.6	Water quantity	t	The water quantity saved by the implementation of the proposed project				Calculated as 3.54 t/MWh * (EG_{Export}-EG_{import})
D.7	Mitigation measures		The implementation of measures to mitigate the influence to the local environment by the proposed project			The approval opinion of Environmental Test and Acceptance Report issued by EPB of Hebei Province was verified by ERM CVS to confirm the following: -Experienced and talented construction team was selected - The construction area was strictly controlled to avoid the damage to the grass	

							- Instead of pitch, sand stone was selected as the raw material for the construction of the road, to avoid road harden - The occupied surface land was collected refilled, and the wastes was collected and well managed - The temporary ground was cleared up after the construction was completed and new vegetation was planted - An appropriate location was selected for the waste to prevent flying dust - Effective measurements have been taken of waste (solid, gas, water) and noise produced during the construction	

5.4.3. Changes to the key SD indicators

The verification team evaluated the monitoring of each SD indicator stated in the monitoring plan and assessed whether there are changes to the key SD indicators according to the established sustainable development monitoring plan in the GS Annex of the PDD and found these to be implemented in accordance with the monitoring plan in the GS Annex to the PDD.

Conclusion

ERM CVS confirmed through the desk review, site visit and interviews, that the data acquisition process, data transferring process, archiving process and reporting process for the SD indicators occur as required by the monitoring plan. The monitoring has been carried out as prescribed in the monitoring plan of the GS Annex in the PDD. It is confirmed by ERM CVS that there are no changes to the key SD indicators identified.

5.5. Assessment of monitoring data and calculation of GHG emission reductions

The verification team evaluated the calculations in the monitoring report to determine the emission reductions during the monitoring period resulting from the implementation of the project activity. In conducting this evaluation, the verification team considered:

- Conformance with the formulae and methods described in the monitoring plan and applied methodology
- Completeness of data during the monitoring period
- Supporting evidence and audit trails, such as plant log books, inventories, purchase records and laboratory analysis results
- Assumptions used in the calculations and their basis
- Application of emission factors, IPCC default values and other reference values

5.5.1. Assessment of monitoring parameters for GHG emission reduction

The calculation is based on the approved methodology ACM0002, version 07. The project participants use a spreadsheet which presents the raw data and formulae used for the calculation /2/.

The verification team can confirm that the data acquisition process, data transferring process, archiving process and reporting process occur as required by the monitoring plan and the CDM Management Manual./11/.

The emission reduction is determined as per

$$ER_y = BE_y – PE_y – L_y$$

According to the approved methodology ACM0002 (version 07) and the registered PDD /3/, the project emissions (PE_y) and leakage (L_y) do not need to be considered. Hence, zero value for project and leakage emissions is applied.

Hence, the emission reductions are

$$ER_y = BE_y = EG_y * EF_y = (EG_{Export} - EG_{import}) * EF_y$$

EG_{Export} is the electricity supplied to the grid by the proposed project. EG_{impor} is the electricity imported by the proposed project from the grid. As per the monitoring plan, the project activity shares the same main meter for monitoring of electricity exported to the grid with another wind farm project, so the electricity supplied to the Grid (EG_{export}) of the site should be calculated as:

$$EG_{export} = EG_{total} * E_I/(E_I+E_{II})$$

Where:

EG_{total} is the electricity generation monitored by the main meter installed at the Zhangbei substation of NCPG

E_I is the electricity supplied to the grid by the proposed project, which is monitored by the meter installed at project site (the proposed CDM project)

E_{II} is the electricity supplied to the grid by the proposed project, which is monitored by the meter installed at the other project (Gaojialiang project)

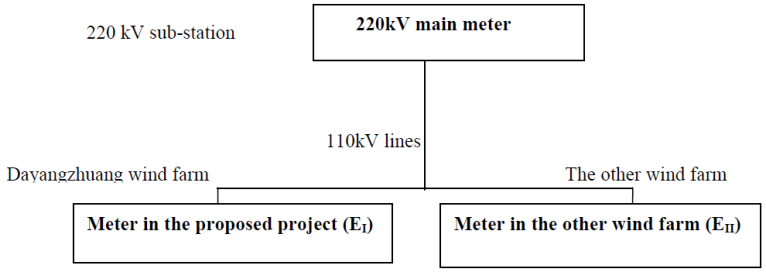

Fig 1 The location of the monitoring equipment.

EG_y has been verified to be 30,527.38 MWh in this monitoring period (11 May 2008 to 26 October 2008). EGy has been verified by ERM CVS to confirm that the values in the spreadsheet for the emission reduction calculation are consistent with those in the Operation logbooks reading records /20//28/. The net power supplied to the grid was also cross-checked against the sales receipts issued by the grid company for the electricity delivered and was found to be consistent /18/. The CO_2 emission factor of the defined grid is calculated ex-ante and does not need to be up-dated during the first crediting period. EF_y = 1.0753 tCO_2/MWh which is consistent with the registered PDD /3/.

