



Verified Carbon Standard

TEESTA LOW DAM PROJECT, STAGE-IV

Document Prepared by



MPCON Ltd.

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Teesta Low Dam Project, Stage-IV is a Greenfield 160 MW capacity run-of-the-river hydro power project located in village Kalijhora, Darjeeling district, West Bengal state in India. The hydel energy generated from the power plant is evacuated to the State Grid System which is part of Indian grid, which is predominantly fossil fuel based. The energy from the hydropower plant is a cleaner form of energy and displaces electricity that would otherwise be generated using fossil fuel sources in the Indian grid.

The project got fully commissioned on 11-August-2016 and has been in continuous operation since then. The expected operational lifetime of the project is 35 years. the detailed commissioning details are mentioned in section 3.1 of this monitoring report. The project is registered at VCS (Project I.D. 1423¹).

During the current monitoring period of 1-April-2021 to 30-June-2022, the project has supplied 883,765 MWh of electricity to the India Grid, and thus contributing to the GHG reductions of 855,307tCO₂e.

The audit history of the project is as follows:

Audit Type	Period	Program	VVB Name	Number of years
Validation	10- December-2015	VCS	Earthood Services Private Limited	
Verification 1	14- February - 2016 to 16-July-2017	VCS	Earthood Services Private Limited	1 Year & 5 Month
Verification 2	17-July-2017 to 31-Mar-2021	VCS	LGAi Technological Center, S.A. (Applus+ Certification)	3 Years, 8 Months & 15 days
Verification 3	01-April-2021 to 30-June-2022	VCS	LGAi Technological Center, S.A. (Applus+ Certification)	1 Year & 5 Month
Total	14- February Feb-2016 to 30-June-2022	VCS		6 Years, 6 Months & 15 days

¹ <https://registry.terra.org/app/projectDetail/VCS/1423>

1.2 Sectoral Scope and Project Type

The project activity falls under the following Sectoral scope and Project Type:

Sectoral Scope : 01 - Energy industries (renewable / non-renewable sources)

Project Type : I - Renewable Energy Projects

Methodology : ACM0002: Grid-connected electricity generation from renewable sources- Version 16.0²

The project is not a grouped project activity.

1.3 Project Proponent

Organization name	NHPC Limited
Contact person	Dr. Avinash Kumar
Title	General Manager (Environment)
Address	NHPC Limited, NHPC Office Complex, Sector 33, Faridabad, 121003, Haryana, India
Telephone	0129-2278421
Email	cdm-env@nhpc.nic.in

1.4 Other Entities Involved in the Project

Organization name	MPCON Ltd
Role in the Project	Project Consultant
Contact person	Mr Manoj Mishra
Title	Chief Engineer
Address	Ground Floor, Rajiv Gandhi Bhawan-2, 35, Shyamla Hills Bhopal-462002
Telephone	0755-4909829,2666556
Email	operationscc.mpcon@mpconsultancy.org

1.5 Project Start Date

Project Start Date: 14-February-2016, which is the date of commissioning of the first turbine.

