



**Verified Carbon
Standard**

THREE GORGES NEW ENERGY JIUQUAN CO., LTD GUAZHOU 100MW SOLAR POWER PROJECT



ClimateBridge

Document Prepared by Climate Bridge (Shanghai) Ltd.

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Project Title	Three Gorges New Energy Jiuquan Co., Ltd Guazhou 100MW Solar Power Project
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Monitoring Period	01-January-2018 to 30-June-2020 (the first and last days included)
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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Three Gorges New Energy Jiuquan Co., Ltd Guazhou 100MW Solar Power Project (hereinafter referred to as “the project”) is a newly built grid-connected solar photovoltaic power plant with installed capacity of 100.39¹ MWp, which is located in Solar Power Industry Zone, Guazhou County, Jingyuan City, Gansu Province of China. Power generated by the project replaces part of electricity generated by fossil-fuel dominated Northwest Power Grid (NWPG), thus the project achieves GHG emission reductions.

The average annual power delivered to the grid by the project is expected to be 151,855 MWh in the first 10-year crediting period. During the first crediting period, the annual average GHG emission reductions are estimated to be 126,206 tCO₂e, while the total GHG emission reductions during the first 10-year crediting period are estimated to be 1,262,062 tCO₂e.

- The project started construction on 22-September-2013. All project equipment and facilities as described in the registered VCS PD have been correctly installed. Please refer to section 2.1 for details;
- The project started commissioning on 30-December-2013 and runs continuously since commissioning.
- This monitoring period covers the period from 01-January-2018 to 30-June-2020. The project operated in accordance with the registered VCS PD.
- Total GHG emission reduction achieved in this monitoring period is 179,858 tCO₂e.

1.2 Sectoral Scope and Project Type

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

Project Type: Grid-connected renewable power generation

The project is not a grouped project.

1.3 Project Proponent

Organization name	Three Gorges New Energy Jiuquan Co., Ltd.
Contact person	Wang Hongye

¹ The total installed capacity of the Solar Photovoltaic Modules is 100.39 MW (=250W*294,315 + 255W*105,144), while the capacity of inverters and box transformers is 100MW.

Title	Department Director
Address	No.12, lane 2, Baiguang Road, Xicheng District, Beijing, China
Telephone	+86 10-58689628
Email	hollywang816@126.com

1.4 Other Entities Involved in the Project

Organization name	Climate Bridge Ltd.
Role in the Project	VCU buyer
Contact person	Gao Zhiwen
Title	General Manager
Address	Block B, Level 24, Jiangong Mansion, No.33 Fushan Road, Pudong New Area, Shanghai, China 200120
Telephone	+86-2162462036
Email	gao.zhiwen@climatebridge.com

1.5 Project Start Date

30-December-2013 (commissioning start date).

1.6 Project Crediting Period

The project adopts renewable crediting periods of 25 years (from 30-December-2013 to 29-December-2038), and the first 10-year crediting period is from 30-December-2013 to 29-December-2023 (both days included).

1.7 Project Location

The project is located in Solar Power Industry Zone, Guazhou County, Jingyuan City, Gansu Province of China. The coordinates of the project are:

Latitude: 40° 36'21.40" - 40° 37'02.90" N

Longitude: 96° 24'6.30" - 96° 25'38.30" E.

1.8 Title and Reference of Methodology

ACM0002: “Grid-connected electricity generation from renewable sources” (Version 16.0);

The methodology also refers to:

“Tool for the demonstration and assessment of additionality” (Version 07.0.0);

“Tool to calculate the emission factor for an electricity system” (Version 04.0);.

More information concerning the above methodology and tools can be referred to:
<http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html>

1.9 Participation under other GHG Programs

The project has been registered as VCS project with ref. No. of 1444, except for VCS, the project has neither been registered nor seeking registration under any other GHG programs.