Thus, the emission reduction of the project in this monitoring period can be calculated as below:

$$ER_y = EG_y * EF_y = 32\ 826\ (tCO_2e)$$

Period	E_I	E_{II}	EG_{Total}	EG_{export}(= EG_{total}* $E_I/(E_I+E_{II})$)	EG_{import}	EG
11/05/2008 - 31/05/2008	805.816	0.000	803.352	803.352	6.072	797.280
01/06/2008 - 30/06/2008	4,519.064	0.000	3,706.824	3,706.824	64.944	3641.880
01/07/2008 - 31/07/2008	5,135.680	0.000	5,121.732	5,121.732	33.264	5,088.468
01/08/2008 - 31/08/2008	5,955.840	0.000	5,942.640	5,942.640	16.104	5,926.536
01/09/2008 - 30/09/2008	6,182.880	0.000	6,164.004	6,164.004	14.124	6,149.880
01/10/2008 - 26/10/2008	8,956.640	0.000	8,927.556	8,927.556	4.224	8,923.332
Total						30527.38

The values of E_I, EG_{total} and EG_{import} are checked to be in line with the monthly reading records of the electricity meter (30087147) installed at the proposed project site and monthly reading records of the electricity meter (200407007Z0071) installed at the substation for the monitoring period between 11 May 2008 to 26 October 2008 /30//31/.

The values of E_{II} are considered to be zero because during 11 May 2008 to 26 October 2008 the Gaojialiang project had not completed the construction and therefore had not started to generate electricity. ERM CVS considers this assumption to be appropriate based on the following activities:

1) ERM CVS verified the statement on the status of the Gaojialiang project during 11 May 2008 to 26 October 2008 issued by North China Power Grid Company, which can be regarded as a third party, to confirm that the Gaojialiang project has not completed the construction and therefore has not started to generate electricity between 11 May 2008 to 26 October 2008 and the meter (200407007Z0071) installed at the substation was served for CECIC Zhangbei Dayangzhuang Wind Farm Project only during 11 May 2008 to 26 October 2008 /26/.

2) ERM CVS verified the statement on the date of the installation of meter (30087146) issued by Zhangjiakou Power Company to confirm that the meter (30087146) to measure E_{II} was installed on 27 October 2008 /21/.

3) ERM CVS verified the operation logbooks for electricity generation of Gaojialiang project /28/ to confirm that Gaojialiang project started its operation to generate electricity from 25 April 2009 /28/, which means the meter (200407007Z0071) installed at the substation was served for CECIC Zhangbei Dayangzhuang Wind Farm Project only during 11 May 2008 to 26 October 2008.

The values for electricity supplied to the grid and imported by the grid (EG_{export} and EG_{import}) for the proposed project in the spreadsheet have been cross-checked to be in line with the sales receipts issued by the grid company /18/.

CL 1 was raised to require cross checking information into the monitoring report. Updated monitoring report and emission reduction calculation spreadsheet with the cross checking information were provided. CL 1 is closed.

The accuracies of the meters are confirmed by ERM CVS to fulfil the requirements of the Technical Administrative Code of Electric Energy Metering DL/T 448-2000 /17/. Calibration reports issued by Zhangjiakou Power Company for the meter (200407007Z0071) dated 10 March 2008 and calibration reports issued by Zhangjiakou Power Company for the meter (30087147) dated 3 March 2008 have been provided to and verified by ERM CVS to confirm that the meters have been calibrated appropriately /13//14/. The Certificate of Metrological Authorization for Zhangjiakou Power Company issued by the Quality Supervision, Inspection and Quarantine of Hebei Province, valid from18 February 2008 to 17 February 2011, was also verified by ERM CVS /12/.

5.5.2. Assessment of monitoring parameters for project emission

N/A

5.5.3. Assessment of monitoring parameters for leakage

N/A

5.5.4. Assessment of the parameters with regard to sustainable developments

1) The staff roster and 17 copies of labour contracts were verified by ERM CVS to confirm that 17 jobs have been created by the proposed project during the operation /10//27/. The indicator has kept the same number of permanent jobs compared with the analysis developed in the SD Matrix presented in the GS Annex of PDD. Therefore the score could be considered as the same in the GS Annex of the PDD.

2) Evidence was verified by ERM CVS to confirm that the project has offered training for employees for the operating of the wind farm, including technical training records and certificates of operation personnel, sanitation training certificates issued by Hebei Red Cross, security training records for 2008 and the photos for rescue training /9/ /15/ /16/ /29/. The qualitative indicator has been considered to be in accordance with the analysis developed in the SD Matrix presented on GS Annex of PDD. Therefore the score could be considered as the same.

3) The ER_{soot}, ER_{SO_2}, and ER_{NO_x} are monitored by monitoring the net electricity supplied to the grid by the proposed project and multiplying by the ex ante factors set out in the GS Annex to the PDD. The reported reductions were 99.82 t soot, 177.66

tSO_2 and 99.82 t NO_x, respectively. The values of the ex-ante factors are consistent with those defined in GS annex to the PDD.

4) The water quantity saved by the implementation of the proposed project was monitored by monitoring the net electricity supplied to the grid by the proposed project and multiplying by the ex-ante factor of 3.54 t/MWh, which equals to 108,066.91 t water. The values of the ex-ante factors are consistent with those defined in GS annex to the PDD.

5) For the monitoring of mitigation measures, the approval opinion of the Environmental Test and Acceptance Report issued by EPB of Hebei Province was verified by ERM CVS to confirm the following:

- Experienced and talented construction team were selected
- The construction area was strictly controlled to avoid the damage to the grass
- Instead of pitch, sand stone was selected as the raw material for the construction of the road, to avoid road harden
- The occupied surface land was collected refilled, and the wastes was collected and well managed
- The temporary ground was cleared up after the construction was completed and new vegetation was planted
- An appropriate location was selected to place the waste to prevent the flying dust
- Effective measurements have been taken to dispose of waste (solid, gas, water) and noise produced during the construction

Through on site observation, as well as verifying the Environmental Test and Acceptance Report and the opinion from EPB of Hebei Province, ERM CVS consider the implementation of mitigation measures to have been sufficient.