² <http://cdm.unfccc.int/methodologies/DB/EY2CL7RTEHRC9V6YQHAR6MJ6VEU83>

1.6 Project Crediting Period

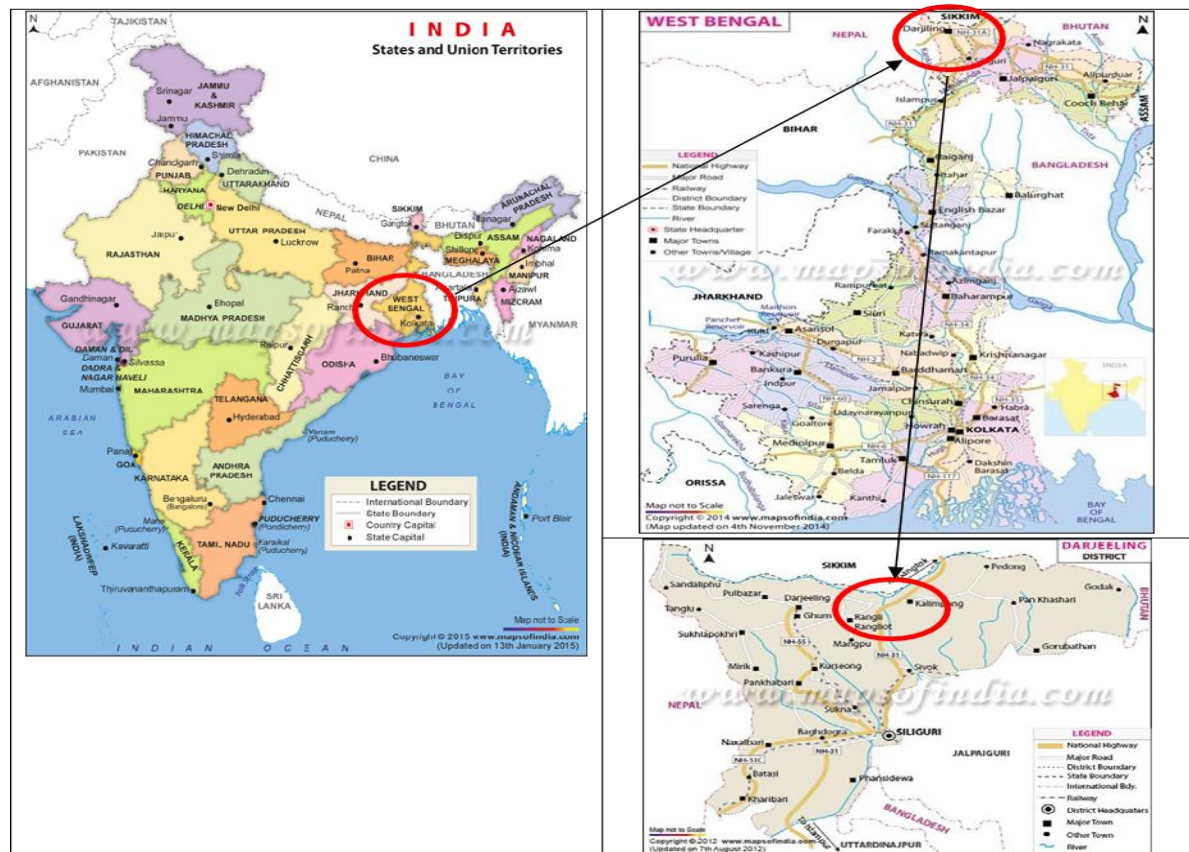
Crediting Period : 14-February-2016 to 13-February-2026

Type of crediting period : Renewable

Length of crediting period : 10 years

1.7 Project Location

The Teesta Low Dam Project, Stage-IV hydroelectric project is installed across Teesta near Kalijhora village in Darjeeling district in the state of West Bengal. The project activity geo-coordinates are: Latitude: 26.9273 N, Longitude 88.4553 E. The map below shows the exact location of the project activity.



1.8 Title and Reference of Methodology

Project Type : Type-I: Renewable Energy Projects

Methodology : ACM0002

Title : Grid-connected electricity generation from renewable sources

Version No. : Version 16.0³;

Reference : CDM Methodology

The methodology refers to following CDM Tools:

- Tool to calculate the emission factor for an electricity system⁴ version 04
- Tool for the demonstration and assessment of additionally⁵ (Version 07.0.0, EB 70, Annex 8)

1.9 Participation under other GHG Programs

The project has neither been registered nor seeking registration under any other GHG programs. The project activity is not participating in any other GHG program.

1.10 Other Forms of Credit and Supply Chain (Scope 3) Emissions

- **Emission Trading Programs and Other Binding Limits:** The project activity is not participating in any other Emission trading program and other binding limits. The GHG emission reductions generated during the current monitoring period have not been used for compliance of other mechanism.
- **Other Forms of Environmental Credit:** The proposed project activity neither has nor intends to generate any other form of GHG related environmental credit for GHG emission reductions or removals claimed under the VCS Program. The initial project activity is neither has nor intends to generate any other form of GHG related environmental credit for GHG emission reductions or removals claimed under the VCS Program.
- **Supply Chain (Scope 3) Emissions:** Not applicable, as this project is not related to supply chain

1.11 Sustainable Development Contributions

The project activity contributes to the sustainable development of the region in addition to the generation of renewable electricity. The following indicators for sustainable development (as given by the Ministry of Environment and Forest, (Government of India) are considered:

For SDG- 7: Through this project activity, it has contributed towards SDG-7 i.e., Affordable and clean energy by setting up of 160 MW capacity run-of-the-river hydro power project.