1.10 Other Forms of Credit

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

Some periods of the project in this crediting period has registered and issued as international renewable energy certificates (I-REC) , the information of I-REC is listed below:
<http://www.irecstandard.org/>; Details of the project, monitoring periods and details of I-REC sought are listed below:

Details of the project		Monitoring periods for I-REC	Details of I-REC	
Project title	Device ID		Volumes (MWh)	Issue ID
Guazhou Solar	GUAZSOL1	01-Sep-2015~31-Dec-2015	27,654	PPENG-2016-0525-0434-37
Guazhou Solar	GUAZSOL1	01-Jan-2016~30-Apr-2016	32,351	PPENG-2016-0525-0448-09
Guazhou Solar	GUAZSOL1	01-May-2016~12-May-2016	3,564	PPENG-2017-0110-0231-58
Guazhou Solar	GUAZSOL1	01-Jan-2017~11-Jan-2017	2,826	PPENG-2017-0705-0901-32

Guazhou Solar	GUAZSOL1	12-Jan-2017~12-Jan-2017	221	PPENG-2017-0713-0155-07
Guazhou Solar	GUAZSOL1	01-Jan-2018~10-May-2018	47,598	PPENG-2018-1218-0812-57
Guazhou Solar	GUAZSOL1	01-Jan-2019~29-May-2019	49,374	PPENG-2019-0625-1341-19
Guazhou Solar	GUAZSOL1	30-May-2019~26-Aug-2019	39,337	PPENG-2019-0925-0630-45

1.11 Sustainable Development

The project promotes local sustainable development through the following aspects:

- The project activity will displace the power generation of fossil fuel power plants, reducing CO₂, SO_x and NO_x emissions significantly, thus mitigating the air pollution and its adverse.
- Improvement of the fossil fuel dominated fuel mix of the electricity generation in the power grid by providing clean and renewable energy source, and help to energy supply security.
- Promote application and diffusion of the innovative/creative solar PV technology in China through the demonstrative practice of the project activity.

2 SAFEGUARDS

2.1 No Net Harm

In this monitoring period, no negative environmental impact and social economic impact are expected to result from the project activity. In fact, the project as a clean renewable energy project can reduce greenhouse gas emissions and the environmental pollution caused by fossil fuels consumption. Meanwhile, the implementation of the project will improve local socio-economic development through creating career opportunities and paying taxes.

2.2 Local Stakeholder Consultation

Local Stakeholder Consultation during the project preparation stage:

The project owner designed a questionnaire to collect the comments of relevant stakeholders in October 2013. The one page questionnaire was designed with the following sections

- 1) Brief introduction of the project
- 2) Basic information of respondent
- 3) Major question issues
 - Whether the project will cause water pollution?
 - Whether the project will cause air pollution?
 - Whether the project will cause noise pollution?
 - Whether the project will impact on soil environment?
 - Whether the project will impact on the surrounding animals and plants?
 - Impact on the local residents' employment opportunities and income.
 - Impact on the local economic development.
 - Impact on the local power grid and NWP.
 - Attitude on developing the project

30 questionnaires have been handed in total and all of them have been received successfully from the stakeholder representatives, respectively from the local government, and surrounding villages. The representatives covered different ages, different occupations and different education levels. Most of the stakeholders interviewed expressed the project will benefit the local environment, economy and social development, some of them thought there is no significant impact on those, and no negative impact were raised by stakeholders.

Local Stakeholder Consultation during the project implementation stage:

Communications with Local stakeholders are being carried out at periodic intervals. Key implementation schedules or changes of the project will be communicated to the local authority, who will inform the neighborhood committee and the local residents, the comments and suggestions from residents will be collected by the local authority meanwhile. And the local government agencies and competent authorities will conduct spot checks on the implementation of the project from time to time, and give suggestions on the involved rectification problems. There are no negative comments received for the project. In line with VCS requirements all the

processes have been implemented to receive comments from local stakeholders as well as communicate with them at periodic intervals.

2.3 AFOLU-Specific Safeguards

The project is a non-AFOLU project.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project generates electricity by using renewable solar photovoltaic (PV) power and delivers to the NWPG, replacing equivalent electricity generated by fossil fuel fired power plants connected to the NWPG and therefore reducing GHG emissions.

The total installed capacity of the Project is 100.39 MWp, which consists of 100 sets of power generation units (sub-systems). Each of the power generation unit is equipped with 2 inverters and one box transformer. The technical parameters of the main equipment installed for the project are shown in Table 1.