Based on the above, it is considered that the monitoring of sustainable development parameters and mitigation/compensation measures have been implemented appropriately.

Compliance question	Verification activities undertaken	Findings	Conclusion (OK/CAR/CL)
Were data available throughout the monitoring period in accordance with the monitoring plan and methodology?	Through the desk review and site visit, ERM CVS concludes: The values of E_I, EG_{total} and EG_{import} are checked to be in line with the Monthly reading records of the electricity meter (30087147) installed at the proposed project site and monthly reading records of the electricity meter (200407007Z0071) installed at the substation for the monitoring period from 11 May 2008 to 26 October 2008 /30//31/. The values of E_{II} are considered to be zero because during 11 May 2008 to 26 October 2008 the Gaojialiang project had not completed the construction and therefore had not started to generate electricity. ERM CVS considers this assumption to be appropriate based on the following activities: 1) ERM CVS verified the statement on the status of Gaojialiang project during 11 May 2008 to 26 October 2008 issued by North China Power Grid Company, which can be regarded as a third party, to confirm that the Gaojialiang project has not completed the construction and therefore has not started to generate electricity during 11 May 2008 to 26 October 2008 and the meter (200407007Z0071) installed at the substation was served for CECIC Zhangbei Dayangzhuang Wind Farm	The data has been checked and considered to be appropriate.	*OK*

	Project only during 11 May 2008 to 26 October 2008 /26/. 2) ERM CVS verified the statement on the date of the installation of meter (30087146) issued by Zhangjiakou Power Company to confirm that the meter (30087146) to measure E_{II} was installed on 27 October 2008 /21/. 3) ERM CVS verified the operation logbooks for electricity generation of Gaojialiang project /28/ to confirm that Gaojialiang project started its operation to generate electricity from 25 April 2009 /28/, which means the meter (200407007Z0071) installed at the substation was served for CECIC Zhangbei Dayangzhuang Wind Farm Project only during 11 May 2008 to 26 October 2008. The values for electricity supplied to and imported by the grid (EG_{export} and EG_{import}) by the proposed project in the spreadsheet have been cross-checked to be in line with the sales receipts issued by the grid company /18/. For the emission reduction of soot, SO_2, NO_x, and water quantity, ex-ante factors are applied, and the monitoring of the net supplied electricity is considered to be complete and accurate.		
Has the project participant used appropriate methods and formulae for calculating baseline, project and leakage emissions?	Desk review Monitored data was used for emission reduction calculations, and the conservative value between monitored data and sales receipts was used for baseline emissions calculation and sustainable development indicators.	The calculation method and the formulae for calculating are appropriate.	*OK*
Has the project participant justified all assumptions, emission factors and default values that have been applied?	A fixed emission factor of 1.0753 tCO_2e/MWh as determined in the registered PDD, is used for the emission reduction calculation. Fixed ex-ante factors for emission reduction of soot, SO_2, NO_x, and water quantity are applied in the GS Annex to the PDD as 3.27 t/GWh, 5.82 t/GWh, 3.27 t/GWh and 3.54 t/MWh /25/.	The emission factors and default values that have been applied are reasonable.	*OK*

5.5.5. Management and operational system

Compliance question	Verification activities undertaken	Findings	Conclusion (OK/CAR/CL)
Have all parameters stated in the monitoring plan, the applied	Desk review The parameters including E_I, EG_{total}	The monitoring of the parameters is considered to be appropriate.	*OK*

methodology and the relevant GS and CDM EB decisions been sufficiently monitored and updated as applicable?	and EG_{import} required by the methodology and the relevant CDM EB decisions have been sufficiently monitored and updated. The values of E_{II} are considered to be zero because during 11 May 2008 to 26 October 2008 the Gaojialiang project had not completed the construction and therefore had not started to generate electricity. ERM CVS considers this assumption to be appropriate based on the following activities: 1) ERM CVS verified the statement on the status of the Gaojialiang project during 11 May 2008 to 26 October 2008 issued by North China Power Grid Company, which can be regarded as a third party, to confirm that the Gaojialiang project has not completed the construction and therefore has not started to generate electricity during 11 May 2008 to 26 October 2008 and the meter (200407007Z0071) installed at the substation was served for CECIC Zhangbei Dayangzhuang Wind Farm Project only during 11 May 2008 to 26 October 2008 /26/. 2) ERM CVS verified the statement on the date of the installation of meter (30087146) issued by Zhangjiakou Power Company to confirm that the meter (30087146) to measure E_{II} was installed on 27 October 2008 /21/. *3)* ERM CVS verified the operation logbooks for electricity generation of the Gaojialiang project /28/ to confirm that the Gaojialiang project started its operation to generate electricity from 25 April 2009 /28/, which means the meter (200407007Z0071) installed at the substation was served for CECIC Zhangbei Dayangzhuang Wind Farm Project only during 11 May 2008 to 26 October 2008. For the emission reduction of soot, SO_2, NO_x, and water quantity, ex-ante factors are applied, and the monitoring of the net supplied electricity is considered to be complete and accurate.		