³ <http://cdm.unfccc.int/methodologies/DB/EY2CL7RTEHRC9V6YQHLAR6MJ6VEU83>

⁴ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v4.0.pdf>

⁵ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>

For SDG- 4: NHPC Limited, along with technology supplier has provided 3 training related to technical and soft skills to its staff & other team members during the current monitoring period. The details of training is provided in Annexure 1 of this report.

For SDG- 13: NHPC Limited is committed to work for mitigation of climate change by generating electricity using clean energy sources. In this current monitoring period, project has achieved GHG emission reductions of 855,307 tCO₂e.

Table 1: Sustainable Development Contributions

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
1)	7.2	7.2.1: Renewable energy share in the total final energy consumption	Implemented activities to increase	About 883,765 MWh renewable electricity has supplied to Indian grid during the reported period that helps to increase the renewable energy share in the energy mix.	Overall, 4,833,601 MWh (832,524+ 3,117,312 + 883,765) renewable electricity has been supplied to Indian grid throughout the project lifetime that helps to increase the renewable energy share in the energy mix.
2)	4.4	4.4.1: Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill	Implemented activities to increase	Together with the technology supplier, the Project organize 3 training during the current monitoring period. Training related to technical and soft skills.	Overall, various trainings would be provided during over project lifetime.
3)	13.0	Total greenhouse gas emissions per year	Implemented activities to increase	By supplying 883,765 MWh of clean electricity to Indian grid, the project avoided release of 855,307 tCO ₂ e in to the atmosphere during the reporting period.	Overall prevented the release of 4,677,960 (805,717+ 3,016,935 + 855,307) tCO ₂ e into the atmosphere since project commissioning.

2 SAFEGUARDS

2.1 No Net Harm

The project does not involve any potential negative environmental and socio-economic impacts and hence this criterion is not applicable to this project activity.

2.2 Local Stakeholder Consultation

As a part of ongoing communication with stakeholders, a dedicated visitor register cum grievance register has been placed at the project site and accessible to stakeholders to provide their feedback on the project. During the current monitoring period, no grievances has been received.

Stakeholder meetings was organized at the time of registration. The details of same can be referred from registered VCS PD for the Project (Project I.D. 1423⁶).

During the current monitoring period, no any grievances received during the current monitoring period; therefore, no any mitigation measures are required. Copy of grievance register have been submitted to DOE.

2.3 AFOLU-Specific Safeguards

Not applicable to this as this is not an AFOLU project activity.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The total installed capacity of the project activity is 160 MW consisting of 4 units of 40 MW each in Darjeeling district, West Bengal. The electricity generated is supplied to the regional electricity grid as per the signed power purchase agreement. The Project is already commissioned & fully operational. The details of commissioning are as follows:

⁶ <https://registry.terra.org/app/projectDetail/VCS/1423>

Project Name	Unit No.	Turbine Capacity	Location	Commissioning Date
Teesta Low Dam Project, Stage-IV	I	40 MW	Kalijhora, Darjeeling (W.B)	14- February -2016
	II	40 MW	Kalijhora, Darjeeling (W.B)	16-March-2016
	III	40 MW	Kalijhora, Darjeeling (W.B)	03-July-2016
	IV	40 MW	Kalijhora, Darjeeling (W.B)	11-August-2016

During current monitoring period (01-April-2021 to 30-June-2022), There is a change in other entity as per registered VCS PD. Details of other entity & respective deviation has been provided in section 3.2.2 of this monitoring report. The applied deviation doesn't have any impact on the project applicability, baseline scenario, additionality etc.