Table 1: Parameters of the equipment installed by the project

Photovoltaic Modules	CS6P-250P	CS6P-255P
Manufacturer	Changshu Artes sunshine Power Technology Co., Ltd.	
Quantity	294,315	105,144
Rated maximum power (Wp)	250	255
Rated Power Voltage (V)	30.1	30.2
Rated Power Current (A)	8.30	8.43
Open circuit voltage (V)	37.2	37.4
Life time (years)	25	25
Decay rate in 25 years (%)	≤ 20	≤ 20
Conversion Efficiency (%)	15.54	15.54

Inverter	SG500MX	EP-0500-A
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Manufacturer	Sungrow Power Supply Co., Ltd.	Wuxi Sineng New Energy Co., Ltd
Quantity	98	102
Rated output Power (kW)	500	500
Rated output Voltage (V)	3 ~ 315	315
Rated output frequency (Hz)	50	50
Max. output current (A)	1,008	1,008

Box transformer	ZGS-Z.G-1000/38.5	YBF-1000/40.5	ZGSF11-Z.G-1000/35
Manufacturer	Ningbo Tian'an Transformer Co., Ltd.	Sunel Transformer Co., Ltd.	Jiangsu Huapeng Transformer Co., Ltd.
Quantity	40	30	30
Rated capacity (kVA)	1,000	1,000	1,000
Rated Voltage (V)	38,500±2×2.5/315/315	40,500	38,500±2×2.5/315/315

The electricity generated is transformed to 35kV by box transformers, connected to the onsite substation via 35kV lines, and then transformed to 110kV through the two main transformers before delivered to Bulongji 330kV Substation of the grid company and finally to NWPg.

The project started construction on 22-September-2013 and started commissioning on 30-December-2013. The project operated smoothly without any emergencies or special events that would impact the applicability of the applied methodology. No events that may impact the GHG emission reductions or removals and monitoring occurred during this monitoring period. The net electricity supplied by the project during this monitoring period from 01-January-2018 to 30-June-2020 is 216,412.018 MWh. VCUs achieved for this monitoring period are 179,858 tCO₂e.

3.2 Deviations

3.2.1 Methodology Deviations

There is no deviation applied to this monitoring period.

3.2.2 Project Description Deviations

There is a project description deviation for coordinates of the project. In the registered PD, there was a type for the coordinates of the project as follows:

Latitude: 40° 36' 21.40" - 40° 37' 502.90" N

Longitude: 96° 24' 6.30" - 96° 25' 38.30" E

The correct coordinates of the project is as below:

Latitude: 40° 36' 21.40" - 40° 37' 02.90" N

Longitude: 96° 24' 6.30" - 96° 25' 38.30" E

3.3 Grouped Projects

The Project is not a grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	EF _{grid,CM,y}
Data unit	tCO ₂ e/MWh
Description	Combined margin CO ₂ emission factor for Northwest Power Grid in year y
Source of data	China DNA
Value applied	0.8311
Justification of choice of data or description of measurement methods and procedures applied	2014 Baseline Emission Factors for Regional Power Grids in China issued by China DNA on 11-May-2015.
Purpose of Data	Calculation of baseline emissions
Comments	-

4.2 Data and Parameters Monitored

Data / Parameter	EG _{facility,y}
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant to the grid in year y
Source of data	Calculated

Description of measurement methods and procedures to be applied	Calculated based on the electricity delivered to the grid by the project ($EG_{\text{export},y}$) and the electricity imported from the grid by the project ($EG_{\text{import},y}$)										
Frequency of monitoring/recording	Measured continuously and recorded monthly										
Value monitored	Exclude the electricity in periods of 01-Jan-2018~10-May-2018, 01-Jan-2019~29-May-2019 and 30-May-2019~26-Aug-2019, the $EG_{\text{facility},y}$ is listed below: <table border="1"> <thead> <tr> <th>Period</th><th>Value</th></tr> </thead> <tbody> <tr> <td>01-Jan-2018~ 31-Dec-2018</td><td>86,102.051</td></tr> <tr> <td>01-Jan-2019~ 31-Dec-2019</td><td>49,016.774</td></tr> <tr> <td>01-Jan-2020~30-Jun-2020</td><td>81,293.194</td></tr> <tr> <td>Total</td><td>216,412.018</td></tr> </tbody> </table>	Period	Value	01-Jan-2018~ 31-Dec-2018	86,102.051	01-Jan-2019~ 31-Dec-2019	49,016.774	01-Jan-2020~30-Jun-2020	81,293.194	Total	216,412.018
Period	Value										
01-Jan-2018~ 31-Dec-2018	86,102.051										
01-Jan-2019~ 31-Dec-2019	49,016.774										
01-Jan-2020~30-Jun-2020	81,293.194										
Total	216,412.018										
Monitoring equipment	-										
QA/QC procedures to be applied	The quantity of electricity delivered to the grid by the project ($EG_{\text{export},y}$) and the electricity imported from the grid by the project ($EG_{\text{import},y}$) is crosschecked with electricity sales and purchase receipts.										
Purpose of the data	Calculation of baseline emissions										
Calculation method	$EG_{\text{facility},y} = EG_{\text{export},y} - EG_{\text{import},y}$										
Comments	-										