Is the accuracy of equipment used for monitoring in accordance with the relevant guidance prepared by the GS and CDM EB and controlled and calibrated in accordance with the monitoring plan?	During the site visit, the accuracies of the meters were verified and confirmed by ERM CVS to fulfil the requirements of the Technical Administrative Code of Electric Energy Metering DL/T 448-2000 /17/. Calibration reports issued by Zhangjiakou Power Company for the meter (200407007Z0071) dated 10 March 2008 and calibration reports issued by Zhangjiakou Power Company for the meter (30087147) dated 3 March 2008 have been provided and verified by ERM CVS to confirm that the meters have been calibrated appropriately /13//14/. The calibration and accuracy of the monitoring equipment are not applicable to the SD indicators.	The accuracy of equipment used for monitoring is in accordance with the relevant guidance prepared by the CDM EB and is controlled and calibrated in accordance with the monitoring plan.	*OK*
Are monitoring results recorded consistently as per the approved frequency?	During the site visit by ERM CVS, the data was measured hourly and recorded monthly, and the operation log records were verified and deemed to be in order /30//31/. The monitoring and recording frequency are in line with the requirements of the methodology ACM0002 Version 07 which is applied to this project as stated in the registered PDD. For the emission reduction of soot, SO_2, NO_x, and water quantity, ex-ante factors are applied, and the monitoring of the net supplied electricity is recorded according to the GS Annex of the PDD.	The monitoring results are recorded consistently as per the approved frequency.	*OK*
Have QA/QC procedures been applied in accordance with the monitoring plan?	During the site visit by ERM CVS, the daily records were checked on site, the monitoring data were archived with paper base and electronic base. The electricity meters were calibrated by the independent third party. Not applicable to SD indicators.	The QA/QC procedures have been applied in accordance with the monitoring plan.	*OK*
Have the management and operational systems for monitoring been fully implemented as stated in the monitoring plan?	During the site visit by ERM CVS, the daily monitoring data was verified, and the monitoring plan was implemented according to the management and monitoring manual. Not applicable to SD indicators.	The management and operational systems for monitoring have been fully implemented as stated in the monitoring plan.	*OK*

Conclusion

Emission reductions have been calculated in accordance with the monitoring plan and the applied methodology, and it is determined that the data processing and emission reduction calculations resulted in real and measurable emission reductions. Where data was unavailable conservative assumptions have been made.

5.6. Comparison of emission reductions with those predicted in the PDD

Emission reductions are predicted, based on the daily average values in the registered PDD, to be 48 058 tCO_2e for a period equivalent to this monitoring period /3/.

Emission reductions reported in the Monitoring Report for this monitoring period (11 May 2008 to 26 October 2008) are 32 826 tCO_2e

The actual emission reductions during this monitoring period of 32 826 tCO_2e is lower than the estimated emission reductions in the registered PDD. This monitoring period started from 11 May 2008 to 26 October 2008, the first five months since its operation started, during which the project activity was under testing and didn't operate at a normal status, and therefore the actual emission reductions did not reflect the level predicted in the registered PDD /3/. ERM CVS concludes the actual emission reduction of 32 826 tCO_2e is acceptable for this monitoring period.

5.7. Other observations

Not Applicable.

6. Parameters verification

6.1. Verification activity

The status of each monitored parameter is set out below. A summary of the status of key instrumentation, including calibration status, is included in Annex 3.

ID:	A 1
Data / Parameter:	EG_{Export}
Data unit:	MWh
Description:	*Electricity exported to NCPG by the proposed project*
Measurement Devices and location	Calculated as $EG_{export}= EG_{total}* E_I/(E_I+E_{II})$
Measurement Frequency:	Calculated
QA/QC Procedures Applied, including calibration:	▪ CDM project management and monitoring manual /11/; ▪ Monthly reading records of the electricity meter (30087147) installed at the proposed project site and monthly reading records of the electricity meter (200407007Z0071) installed at the substation for the monitoring period from 11 May 2008 to 26 October 2008 /30//31/ ▪ All electricity meters were calibrated regularly according to according to the Technical Administrative Code of Electric Energy Metering (DL/T 448-2000) /17/
Verification Activities / Evidence Reviewed:	This parameter is calculated based on the measurement of EG_{total} (see A.2 below). **Cross checking** The values for electricity supplied to the grid and imported by the grid (EG_{export} and EG_{import}) by the proposed project in the spreadsheet have been cross-checked to be in line with the sales receipts issued by the grid company /18/.
Findings:	OK
Conclusions:	OK

ID:	A 2
Data / Parameter:	EG_{total}
Data unit:	MWh
Description:	*Electricity exported to the grid by the project and the other project which share the same main meter with the project*
Measurement Devices and location	Electricity meter in the substation
Measurement Frequency:	Continuous measurement
QA/QC Procedures Applied, including	▪ CDM project management and monitoring manual /11/;

calibration:	▪ Monthly reading records of the electricity meter (30087147) installed at the proposed project site and monthly reading records of the electricity meter (200407007Z0071) installed at the substation for the monitoring period from 11 May 2008 to 26 October 2008 are verified by the verification team /30//31/ ▪ All electricity meters were calibrated regularly according to according to the Technical Administrative Code of Electric Energy Metering (DL/T 448-2000) /17/
Verification Activities / Evidence Reviewed:	**Measurement Device** There is one continuous bidirectional main meter (Serial No. 200407007Z0071) installed in the 220kV Zhangbei substation of NCPG, which monitors the total power exported to the grid (EG_{total}) and the total power imported from the grid (EG_{import}). NCPG is in charge of the meter reading and maintenance of the metering system. The accuracy level of the meter is 0.2s which was confirmed through the review of the calibration report and in line with the Technical Administrative Code of Electric Energy Metering (DL/T 448-2000) /17/. All of the installation of the meters and the monitoring procedures are consistent with the registered PDD. **Measurement Frequency and data record** The monthly reading records were verified to be in place /30//31/. The monitoring data was hourly recorded and monthly reported. The paper base and electronic data records will be kept for 2 years until the end of the crediting period. **Calibration** Calibration reports issued by Zhangjiakou Power Company for the meter (200407007Z0071) dated 10 March 2008 have been provided to and verified by ERM CVS to confirm that the meters have been calibrated appropriately /13//14/. The Certificate of Metrological Authorization for Zhangjiakou Power Company issued by the Quality Supervision, Inspection and Quarantine of Hebei Province valid from 18 February 2008 to 17 February 2011 was also verified by ERM CVS /12/. The calibration period covers all this monitoring period 11 May 2008 to 26 October 2008. **Cross checking** The values for electricity supplied to the grid and imported by the grid (EG_{export} and EG_{import}) for the proposed project in the spreadsheet have been cross-checked to be in line with the sales receipts issued by the grid company /18/.
Findings:	OK
Conclusions:	OK