Salient Features:

The project is a run-of-river hydropower plant with a catchment area of 8021 Sq. Km. The dam is of Concrete Gravity/ RCC type. The plant includes four Kaplan turbines, the capacity of each turbine is 40 MW totaling to a capacity of 160 MW. The surface power house is located on the left bank of Testa River.

There was no major breakdown or shutdown during the monitoring period which might affect the applicability of methodology or might cause material errors in emission reductions.

The technical specifications related to the plant are provided below:

TEESTA LOW DAM PROJECT (STAGE-IV) IN WEST BENGAL
(4 X 40 = 160 MW)

SALIENT FEATURES

1	LOCATION	
	State	West Bengal
	District	Darjeeling
	River	Teesta
	Dam Site	18.3km Downstream Of Teesta Bridge On NH31A
	Power House	50 M Downstream Of Dam Axis On The Left Bank
2	HYDROLOGY	
	Catchment Area	8021 Sq. Km.
3	RESERVOIR	
	Full Reservoir Level (FRL)	EL 182.25 M
	Min. Draw Down Level (MDDL)	EL 179.0 M
	Gross Storage	36.63 MCM
	Live Storage	7.91 MCM
	Area Under Sub-Mergence At FRL	257.26 HA
4	DAM	
	Type	Concrete Gravity /RCC
	Top Elevation	EL 185.00 M
	Length At the Top	521 M
	Height of dam above river bed level	± 30 M
	Height of dam above deepest foundation level	± 45 M
5	SPILLWAY	
	Design flood	15400 CUMecs (PMF)
	Type	Sluice type with breast wall
	Crest elevation	EL 157 M
	Number & size of spillway opening	7 NOS, 11 M (W) X 17 M (H)
6	DIVERSION CHANNEL	
	NO. of channels	
	Length	±700 M
7	COFFER DAMS	
	Length	

	U/S coffer dam	200 M
	D/S coffer dam	200 M
	Height	
	U/S coffer dam	13M
	D/S coffer dam	12.5 M
8	INTAKE	
	Invert Level	EL 165.50 M
	Number of intakes	4 NOS
	Gate opening	7 M (W) x 7 M (H)
9	PENSTOCK	
	Number	FOUR
	Shape	Circular, Steel Lined
	Length	± 45 M EACH
	Diameter	7 M
10	POWER HOUSE	
	Type and location	Surface; Left Bank
	Design discharge	716.00 CUMecs
	Type of turbine	Kaplan
	Installed capacity	4 x 40MW
	Power house size	134 M x 24.5 M x 66 M
	Gross head	25.76 M
	Rated net head	25.05 M
11	TAIL RACE CHANNEL	
	Shape	Trapezoidal
	Bottom Width	100 m
	Length	98 M
	Weir Level	El. 152.12 M
12	SWITCHYARD	
	Size and location	200M X 95 M on Left Bank at EL.± 215.00 M

Estimated life time of the project:

35 years

The total capacity of the project activity is 160 MW and the power produced displaces an equivalent amount of power from the grid, which is fed mainly by fossil fuel fired power plants.

Hence, it results in reduction of GHG emissions. During the current monitoring period, no any event occurred that impact the GHG emission reduction or removals and monitoring practices.

3.2 Deviations

3.2.1 Methodology Deviations

Not Applicable, as there are no methodological deviations applied during current monitoring period.

3.2.2 Project Description Deviations

Project description deviations applied during current monitoring period

Deviation 3:

During current monitoring period (01-April-2021 to 30-June-2022), There is a change in other entity as per registered VCS PD. The details for other entity involved for the current monitoring period is mentioned below-

Organization name	MPCON Ltd
Role in the Project	Project Consultant
Contact person	Mr Manoj Mishra
Title	Chief Engineer
Address	Ground Floor, Rajiv Gandhi Bhawan-2, 35, Shyamla Hills Bhopal-462002
Telephone	0755-4909829,2666556
Email	operationscc.mpcon@mpconsultancy.org

The applied deviation doesn't have any impact on the project applicability, baseline scenario, additionality etc..

Project description deviations applied in previous monitoring reports.