Data / Parameter	$EG_{\text{export},y}$
Data unit	MWh
Description	Quantity of the electricity delivered to the grid by the project in year y
Source of data	On-site measurement
Description of measurement methods and procedures to be applied	Use calibrated electric meters. The accuracy of the meter(s) is 0.2s. The calibration was conducted annually subject to national standards.

Frequency of monitoring/recording	Measured continuously and recorded monthly																														
Value monitored	The actual quantity of the electricity delivered to the grid by the project is listed below: <table> <tr> <th>Period</th><th>Value</th></tr> <tr> <td>01-Jan-2018~ 31-Dec-2018</td><td>134,437.618</td></tr> <tr> <td>01-Jan-2019~ 31-Dec-2019</td><td>139,011.243</td></tr> <tr> <td>01-Jan-2020~30-Jun-2020</td><td>82,227.129</td></tr> <tr> <td>Total</td><td>355,675.990</td></tr> </table> Since the periods which issued as I-REC in this monitoring period are 01-Jan-2018~10-May-2018,01-Jan-2019~29-May-2019 and 30-May-2019~26-Aug-2019, the electricity in those periods is listed below: <table> <tr> <th>Period</th><th>Value</th></tr> <tr> <td>01-Jan-2018~10-May-2018</td><td>47,598.000</td></tr> <tr> <td>01-Jan-2019~29-May-2019</td><td>49,374.372</td></tr> <tr> <td>30-May-2019~26-Aug-2019</td><td>39,337.000</td></tr> <tr> <td>Total</td><td>136,309</td></tr> </table> After exclude those electricity, the $EG_{export,y}$ is listed below: <table> <tr> <th>Period</th><th>Value</th></tr> <tr> <td>01-Jan-2018~31-Dec-2018</td><td>86,839.618</td></tr> <tr> <td>01-Jan-2019~31-Dec-2019</td><td>50,299.871</td></tr> <tr> <td>01-Jan-2020~30-Jun-2020</td><td>82,227.129</td></tr> <tr> <td>Total</td><td>219,366.618</td></tr> </table>	Period	Value	01-Jan-2018~ 31-Dec-2018	134,437.618	01-Jan-2019~ 31-Dec-2019	139,011.243	01-Jan-2020~30-Jun-2020	82,227.129	Total	355,675.990	Period	Value	01-Jan-2018~10-May-2018	47,598.000	01-Jan-2019~29-May-2019	49,374.372	30-May-2019~26-Aug-2019	39,337.000	Total	136,309	Period	Value	01-Jan-2018~31-Dec-2018	86,839.618	01-Jan-2019~31-Dec-2019	50,299.871	01-Jan-2020~30-Jun-2020	82,227.129	Total	219,366.618
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Total	219,366.618																														
Monitoring equipment	Monitored by bidirectional electricity meter M1 Mode: WU.TE432q Serial number: 41600811 Accuracy: 0.2s Calibration frequency: Annually Date of calibration: 14-Nov-2017,14-Nov-2018, 14-Nov-2019 Validity: 13-Nov-2020																														

	Calibration entity name: Gansu Electric Power Company Energy Measurement Center
QA/QC procedures to be applied	Meter is calibrated periodically by the third party calibration entity. The data is crosschecked by the electricity sale receipts.
Purpose of the data	Calculation of baseline emissions
Calculation method	-
Comments	-

