

WUTUHE ERJI HYDRO POWER PROJECT IN GUIZHOU PROVINCE, CHINA

Document Prepared By (Guizhou Honor Carbon Asset Management Co., Ltd)

Project Title	Wutuhe Erji Hydro power Project in Guizhou Province, China
Version	Version 2.0
Report ID	HY01-002
Date of Issue	02-01-2014
Project ID	330
Monitoring Period	26/06/2012 to 25/11/2013
Prepared By	Guizhou Honor Carbon Asset Management Co., Ltd
Contact	Address: 8F Keji Building A, Jinyang District, Guiyang City, Guizhou Province, China(550001) Telephone No:+86 851 7990160 Email:hycdm@vip.163.com

Table of Contents

1	Project Details	3
1.1	Summary Description of the Implementation Status of the Project	3
1.2	Sectoral Scope and Project Type	3
1.3	Project Proponent	3
1.4	Other Entities Involved in the Project.....	3
1.5	Project Start Date.....	4
1.6	Project Crediting Period	4
1.7	Project Location	4
1.8	Title and Reference of Methodology.....	4
1.9	Other Programs	4
2	Implementation Status.....	4
2.1	Implementation Status of the Project Activity	4
2.2	Deviations	5
2.2.1	Methodology Deviations	5
2.2.2	Project Description Deviations	5
2.3	Grouped Project.....	5
3	Data and Parameters	5
3.1	Data and Parameters Available at Validation	5
3.2	Data and Parameters Monitored.....	6
3.3	Monitoring Plan	8
4	Quantification of GHG Emission Reductions and Removals	11
4.1	Baseline Emissions.....	11
4.2	Project Emissions	12
4.3	Leakage	12
4.4	Net GHG Emission Reductions and Removals	12
	APPENDIX X: <title of appendix>	14

1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Wutuhe Erji Hydro Power Project in Guizhou Province, China (here after referred as “the project”) is located in the town of Huaga, Shuicheng County, Liupanshui city. The total installed capacity of the project is 7.5MW (3×2.5MW). The estimated annual electricity generated by the project is 31,210MWh and the estimated annual net electricity supplied to the grid by the project is 28,060MWh. The project owner is Shuicheng Wutuhe Hydro Power Development Co., Ltd. The electricity generated by the project finally connected to China Southern Power Grid (CSPG) and reduce GHG emission of CSPG which is dominated by fossil fuel power generation. The estimated emission reductions are total 244,450 tCO₂e during the whole crediting period and 24,445 tCO₂e per year.

1.2 Sectoral Scope and Project Type

This project falls under VCS sectoral scope 1: Energy industries (Renewable/non-renewable sources), and the project falls into Type 1 Renewable Energy projects. It is not a grouped project.

1.3 Project Proponent

Organization name	Shuicheng Wutuhe Hydro Power Development Co., Ltd.
Contact person	Mr. Wu Chao
Title	Manager
Address	Tianxin Village, Huaga Town, Shuicheng County
Telephone	+86 851 7990140
Email	sea.wang.ok@vip.163.com

1.4 Other Entities Involved in the Project

Organization name	Guizhou Zhongshui Hengyuan Project management and consulting Co. Ltd.
Role in the project	Project proponent.
Contact person	Ms. Wang Can,
Title	Manager
Address	8/F, A building, Keji mansion, Jinyang Knowledge-driven economy industrial zone, High-tech development district, Guiyang city Guizhou Province.
Telephone	+86 851 7990160
Email	wangc@hy-carbon.net

1.5 Project Start Date

The project started on 28/11/2004.

1.6 Project Crediting Period

The Crediting Period Start Date is from 28/03/2006 (the date when the VCS v1 was released) to 27/03/2016. This monitoring period is the fourth monitoring period and from 26/06/2012 to 25/11/2013.