Deviation- 1: The source document for electricity exported has been changed from Joint Meter Reading (JMR) to "Deviation Settlement Account document" which are publicly available documents issued by the 'Northern Regional Power Committee', Ministry of power; Government of India.

Deviation- 2:

- The source for the import data has been changed from Monthly electricity sales bills to import data certified by State Electricity Board.

- The second deviation is related to applying Maximum permissible error factor in the import meter reading, as the calibration of the import meters is not under the control of PP. The state electricity board who decides about when to calibrate the import meters. The state electricity board does not share the calibration certificates with the PP for import meters and this is common practice followed by them.

The nature of above applied deviation is permanent and have already been approved in the previous verification⁷.

3.3 Grouped Projects

The project does not involve any addition of new project activity and thus the project do not fall under grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	EF_{grid,OM,y}
Data unit	tCO ₂ /MWh
Description	Operating Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 10, December 2014 ⁸
Value applied	0.9862
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per “Tool to calculate the emission factor for an electricity system, version 04.0.0” as 3-year generation weighted average using data for the years 2011-12, 2012-13 & 2013-14. The data are obtained from “CO ₂ Baseline Database for Indian Power Sector” version 10.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of Data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	EF_{grid,BM,y}
Data unit	tCO ₂ /MWh

⁷<https://registry.terra.org/app/projectDetail/VCS/1423>

⁸https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver10.pdf

Description	Build Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 10, December 2014
Value applied	0.9495
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per “Tool to calculate the emission factor for an electricity system, version 04.0.0” as 3-year generation weighted average using data for the years 2013-14. The data are obtained from “CO ₂ Baseline Database for Indian Power Sector” version 10.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of Data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO ₂ /MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 10, December 2014
Value applied	0.9678
Justification of choice of data or description of measurement methods and procedures applied	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: $EF_{grid,BM,y}$ = Build margin CO₂ emission factor in year y (tCO₂/MWh) $EF_{grid,OM,y}$ = Operating margin CO₂ emission factor in year y (tCO₂/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 50% W_{BM} = Weighting of build margin emissions factor (%) = 50%
Purpose of Data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

4.2 Data and Parameters Monitored

Data / Parameter	$EG_{PJ,y}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Source of data	Deviation Settlement Account statement issued by NRPC

Description of measurement methods and procedures to be applied	Net electricity supplied to grid will be calculated as Net electricity generated and supplied by the project plant/unit to the grid = Electricity exported by the project to the grid at project site switch yard – Electricity imported by the project from the grid at interconnection point of the Regional Supply $EG_{PJ,y} = EG_{Export,y} - EG_{Import,y}$
Frequency of monitoring/recording	Continuous measurement and at least monthly recording
Value monitored	883,765
Monitoring equipment	Not applicable, as this is a calculated value
QA/QC procedures to be applied	Not applicable, as this is a calculated value
Purpose of the data	Calculation of Baseline emissions
Calculation method	NA
Comments	The data would be archived electronically and maintained for the entire crediting period plus two years.

Data / Parameter	$EG_{Export,y}$
Data unit	MWh
Description	Quantity of Electricity exported by the project to the grid at project site switch yard in year y
Source of data	Deviation Settlement Account statement issued by NRPC
Description of measurement methods and procedures to be applied	Monitoring equipment: Energy Meters are used for monitoring Recording Frequency: Continuous monitoring and Monthly recording from Energy Meters, Summarized Annually Archiving Policy: Paper & Electronic Calibration frequency: 5 years Electricity exported by the project to the grid at project site switch yard is the actual generation recorded and monitored by the metering system installed at the project site switch yard. The metering system comprises of three individual special energy meters (SEMs) (acts as standby meters) installed at the power station, for each generating unit. These are connected via four transmission lines of 220 kV, each having its own SEM meter (main meter and check meter). In