ID:	A 3
Data / Parameter:	E_I:
Data unit:	MWh
Description:	*Electricity exported to the grid by the proposed project*
Measurement Devices and location	Electricity meter in the proposed project
Measurement Frequency:	Continuous measurement
QA/QC Procedures Applied, including calibration:	▪ CDM project management and monitoring manual /11/ ▪ Monthly reading records of the electricity meter (30087147) installed at the proposed project site and monthly reading records of the electricity meter (200407007Z0071)

	installed at the substation for the monitoring period from 11 May 2008 to 26 October 2008 /30//31/ ▪ All electricity meters were calibrated regularly according to the Technical Administrative Code of Electric Energy Metering (DL/T 448-2000) /17/.
Verification Activities / Evidence Reviewed:	**Measurement Device** One meter is installed at the onsite substation of the proposed project for monitoring of the electricity exported to the grid by the project (E_I, meter Serial No. 30087147), and another meter is installed at the site of the Gaojialiang project for monitoring of electricity exported to the grid by the Gaojialiang project, which shares the same main meter with the project, (E_{II}, meter Serial No. 30087146). The accuracy level of both of these meters is 0.5s which was confirmed through the review of calibration reports and in line with the Technical Administrative Code of Electric Energy Metering (DL/T 448-2000) /17/. All of the installation of the meters and the monitoring procedures are consistent with the registered PDD. **Measurement Frequency and data record** The monthly reading records were verified to be in place /30//31/. The monitoring data was hourly recorded and monthly reported. The paper base and electronic data records will be kept for 2 years until the end of the crediting period. **Calibration** Calibration reports issued by Zhangjiakou Power Company for the meter (30087147) dated 3 March 2008 have been provided to and verified by ERM CVS to confirm that the meters have been calibrated appropriately /13//14/. The Certificate of Metrological Authorization for Zhangjiakou Power Company issued by the Quality Supervision, Inspection and Quarantine of Hebei Province valid from 18 February 2008 to 17 February 2011 was also verified by ERM CVS /12/. The calibration period covers all this monitoring period 11 May 2008 to 26 October 2008. **Cross checking** The values for electricity supplied to the grid and imported by the grid (EG_{export} and EG_{import}) for the proposed project in the spreadsheet have been cross-checked to be in line with the sales receipts issued by the grid company /18/.
Findings:	OK
Conclusions:	OK

ID:	A 4
Data / Parameter:	E_{II}
Data unit:	MWh
Description:	*Electricity exported to the grid by the other project (Gaojialiang project) which shares the same main meter with the project*
Measurement Devices and location	Electricity meter in the Gaojialiang project
Measurement Frequency:	Continuous measurement
QA/QC Procedures Applied, including calibration:	▪ CDM project management and monitoring manual /11/;

Verification Activities / Evidence Reviewed:	The values of E_{II} are considered to be zero because during 11 May 2008 to 26 October 2008 the Gaojialiang project had not completed the construction and therefore had not started to generate electricity. ERM CVS considers this assumption to be appropriate based on the following activities: 1) ERM CVS verified the statement on the status of the Gaojialiang project during 11 May 2008 to 26 October 2008 issued by North China Power Grid Company, which can be regarded as a third party, to confirm that the Gaojialiang project has not completed the construction and therefore has not started to generate electricity during 11 May 2008 to 26 October 2008 and the meter (200407007Z0071) installed at the substation was served for CECIC Zhangbei Dayangzhuang Wind Farm Project only during 11 May 2008 to 26 October 2008 /26/. 2) ERM CVS verified the statement on the date of the installation of meter (30087146) issued by Zhangjiakou Power Company to confirm that the meter (30087146) to measure EII was installed on 27 October 2008 /21/. 3) ERM CVS verified the operation logbooks for electricity generation of the Gaojialiang project /28/ to confirm that the Gaojialiang project started its operation to generate electricity from 25 April 2009 /28/, which means the meter (200407007Z0071) installed at the substation was served for CECIC Zhangbei Dayangzhuang Wind Farm Project only during 11 May 2008 to 26 October 2008.
Findings:	OK
Conclusions:	OK

ID:	**A.5**
Data / Parameter:	EG_{import}
Data unit:	MWh
Description:	Electricity imported from the grid by the proposed project
Measurement Devices and location	Electricity meter in the substation
Measurement Frequency:	Continuous measurement
QA/QC Procedures Applied, including calibration:	▪ CDM project management and monitoring manual /11/; ▪ Monthly reading records of the electricity meter (30087147) installed at the proposed project site and monthly reading records of the electricity meter (200407007Z0071) installed at the substation for the monitoring period from 11 May 2008 to 26 October 2008 /30//31/; ▪ All electricity meters were calibrated regularly according to according to the Technical Administrative Code of Electric Energy Metering (DL/T 448-2000) /17/.
Verification Activities / Evidence Reviewed:	**Measurement Device** There is one continuous bidirectional main meter (Serial No. 200407007Z0071) installed in the 220kV Zhangbei substation of NCPG, which monitors the total power exported to the grid (EG_{total}) and the total power imported from the grid (EG_{import}). NCPG is in charge of the meter reading and maintenance of the metering system. The accuracy level of the meter is 0.2s which was confirmed through the review of the calibration report and in line with the Technical Administrative Code of Electric Energy Metering (DL/T 448-2000) /17/. All of the installation of the meters and the monitoring procedures are consistent with the registered PDD.