1.7 Project Location

The project is sited on Wutuhe River, in the town of Huaga, Shuicheng County, Liupanshui City, Guizhou province, China. The geographical coordinates of the power house are east longitude 104°56'31" and north latitude 26°05'30" and the geographical coordinates of the dam are east longitude 104°55'13" and north latitude 26°05'09". The electricity generated by the proposed project is supplied to the China Southern Power Grid (CSPG), which covers Guangdong, Guangxi, Yunnan, Hainan and Guizhou province power grid. Hence the project boundary includes all the power plants and itself connected to the CSPG.

1.8 Title and Reference of Methodology

The methodology applied for the proposed project is the approved methodology for small-scale CDM project- "AMS-I.D. Renewable Energy Projects-Grid connected renewable electricity generation" (version 13).

Furthermore, the "Tool for the Emission Factor Calculation of Electricity System" (version 1.1) is also quoted.

Other Programs

Not applicable.

2 IMPLEMENTATION STATUS

2.1 Implementation Status of the Project Activity

The electric power generated by the project is transmitted to the 35KV Yezhong Substation and the data of $EG_{P \text{ to } G}$ and $EG_{G \text{ to } P}$ is measured by the gateway meters installed in the proposed project station, finally delivered to the CSPG (China Southern Power Grid).

The key technical data for the proposed project are summarized in the following table1.

Parameter		Unit	Value
Turbine	Model	---	HLJF2504-WJ-69
	Quantity	unit	3
	Rated water head	m	85

	Rated flow rate	m ³ /s	3.42
	serial number	03663/03664/03665	
	Manufacturer	Fujian Nanping Mechanical & Electric Co., Ltd	
Generator	Model	---	SFW2500-6/1430
	Quantity	unit	3
	Rated power	MW	2.5
	Rated voltage	V	6300
	power factor quantity	---	0.8
	serial number	0300533/0300534/0300535	
	Manufacturer	Fujian Nanping Mechanical & Electric Co., Ltd	

The project activity started operation since 28/11/2004. All the three units began generating electricity on 28/11/2004.

No events or situations that occurred during the monitoring period, which may impact the applicability of the methodology.

2.2 Deviations

2.2.1 Methodology Deviations

Not applicable.

2.2.2 Project Description Deviations

Not applicable.

2.3 Grouped Project

This project is not a grouped project; this section is therefore not applicable.

3 DATA AND PARAMETERS

3.1 Data and Parameters Available at Validation

Data / Parameter	EF _y
Data unit	tCO ₂ /MWh
Description	Emission factor

Source of data	The registered PD
Value applied:	0.8712
Justification of choice of data or description of measurement methods and procedures applied	Data published by China DNA on http://cdm.ccchina.gov.cn
Purpose of the data	Baseline emission calculation.
Comments	/

3.2 Data and Parameters Monitored

Data / Parameter	EG _{P to G}
Data unit	MWh
Description	Electricity exported to the grid
Source of data	Meter readings
Description of measurement methods and procedures to be applied	The data can be accurately measured by the gateway meter M ₁ installed in the power station and continuously recorded by the staffers of the proposed project, and it will be directly used to calculate emission reductions.
Frequency of monitoring/recording	Recorded on a daily basis
Value monitored:	37970.38
Monitoring equipment	The data of electricity supplied to the grid by the project is continuously measured by the primary gateway meters M ₁ installed in the proposed project station and M ₂ (back-up gateway meter) installed in the substation. If M1 is in malfunction, the data from M2 will be used. And the detail information of meters is listed in table 2 of section 3.3
QA/QC procedures to be applied	Checked, verified with the data of generated electricity, accepted by the proposed project owner, the proportion of data to be monitored is 100%.
Purpose of the data	Calculation of net power export
Calculation method	N/A
Comments	/

Data / Parameter	EG _{G to P}
Data unit	MWh
Description	Electricity imported from grid