Data / Parameter	EG import, y										
Data unit	MWh										
Description	Quantity of the electricity imported from the grid by the project in year y										
Source of data	On-site measurement										
Description of measurement methods and procedures to be applied	Use calibrated electric meters. The accuracy of the meter(s) is 0.2s. The calibration is conducted annually subject to national standards.										
Frequency of monitoring/recording	Measured continuously and recorded monthly										
Value monitored	The actual quantity of the electricity imported from the grid by the project is listed below: <table border="1"> <thead> <tr> <th>Period</th><th>Value</th></tr> </thead> <tbody> <tr> <td>01-Jan-2018~ 31-Dec-2018</td><td>737.568</td></tr> <tr> <td>01-Jan-2019~ 31-Dec-2019</td><td>1,283.097</td></tr> <tr> <td>01-Jan-2020~ 30-Jun-2020</td><td>933.935</td></tr> <tr> <td>Total</td><td>2,954.600</td></tr> </tbody> </table>	Period	Value	01-Jan-2018~ 31-Dec-2018	737.568	01-Jan-2019~ 31-Dec-2019	1,283.097	01-Jan-2020~ 30-Jun-2020	933.935	Total	2,954.600
Period	Value										
01-Jan-2018~ 31-Dec-2018	737.568										
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	Calibration frequency: Annually Date of calibration: 14-Nov-2017,14-Nov-2018, 14-Nov-2019 Validity: 13-Nov-2020 Calibration entity name: Gansu Electric Power Company Energy Measurement Center
QA/QC procedures to be applied	Cross check measurement results with electricity purchase receipts
Purpose of the data	Calculation of baseline emissions
Calculation method	-
Comments	-

4.3 Monitoring Plan

Operation and management structure

Overall responsibility for daily monitoring and reporting lies with the project owner. A monitoring group is established within the project company to carry out the monitoring work. The structure of the monitoring group is as follows:

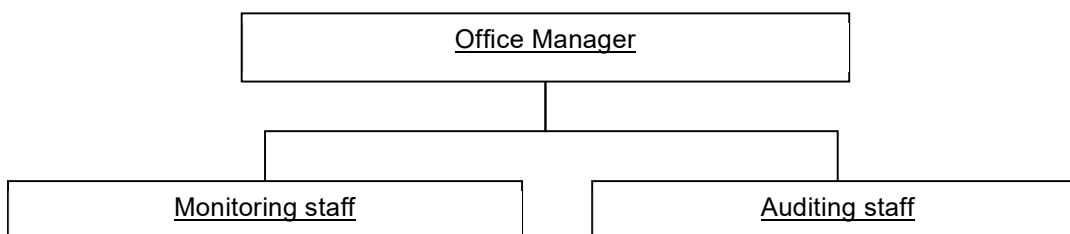


Figure 1 Organization structure of the monitoring team

The responsibilities of each role in the team structure are:

- Office manager has the overall management responsibility, especially supervising the implementation of the monitoring plan
- Monitoring staff measures the electricity imported to and exported from the project
- Auditing staff performs internal verification of the measurement, collects relevant receipts and calculates emission reductions
- Finally, general manager reviews the monitoring reports.

Monitoring equipment and installation

The electricity generated by the project is transformed to 110kV through the onsite 110kV substation before connected to the Bulongji Substation of NWPG through 110kV transmission

line. And two bi-directional meters M1 and M2 with accuracy of 0.2s are installed to monitor the electricity delivered to the grid by the project ($EG_{\text{export},y}$) and the electricity imported from the grid by the project ($EG_{\text{import},y}$). Meter M2 is installed at the Bulongji substation, and meter M1 is installed at the onsite 110kV substation. Meter M1 is owned, operated and maintained by the project owner and meter M2 is owned, operated and maintained by the grid company. Since meter M2 is out of project owner's reach, the readings from meter M1 are used for ER calculation, and when M1 is out of order, the readings from meter M2, which are provided by the grid company only under such circumstances, are used instead. The total electricity delivered to the grid by the project is calculated as follows: $EG_{\text{facility},y} = EG_{\text{export},y} - EG_{\text{import},y}$.

During this monitoring period, meter M1 runs continuously with no malfunctioning.