	Measurement Frequency and data record The monthly reading records were verified to be in place /30//31/. The monitoring data was hourly recorded and monthly reported. The paper base and electronic data records will be kept for 2 years until the end of the crediting period. **Calibration** Calibration reports issued by Zhangjiakou Power Company for the meter (200407007Z0071) dated 10 March 2008 and calibration reports issued by Zhangjiakou Power Company for the meter (30087147) dated 3 March 2008 have been provided to and verified by ERM CVS to confirm that the meters have been calibrated appropriately /13//14/. The Certificate of Metrological Authorization for Zhangjiakou Power Company issued by the Quality Supervision, Inspection and Quarantine of Hebei Province valid from 18 February 2008 to 17 February 2011 was also verified by ERM CVS. The calibration period covers all this monitoring period 11 May 2008 to 26 October 2008. **Cross checking** The values for electricity supplied to the grid and imported by the grid (EG_{export} and EG_{import}) by the proposed project in the spreadsheet have been cross-checked to be in line with the sales receipts issued by the grid company /18/.
Findings:	OK
Conclusions:	OK

ID:	D.1
Data / Parameter:	Number of jobs additional to the baseline
Data unit:	Person
Description:	Jobs created by the proposed project, during operation of the project.
Measurement Devices and location	Staff roster and labour contracts
Measurement Frequency:	This indicator will be checked at the time of verification and/or at least once a year.
QA/QC Procedures Applied, including calibration:	/
Verification Activities / Evidence Reviewed:	Measurement Device Staff roster and 17 copies of labour contracts were verified by ERM CVS to confirm that 17 jobs have been created by the proposed project during the operation /10//27/.
Findings:	OK
Conclusions:	OK

ID:	D.2
Data / Parameter:	Employment quality

Data unit:	/
Description:	The project will offer training to the employees for the operation of the wind farm.
Measurement Devices and location	Training records
Measurement Frequency:	This indicator will be checked at the time of verification and/or at least once a year.
QA/QC Procedures Applied, including calibration:	CDM project management and monitoring manual /11/.
Verification Activities / Evidence Reviewed:	Measurement Device The evidence was verified by ERM CVS to confirm that the project has offered training for employees for the operating of the wind farm, including technical training records and certificates of operation personnel, sanitation training certificates issued by Hebei Red Cross, security training records for 2008 and the photos for rescue training /9//15//16//29/.
Findings:	OK
Conclusions:	OK

ID:	D.3
Data / Parameter:	ER_{soot}
Data unit:	tonnes
Description:	Emission reduction of soot
Measurement Devices and location	Calculated as 3.27 t/GWh * ($EG_{Export,y}$- $EG_{import,y}$)
Measurement Frequency:	This indicator will be checked at the time of verification and/or at least once a year.
QA/QC Procedures Applied, including calibration:	CDM project management and monitoring manual /11/.
Verification Activities / Evidence Reviewed:	The ER_{soot} is calculated by multiplying the net electricity supplied to the grid by the project by the ex ante emission factor (3.27) which equals a reduction of 99.82 t soot. Monthly reading records of the electricity meter (200407007Z0071) installed at the substation and monthly reading records of the electricity meter (30087147) installed at the proposed project site were verified /30/31/, to calculate the net electricity supplied. Sale receipts for the electricity delivered to and imported from the grid issued by the North China Power Grid Company were verified /18/, to cross check the net electricity supplied. Gold Standard Annex to the PDD of CECIC Zhangbei Dayangzhuang Wind Farm Project was verified to confirm the emission factor /25/.
Findings:	OK
Conclusions:	OK

ID:	D.4
Data / Parameter:	ER_{SO_2}
Data unit:	tonnes
Description:	Emission reduction of SO_2
Measurement Devices and location	Calculated as 5.82 t/GWh * (EG_{Export}- EG_{import})
Measurement Frequency:	This indicator will be checked at the time of verification and/or at least once a year.
QA/QC Procedures Applied, including calibration:	CDM project management and monitoring manual /11/.
Verification Activities / Evidence Reviewed:	The ER_{SO_2} is calculated by multiplying the net electricity supplied to the grid by the project by the ex ante emission factor (5.82) which equals a reduction of 177.66 t SO_2. Monthly reading records of the electricity meter (200407007Z0071) installed at the substation and monthly reading records of the electricity meter (30087147) installed at the proposed project site were verified /30/31/, to calculate the net electricity supplied. Sale receipts for the electricity delivered to and imported from the grid issued by the North China Power Grid Company were verified /18/, to cross check the net electricity supplied. Gold Standard Annex to the PDD of CECIC Zhangbei Dayangzhuang Wind Farm Project was verified to confirm the emission factor /25/.
Findings:	OK
Conclusions:	OK