Source of data	Meter readings
Description of measurement methods and procedures to be applied	The data can be accurately measured by the gateway meter M_1 installed in the power station and continuously recorded by the staffers of the proposed project, and it will be directly used to calculate emission reductions.
Frequency of monitoring/recording	Recorded on a daily basis
Value monitored:	48.020
Monitoring equipment	The data of electricity supplied to the grid by the project is continuously measured by the primary gateway meters M_1 installed in the proposed project station and M_2 (back-up gateway meter) installed in the substation. If M_1 is in malfunction, the data from M_2 will be used. And the detail information of meters is listed in table 2 of section 3.3
QA/QC procedures to be applied	Checked, verified with the data of generated electricity, accepted by the proposed project owner, the proportion of data to be monitored is 100%.
Purpose of the data	Calculation of net power export
Calculation method	N/A
Comments	/

Data / Parameter	EG_y
Data unit	MWh
Description	Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads.
Source of data	Calculated by $EG_{PtoG} - EG_{GtoP}$
Description of measurement methods and procedures to be applied	The measurement/monitoring equipment should adopt the colligated automation system complying with state standard and technology. These equipment and systems should be calibrated and checked. The local power grid company is responsible for the maintenance and calibration of the gateway meters. The data of exported electricity can be accurately measured by the gateway meters and recorded.
Frequency of monitoring/recording	Recorded on a monthly basis
Value monitored:	37922.360
Monitoring equipment	The data of electricity supplied to the grid by the project

	is continuously measured by the primary gateway meters M_1 installed in the proposed project station and M_2 (back-up gateway meter) installed in the substation. If M_1 is in malfunction, the data from M_2 will be used. And the detail information of meters is listed in table 2 of section 3.3
QA/QC procedures to be applied	The sum of monthly exported electricity and the related electricity receipts are supplied to the project owner as an additional check for quality control.
Purpose of the data	Calculation of Baseline emissions
Calculation method	N/A
Comments	/

3.3 Monitoring Plan

Monitoring is a key procedure to verify the real and measurable emission reductions from the proposed project. And, to guarantee the proposed project's real, measurable and long-term GHG emission reductions, the monitoring plan is established. The monitoring plan is carried out practically in line with the referred VCS PD Monitoring Plan.

1) The line diagram showing meter location is as follows:

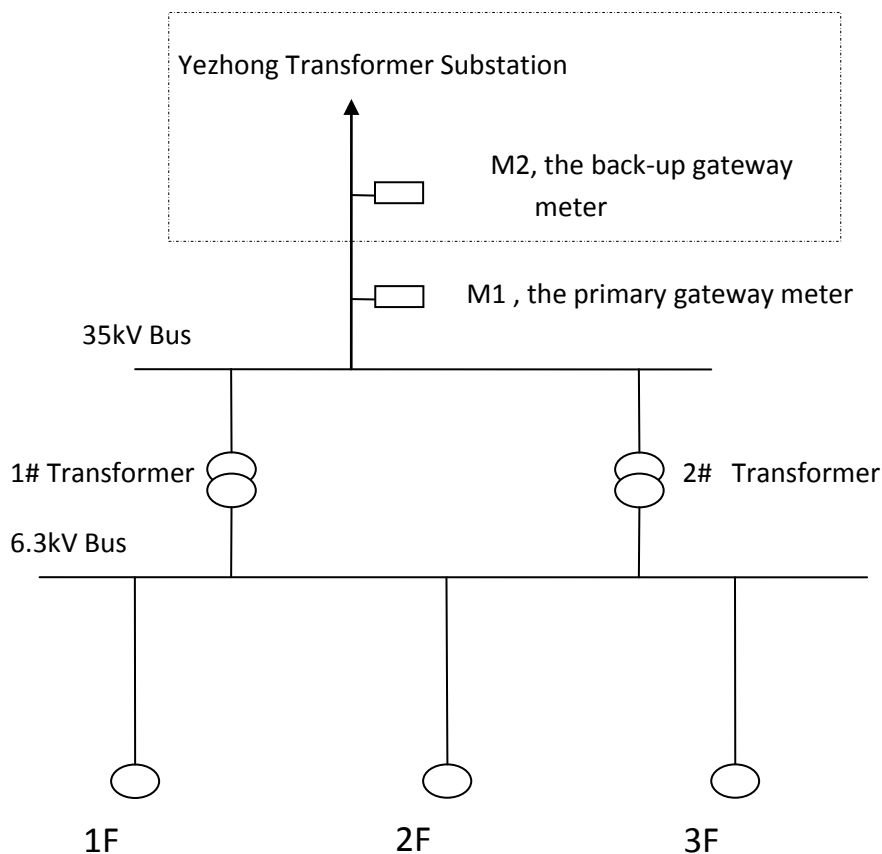


Figure 1 power connection diagram

2) QA/QC procedures

Id	Uncertainty level of data (High/Medium/Low)	Explain QA/QC procedures planned for these data, or why such procedures are not necessary
EG _{P to G}	Low	The measurement/ monitoring equipment should be implemented according to the requirements of the Technical Administrative Code of Electric Energy Metering (DL/T448-2000). These equipment and systems should be calibrated and checked. The local power grid company is responsible for the maintenance and calibration of the gateway meter once a year. The sum of monthly exported electricity and the related electricity receipts (viz. Balance Advice Note (BAN) issued by the local grid company on monthly basis) are supplied to the proposed project owner as an additional check for quality control.

EG _{G to P}	Low	The measurement/ monitoring equipment should be implemented according to the requirements of the Technical Administrative Code of Electric Energy Metering (DL/T448-2000). These equipment and systems should be calibrated and checked. The local power grid company is responsible for the maintenance and calibration of the gateway meter once a year. The sum of monthly imported electricity and the related electricity receipts (viz. Balance Advice Note (BAN) issued by the local grid company on monthly basis) are supplied to the proposed project owner as an additional check for quality control.
EG _y	Low	The total electricity produced by the project activity including the electricity supplied to the grid and the electricity supplied to the internal loads, The local power grid company is responsible for the calibration of the meters, The data of total electricity can be accurately measured by the meter and recorded.

3) Information about the meters

Table 2 Detail calibration information of meters of the Project

	M ₁ (Primary Gateway meter)	M ₂ (Back-up Gateway meter)
Definition	0.5	0.5s
Serial number	200408406Q0028	090056
Location	in the power station	Yezhong transformer substation
Calibration Certificate Valid Period time	11/06/2013 to 10/06/2018	12/05/2013 to 11/05/2018
On-site calibration	12/06/2012	10/05/2012
	11/06/2013	09/05/2013
Valid Until	10/06/2014	08/05/2014
Calibration Entity	Liupanshui electricity supplying Bureau	

Before operation, the meters were delivered to the authorised third party for calibration. After calibration certificates of the meters issued, the meters are sealed with a qualification label by the local grid company.

4) Roles and responsibilities

Mr. Wuchao is nominated to take the full responsibility for the implementation of the monitoring plan by the proposed project owner. In addition, the monitoring plan carried out on site clearly states, the other two persons who are involved in the monitoring of the project.

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

Table3 the comparison between the exported electricity and the imported electricity

Period	Exported Electricity measured by M ₁ (MWh)	Imported Electricity measured by M ₁ (MWh)	EG _y (MWh)
	B	C	D=B-C
06/26/2012-07/25/2012	4594.240	0.140	4594.100
07/26/2012-08/25/2012	5161.660	0.000	5161.660
08/26/2012-09/25/2012	4880.540	0.000	4880.540
09/26/2012-10/25/2012	4278.120	0.000	4278.120
10/26/2012-11/25/2012	1516.340	2.660	1513.680
11/26/2012-12/25/2012	812.000	4.620	807.380
Sub total from(26/06/2012-12/25/ 2012)	21242.900	7.420	21235.480
12/26/2012-01/25/2013	692.300	5.740	686.560
01/26/2013-02/25/2013	545.160	5.460	539.700
02/26/2013-03/25/2013	410.060	3.780	406.280
03/26/2013-04/25/2013	399.980	2.520	397.460
04/26/2013-05/25/2013	690.200	3.780	686.420
05/26/2013-06/25/2013	1927.800	3.640	1924.160
06/26/2013-07/25/2013	2652.300	1.540	2650.760
07/26/2013-08/25/2013	3415.860	0.980	3414.880