The power line diagram of the project is shown as follows:

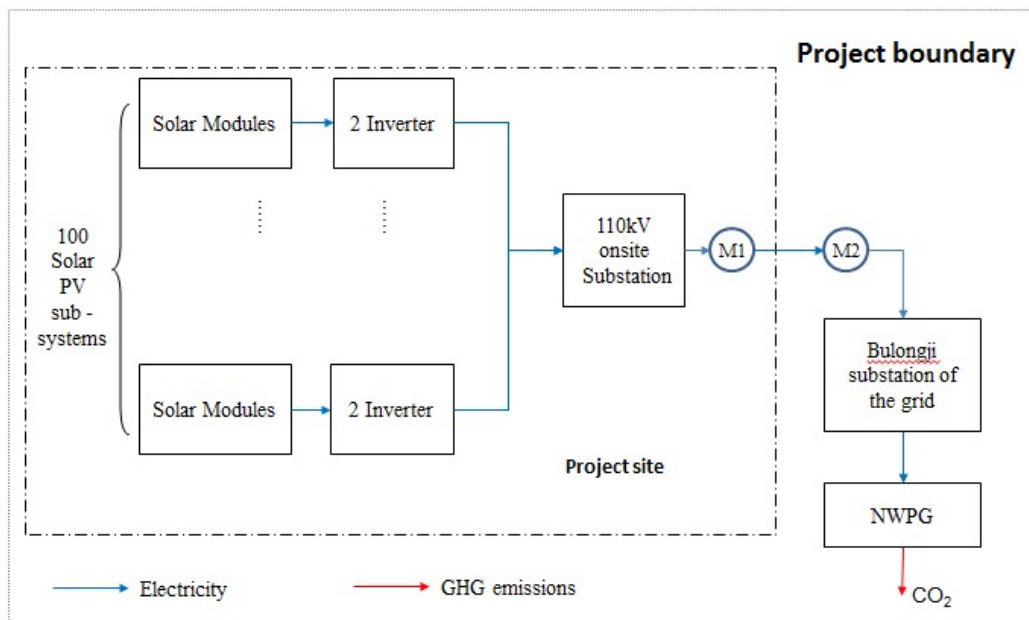


Figure 2 Power line diagram of the monitoring system

1) Data collection system

The procedures of data recording and collecting are listed below:

- The project owner reads meter M1 every month and then submits the reading results to the grid company for crosscheck with meter readings of meter M2. Upon agreement on the electricity readings from both parties, the project owner provides the grid company sale receipt for $EG_{\text{export},y}$ and the power grid issues the project owner receipt for $EG_{\text{import},y}$.
- The project owner files the meter readings of M1 in the monthly report. The monthly report is archived and used to calculate emission reductions.

- The project owner collects and keeps on file maintenance records, meter calibration documents.

2) Quality assurance and quality control (QA/QC)

QA/QC practice involves:

- The metering equipment is calibrated and checked annually for accuracy;
- Calibration is carried out by qualified parties with the records supplied to the project owner, and the calibration ensured sufficient accuracy so that any error resulting from such equipment did not exceed the allowable error of full-scale rating.
- When M1 is out of work, M2 is used for measurement, and no emission reduction is claimed when both M1 and M2 are out of work.

All data collected as part of monitoring is archived electronically. All information is stored by the technology department of the project owner and all the materials have physical copies for backup. And all data including calibration records is kept until 2 years after the end of the crediting period, or the last issuance of VCU, whichever is later.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

Baseline Emissions (BE_y) is determined by multiplying net electricity generation supplied by the project plant to the grid ($EG_{facility,y}$) during the monitoring period by Emission Factor ($EF_{grid,CM,y}$) of NWPG.

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

where

BE_y : Baseline emissions of the NWPG during monitoring period

$EF_{grid,CM,y}$: Emission factor of the NWPG during monitoring period

$EG_{facility,y}$: Quantity of net electricity generation supplied by the project plant to the grid in year y

As stated in Section 3.1, the grid emission factor $EF_{grid,cm,y}$ of the project during this crediting period is 0.8311 tCO₂e/MWh, The monthly electricity data and baseline emission are listed in the table 2 and table 3.