ID:	D.5
Data / Parameter:	ER_{NOx}
Data unit:	tonnes
Description:	Emission reduction of NO_x
Measurement Devices and location	Calculated as 3.27 t/GWh * (EG_{Export}- EG_{import})
Measurement Frequency:	This indicator will be checked at the time of verification and/or at least once a year.
QA/QC Procedures Applied, including calibration:	CDM project management and monitoring manual /11/.
Verification Activities / Evidence Reviewed:	ER_{NOx} is calculated by multiplying the net electricity supplied to the grid by the project by the ex ante emission factor (3.27), which equals a reduction of 99.82 t NO_x. Monthly reading records of the electricity meter (200407007Z0071) installed at the substation and monthly reading records of the electricity meter (30087147) installed at the proposed project site were verified /30/31/, to calculate the net electricity supplied. Sale receipts for the electricity delivered to and imported from the grid issued by the North China Power Grid Company were verified /18/, to cross check the net electricity supplied. Gold Standard Annex to the PDD of CECIC Zhangbei Dayangzhuang Wind Farm Project was

	verified to confirm the emission factor /25/.
Findings:	OK
Conclusions:	OK

ID:	D.6
Data / Parameter:	Water quantity
Data unit:	tonnes
Description:	The water quantity saved caused by the implementation of the proposed project
Measurement Devices and location	Calculated as 3.54 t/MWh * (EG_{Export}- EG_{import})
Measurement Frequency:	This indicator will be checked at the time of verification and/or at least once a year.
QA/QC Procedures Applied, including calibration:	CDM project management and monitoring manual /11/.
Verification Activities / Evidence Reviewed:	The water quantity saved caused by the implementation of the proposed project was calculated by multiplying the net electricity supplied to the grid by the project by the ex ante emission factor (3.54), which equals to 108 066.91 t water. Monthly reading records of the electricity meter (200407007Z0071) installed at the substation and monthly reading records of the electricity meter (30087147) installed at the proposed project site were verified /30/31/, to calculate the net electricity supplied. Sale receipts for the electricity delivered to and imported from the grid issued by the North China Power Grid Company were verified /18/, to cross check the net electricity supplied. Gold Standard Annex to the PDD of CECIC Zhangbei Dayangzhuang Wind Farm Project was verified to confirm the emission factor /25/.
Findings:	OK
Conclusions:	OK

ID:	D.7
Data / Parameter:	Mitigation measures
Data unit:	/
Description:	The implementation of the measures to mitigate the influence to the local environment by the proposed project
Measurement Devices and location	Relevant evidences
Measurement Frequency:	This indicator will be checked at the time of verification and/or at least once a year.
QA/QC Procedures Applied, including calibration:	CDM project management and monitoring manual /11/.
Verification Activities /	The approval opinion of Environmental Test and Acceptance Report issued by EPB of Hebei

Evidence Reviewed:	Province was verified by ERM CVS to confirm the following: - An experienced and talented construction team was selected - The construction area was strictly controlled to avoid the damage to the grass - Instead of pitch, sand stone was selected as the raw material for the construction of the road, to avoid road harden - The occupied surface land was collected refilled, and the waste was collected and well managed - The temporary ground was cleared up after the construction completed and new vegetation was planted - An appropriate location was selected to place the waste to prevent the flying dust - Effective measurements have been taken to dispose of waste (solid, gas, water) and noise produced during the construction
Findings:	OK
Conclusions:	OK

6.2. Parameters Consistency

Baseline Emission Parameter	***ID***	***Monitoring Plan***	***Methodology***	***Monitoring Report/ Project implementation***	***Implementation***	***Verification***
EG_{Export}	A 1	•	•	•	•	✓
EG_{total}	A 2	•	•	•	•	✓
E_I:	A 3	•	•	•	•	✓
E_{II}	A 4	•	•	•	•	✓
EG_{import}	A 5	•	•	•	•	✓

Project Emission Parameter	***ID***	***Monitoring Plan***	***Methodology***	***Monitoring Report/ Project implementation***	***Implementation***	***Verification***
N/A						

Leakage Parameter	***ID***	***Monitoring Plan***	***Methodology***	***Monitoring Report***	***Implementation***	***Verification***
N/A						

Sustainable development Parameters	***ID***	***Monitoring Plan***	***Methodology***	***Monitoring Report/ Project implementation***	***Implementation***	***Verification***
Number of jobs additional to the baseline	D.1	•	•	•	•	✓
Employment quality	D.2	•	•	•	•	✓
ER_{soot}	D.3	•	•	•	•	✓

ER_{SO_2}	D.4	•	•	•	•	✓
ER_{NOx}	D.5	•	•	•	•	✓
Water quantity	D.6	•	•	•	•	✓
Mitigation measures	D.7	•	•	•	•	✓

7. Corrective Action Requests, Clarification Requests and Forward Action Requests

7.1. Clarification Requests

CL 1 The cross checking of information against the sales receipts which is required by the methodology should be included in the monitoring report.	
Date raised	09 October 2010
Comment:	The verification team has cross checked the sales receipts for the electricity exported to the grid and imported from the grid, and considers the calculation result to be appropriate. However, the information for cross checking should be addressed in the monitoring report.
Corrective Action Request:	The monitoring report is required to be updated to address the above comment.
PP Response:	The cross checking of information against the sales receipts has been included in the updated Monitoring Report.
Documentation provided	
1. Monitoring Report Version 3.0 dated 30 December 2010 /1/ 2. Updated ER sheet Version 3.0 dated 30 December 2010/2/	
Verification activity	
ERM CVS has verified the sales receipts and can confirm that the cross checking information in the monitoring report and ER spreadsheet are consistent with the sales receipts, and the conservative values between the meter readings and sales receipts have been applied in the calculation.	
Reason for acceptance / non-acceptance	
The baseline emission calculation is considered to be appropriate and conservative, which is also in accordance with the applied methodology. This CL is closed.	