08/26/2013-09/25/2013	3542.840	1.120	3541.720
09/26/2013-10/25/2013	1211.280	6.160	1205.120
10/26/2013-11/25/2013	1239.700	5.880	1233.820
Sub total from(12/26/2012-11/25/ 2013)	16727.480	40.600	16686.880
Total	37970.380	48.020	37922.360

The baseline emission BE_y during the monitoring period results from:

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

$$EG_y = EG_{P \text{ to } G} - EG_{G \text{ to } P}$$

Where

EG_y – net power transmitted to the grid (MWh);

$EF_{grid,CM,y}$ – emission factor (tCO₂e /MWh)

$EG_{P \text{ to } G}$ – exported electricity to the grid (MWh)

$EG_{G \text{ to } P}$ – imported electricity from the grid (MWh)

The baseline emission BE_y during the monitoring period can be calculation by the formula below:

$$EG_y = EG_{P \text{ to } G} - EG_{G \text{ to } P} = 37970.380 - 48.020 = 37922.360 \text{ (MWh)}$$

$$BE_y = EG_y \times EF_{grid,CM,y} = 37922.360 \times 0.8712 = 33,037 \text{ (tCO}_2\text{e)}$$

4.2 Project Emissions

According to the methodology AMS-I.D. (version 13), there is no emissions from the project activity. So:

$$PE_y = 0.$$

4.3 Leakage

According to baseline methodology AMS-I.D.(version 13), there is no need for the project to consider leakage. Besides there is no fossil fuel engine/generator which is in place for emergency purpose during the monitoring period. The leakage from the project is zero. Thus:

$$LE_y = 0.$$

4.4 Net GHG Emission Reductions and Removals

According to the methodology: $ER_y = BE_y - PE_y - LE_y$

1) The final GHG emission reduction (ER) is calculated as follows:

$$ER_y = BE_y - PE_y - LE_y = 33,037 - 0 - 0 = 33,037 \text{ (tCO}_2\text{e)}$$

2) There are total a year during the whole crediting period, and the emission reduction are divided into three periods could be calculated as the following:

$$\text{In year 2012(from 26/06/2012-25/12/2012): } ER_{2012} = 21235.480 \times 0.8712 - 0 - 0 = 18,500 \text{ (tCO}_2\text{e);}$$

In year 2013(from 26/12/2012-25/11/2013): $ER_{2013}=16686.880 \times 0.8712 - 0 - 0 = 14,537(tCO_2e)$;

Based on the yearly calculation, the total emission reduction in the monitoring period should be $ER_{2012} + ER_{2013} = 18,500 + 14,537 = 33,037(tCO_2e)$;

Total baseline emissions: 33,037(tCO₂e)

Total project emissions: 0 (tCO₂e)

Total leakage: 0 (tCO₂e)

Total emission reductions: (tCO₂e)

$ER_y = BE_y - PE_y - LE_y = 33,038 - 0 - 0 = 33,037(tCO_2e)$.

Emission reductions generated in the 4th monitoring period (26/06/2012–25/11/2013): 33,037(tCO₂e).

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)
Year 2012(26/06 /2012-12/25/ 2012)	18,500	0	0	18,500
Year 2013(12/26 /2012-11/25/ 2013)	14,537	0	0	14,537
Total	33,037	0	0	33,037

APPENDIX X: <TITLE OF APPENDIX>

N/A