Table 2 The monthly electricity data for $EG_{\text{export},y}$ and $EG_{\text{import},y}$

Monitoring period ²	$EG_{\text{export},y}$ MWh			$EG_{\text{import},y}$ MWh			Electricity issued as I-REC(MWh)	$EG_{\text{facility},y}$ MWh
	Measured by the main meter	Electricity data in Sales Receipts	Data for Calculation	Measured by the main meter	Electricity data in Sales Receipts	Data for Calculation		
	A	B	C=min(A,B)	D	E	F=max(D,E)		
01-Jan-2018~29-Jan-2018	10,112.300	9,944.110	9,944.110	97.240	99.000	99.000	9,944.110	-99.000
30-Jan-2018~26-Feb-2018	10,950.500	10,714.000	10,714.000	91.520	93.500	93.500	10,714.000	-93.500
27-Feb-2018~29-Mar-2018	15,145.240	14,696.000	14,696.000	64.020	66.000	66.000	14,696.000	-66.000
30-Mar-2018~28-Apr-2018	10,112.740	9,801.000	9,801.000	53.240	55.000	55.000	9,801.000	-55.000
29-Apr-2018~29-May-2018	7,832.000	7,579.000	7,579.000	42.680	44.000	44.000	2,442.890	5,092.110
30-May-2018~28-Jun-2018	10,928.500	10,604.000	10,604.000	42.900	44.000	44.000	0	10,560.000
29-Jun-2018~29-Jul-2018	14,891.140	14,443.000	14,443.000	37.400	38.500	38.500	0	14,404.500

² According to power purchase agreement, the time of meter reading for $EG_{\text{export},y}$ and $EG_{\text{import},y}$ with the power company is at 0:00 of two days before the last day of every month before May of 2020, that may be advanced or delayed one or several days while meeting festival or holiday. The electricity for the period from 30-Dec-2018 to 31-Dec-2018 and 01-Jan-2019 to 29-Jan-2019, 30-Dec-2019 to 31-Dec-2019 and 01-Jan-2020 to 29-Jan-2020 is calculated based on the data in monitoring period from 30-Dec-2018 to 29-Jan-2019, and 30-Dec-2019 to 29-Jan-2020 multiplied by the covering days (2 days and 29 days) and divided by 31 days .From May of 2020, the time of meter reading for $EG_{\text{export},y}$ and $EG_{\text{import},y}$ with the power company is at 24:00 of every month.

30-Jul-2018~29-Aug-2018	12,771.660	12,386.000	12,386.000	49.060	50.600	50.600	0	12,335.400
30-Aug-2018~28-Sep-2018	12,069.640	11,704.000	11,704.000	53.240	55.000	55.000	0	11,649.000
29-Sep-2018~29-Oct-2018	12,907.100	12,507.000	12,507.000	48.180	49.500	49.500	0	12,457.500
30-Oct-2018~28-Nov-2018	10,468.920	10,131.000	10,131.000	63.800	66.000	66.000	0	10,065.000
29-Nov-2018~29-Dec-2018	10,099.760	9,790.000	9,790.000	69.300	71.500	71.500	0	9,718.500
30-Dec-2018~31-Dec-2018	143.369	138.508	138.508	4.797	4.968	4.968	0	133.541
Subtotal	138,432.869	134,437.618	134,437.618	717.377	737.568	737.568	47,598.000	86,102.051
01-Jan-2019~29-Jan-2019	2,078.851	2,008.372	2,008.372	69.563	72.032	72.032	2,008.372	-72.033
30-Jan-2019~26-Feb-2019	8,639.180	8,580.000	8,580.000	152.900	154.000	154.000	8,580.000	-154.000
27-Feb-2019~29-Mar-2019	14,802.480	14,432.000	14,432.000	117.920	121.000	121.000	14,432.000	-121.000
30-Mar-2019~28-Apr-2019	11,482.288	11,099.000	11,099.000	117.040	121.000	121.000	11,099.000	-121.000
29-Apr-2019~29-May-2019	13,754.400	13,255.000	13,255.000	84.700	88.000	88.000	13,255.000	-88.000
30-May-2019~28-Jun-2019	12,192.620	12,012.000	12,012.000	86.680	88.000	88.000	12,012.000	-88.000
29-Jun-2019~29-Jul-2019	15,287.800	15,168.890	15,168.890	76.340	77.000	77.000	15,168.890	-77.000