7.2. Corrective Action Requests

No CARs raised.

7.3. Forward Action Requests

No FAR raised.

Annex 1: Reference Documents

#	Project related documents	Date/Version/Status
/1/	Gold Standard Monitoring Report of CECIC Zhangbei Dayangzhuang Wind Farm Project.	Version 1.0 dated 13 September 2010 Version 2.0 dated 15 November 2010 Version 3.0 dated 30 December 2010
/2/	Emission Reduction Calculation Spreadsheet.	Version 1.0 of 13 September 2010 Version 2.0 of 15 November 2010 Version 3.0 dated 30 December 2010
/3/	PDD of CECIC Zhangbei Dayangzhuang Wind Farm Project on UNFCCC website.	Version 1.3 dated 25 October 2008
/4/	CDM Validation report of CECIC Zhangbei Dayangzhuang Wind Farm Project, Report No. BVC/China-VAL/0024/08	Version 2 dated 26 October 2008
/5/	Project registration information on the UNFCCC website (http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1253581167.32/view)	
/6/	EB 55 Report Annex 1: Validation and Verification Manual. http://cdm.unfccc.int/EB/index.html	Version 1.2, 30 July 2010
/7/	ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”	Version 07 of 30 November 2007
/8/	The Environmental Test and Acceptance Report and the approval opinion of Environmental Test and Acceptance Report issued by EPB of Hebei Province	27 November 2008
/9/	Technical training records and certificates of operation personnel	
/10/	The staff roster issued by CECIC Wind Power (Zhangbei) Yunwei Co. Ltd	
/11/	CDM Management and Monitoring Manual of CECIC Zhangbei Dayangzhuang Wind Farm Project	January 2008
/12/	Certificate of Metrological Authorization for Zhangjiakou Power Company issued by the Quality Supervision, Inspection and Quarantine of Hebei Province.	18 February 2008 to 17 February 2011
/13/	Calibration reports issued by Zhangjiakou Power Company for the meter (200407007Z0071)	10 March 2008
/14/	Calibration reports issued by Zhangjiakou Power Company for the meter (30087147)	3 March 2008
/15/	Sanitation training certificates issued by Hebei Red Cross	

#	Project related documents	Date/Version/Status
/16/	Security Training records for 2008	
/17/	Technical Administrative Code of Electric Energy Metering (DL/T 448-2000)	
/18/	Sale receipts for the electricity delivered to and imported from the grid issued by the North China Power Grid Company.	11 May 2008 to 26 October 2008
/19/	The Power Purchase and Sale Agreement between CECIC Wind Power (Zhangbei) Yunwei Co. Ltd and Zhangjiakou Power Company.	20 December 2007 to 31 December 2008
/20/	Operation logbooks for electricity generation issued by CECIC Wind Power (Zhangbei) Yunwei Co. Ltd	11 May 2008 to 26 October 2008
/21/	The statement on the date of the installation of meter (30087146) issued by Zhangjiakou Power Company	
/22/	The Gold Standard Validation & Verification Manual for CDM Projects dated March 2007	Version 1.0
/23/	The Gold Standard Validation & Verification Manual for Voluntary Offset Projects dated June 2007	Version 1.0
/24/	Gold Standard Rules and Procedures Updates and Clarifications dated 17 December 2007	Version 1.0
/25/	Gold Standard Annex to the PDD of CECIC Zhangbei Dayangzhuang Wind Farm Project	Version 04 of 12 April 2010
/26/	The statement on the status of Gaojialiang project during 11 May 2008 to 26 October 2008 issued by North China Power Grid Company	
/27/	17 copies of labour contracts between CECIC Wind Power (Zhangbei) Yunwei Co. Ltd and employees	2008
/28/	Operation logbooks for electricity generation of Gaojialiang project	April 2009
/29/	The photos for rescue training	
/30/	Monthly reading records of the electricity meter (200407007Z0071) installed at the substation	11 May 2008 to 26 October 2008
/31/	Monthly reading records of the electricity meter (30087147) installed at the proposed project site	11 May 2008 to 26 October 2008
/32/	Gold Standard Validation Report of CECIC Zhangbei Dayangzhuang Wind Farm Project issued by DNV	14 September 2009
/33/	The CDM verification report of CECIC Zhangbei Dayangzhuang Wind Farm Project for the monitoring period 27 October 2008 to 31 May 2009 issued by TUV SUD	Version 02 of 19 November 2009
/34/	The CDM verification report of CECIC Zhangbei Dayangzhuang Wind Farm Project for the monitoring period 1 June 2009 to 30 April 2010 issued by ERM CVS	Version 2 of 02 August 2010

#	Project related documents	Date/Version/Status
/35/	Other relevant information on UNFCCC website: http://cdm.unfccc.int	

Annex 2: Persons interviewed

#	Name	Organisation	Role
1	Ding Lin'en	Carbon Resource Management Ltd.	Project manager
2	Zhang Ling		Project manager
3	Yan Haixia	CECIC Wind Power (Zhangbei) Yunwei Co. Ltd	Vice Department Manager
4	Huang Weixin		Operation personnel

Annex 3: List of instruments used for monitored parameters

Nº	*Tag number*	*Parameter*	*Location*	*Instrument*	*Date of last calibration*	*Date of next calibration*	*Status*
	200407007Z0071	A.2 A.5	Electricity meter in the substation	Electricity meter	10 March 2008		✓
	30087147	A.3	Electricity meter in the proposed project	Electricity meter	3 March 2008		✓