30-Jul-2019-29-Aug-2019	13,835.800	13,728.110	13,728.110	98.120	99.000	99.000	12,156.110	1,473.000
30-Aug-2019~28-Sep-2019	14,223.000	14,124.000	14,124.000	87.340	88.000	88.000	0	14,036.000
29-Sep-2019~29-Oct-2019	13,752.200	13,640.000	13,640.000	98.120	99.000	99.000	0	13,541.000
30-Oct-2019~28-Nov-2019	9,497.400	9,405.000	9,405.000	119.900	121.000	121.000	0	9,284.000
29-Nov-2019~29-Dec-2019	10,909.800	10,791.000	10,791.000	141.460	143.000	143.000	0	10,648.000
30-Dec-2019~31Dec-2019	775.961	767.871	767.871	11.937	12.065	12.065	0	755.806
Subtotal	141,231.780	139,011.243	139,011.243	1,262.019	1,283.097	1,283.097	88,711.372	49,016.774
01-Jan-2020~29-Jan-2020	11,251.439	11,134.129	11,134.129	173.083	174.935	174.935	0	10,959.194
30-Jan-2020-26-Feb-2020	11,250.800	11,132.000	11,132.000	184.800	187.000	187.000	0	10,945.000
27-Feb-2020~29-Mar-2020	15,213.000	15,059.000	15,059.000	163.240	165.000	165.000	0	14,894.000
30-Mar-2020~28-Apr-2020	16,460.400	16,291.000	16,291.000	152.460	154.000	154.000	0	16,137.000
29-Apr-2020~31-May-2020	14,885.200	14,740.000	14,740.000	130.680	132.000	132.000	0	14,608.000
01-Jun-2020~30-Jun-2020	14,022.096	13,871.000	13,871.000	119.680	121.000	121.000	0	13,750.000
Subtotal	83,082.935	82,227.129	82,227.129	923.943	933.935	933.935	0	81,293.194
Total (01-Jau-2018~30-Jun-2020)	362,747.584	355,675.990	355,675.990	2,903.340	2,954.600	2,954.600	0	216,412.018

Table 3 Baseline Emissions during this monitoring period

Time Period	EG _{export,y} MWh	EG _{import,y} MWh	EG _{facility,y} MWh	BE _y tCO ₂ e
01-Jan-2018~ 31-Dec-2018	86,839.618	737.568	86,102.051	71,559
01-Jan-2019~ 31-Dec-2019	50,299.871	1,283.097	49,016.774	40,737
01-January-2020 ~ 30-June-2020	82,227.129	933.935	81,293.194	67,562
Total	219,366.618	2,954.600	216,412.018	179,858

5.2 Project Emissions

The project is a renewable energy project, therefore, according to methodology ACM0002, there is no emission for the project, PE_y=0.

5.3 Leakage

According to methodology ACM0002, project leakage is not considered.

5.4 Net GHG Emission Reductions and Removals

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)
01-January-2018 ~ 31-December-2018	71,559	0	0	71,559
01-January-2019 ~ 31-December-2019	40,737	0	0	40,737
01-January-2020 ~ 30-June-2020	67,562	0	0	67,562
Total	179,858	0	0	179,858

Comparison of actual emission reductions with estimates during validation:

The emission reductions of 179,858 tCO₂e achieved in this monitoring period are about 3.91%³ lower than the estimated value 187,168 tCO₂e⁴ which is calculated in line with the registered PD, which is in the normal fluctuation range.

³ $(179,858 \text{ tCO}_2\text{e} - 187,168 \text{ tCO}_2\text{e}) / 187,168 \text{ tCO}_2\text{e} = -3.91\%$

⁴ As per the registered PD, the annual emission reduction in 2018, 2019 and 2020 are respectively 126,901 tCO₂e, 125,565 tCO₂e and 124,229 tCO₂e, thus the estimated emission reduction in the monitoring period (covering 544 days, ie. the whole 912 days minus I-REC claimed days of 368 days) is 187,168 tCO₂e, ie. $187,168 \text{ tCO}_2\text{e} = 126,901 \text{ tCO}_2\text{e} * (365 \text{ days} - 130 \text{ days}) / 365 \text{ days} + 125,565 \text{ tCO}_2\text{e} * (365 \text{ days} - 238 \text{ days}) / 365 \text{ days} + 124,229 \text{ tCO}_2\text{e} * 182 \text{ days} / 366 \text{ days}$.