	case, anyone transmission line in not in service than complete load will be shifted to other transmission line which is in operation. The energy meters are special energy meters which are installed and sealed by the Power Grid Corporation of India Limited in the presence of the representatives of the power producer. The check meter shall be used during the period the main metering system is not in service. Further in case of failure of both main meter and check meter, sum of the net electricity generation recorded by three individual special energy meters (SEMs) and individual auxiliary meters shall be used for accounting and billing purpose
Frequency of monitoring/recording	Continuous measurement and at least monthly recording
Value monitored	890,326
Monitoring equipment	Special Energy Meters (SEMs) of 0.2s accuracy class. Reference of details of meters & calibration details are provided in Section 4.3 of this Monitoring Report.
QA/QC procedures to be applied	Energy meters will be calibrated once in a five year and faulty meters will be duly replaced immediately. The details of meters & calibration details are provided in Section 4.3 of this Monitoring Report. The energy meters are in the custody of the distribution network and the distribution network takes the call based on their requirement. It is noted that no calibration was done during the monitoring period. Therefore, an error factor of 2% is applied to the total net generation. This data may be cross checked with the Monthly Generation
Purpose of the data	Calculation of Baseline emissions
Calculation method	NA
Comments	The data would be archived electronically and maintained for the entire crediting period plus two years.

Data / Parameter	EG_{Import,y}
Data unit	MWh
Description	Quantity of electricity generation supplied by the project plant/unit to the grid in year y
Source of data	Deviation Settlement Account statement issued by NRPC
Description of measurement methods and procedures to be applied	Monitoring equipment: Energy Meters are used for monitoring Recording Frequency: Continuous monitoring and Monthly recording from Energy Meters, Summarized Annually Archiving Policy: Paper & Electronic Calibration frequency: 5 years

	Electricity exported by the project to the grid at project site switch yard is the actual generation recorded and monitored by the metering system installed at the project site switch yard. The metering system comprises of three individual special energy meters (SEMs) (acts as standby meters) installed at the power station, for each generating unit. These are connected via four transmission lines of 220 kV, each having its own SEM meter (main meter and check meter). In case, anyone transmission line is not in service than complete load will be shifted to other transmission line which is in operation. The energy meters are special energy meters which are installed and sealed by the Power Grid Corporation of India Limited in the presence of the representatives of the power producer. The check meter shall be used during the period the main metering system is not in service. Further in case of failure of both main meter and check meter, sum of the net electricity generation recorded by three individual special energy meters (SEMs) and individual auxiliary meters shall be used for accounting and billing purpose
Frequency of monitoring/recording	Continuous measurement and at least monthly recording
Value monitored	973
Monitoring equipment	Special Energy Meters (SEMs) of 0.5s accuracy class
QA/QC procedures to be applied	Energy meters will be calibrated once in a five year and faulty meters will be duly replaced immediately. The details of meters & calibration details are provided in Section 4.3 of this Monitoring Report. The energy meters are in the custody of the distribution network and the distribution network takes the call based on their requirement. It is noted that no calibration was done during the monitoring period. Therefore, an error factor of 0.5% is applied to the total net generation. This data may be cross checked with the Monthly Generation
Purpose of the data	Calculation of Baseline emissions
Calculation method	NA
Comments	The data would be archived electronically and maintained for the entire crediting period plus two years.

4.3 Monitoring Plan

The project proponents at the power station have a procedure to ensure proper monitoring of the VCS project activity. The project activity has installed monitoring and control equipment that measure, record, report, monitor and control various key parameters.

The methodology requires monitoring of the net electricity supplied from the project activity. The proponent is maintaining complete and accurate records and all other data required for the purpose

of proper administration and operation of the hydro power plant. The data are kept for at least 2 years after the end of the crediting period.

1. **Purpose** - The purpose of monitoring the project is to assess the annual emission reductions in tonnes of CO₂ that the project activity has achieved.
2. **Data to be reported** - EG_{PJ,y} in MWh and periodical calibrations of monitoring equipment's
3. **Origin of data and monitoring including estimation approach**- Net electricity generate and supplied to grid is sourced from Deviation Settlement Account statement issued by Northern Regional Power Committee.

4. Meter Details

The details of the Export Meters are given below.

Feeder Details	220 KV NJP, Feeder- 1		220 KV NJP, Feeder- 2		220 KV TLDP-III, Feeder- 3	
Meter Details	Main	Check	Main	Check	Main	Check
Meter Sl. No	WBE12813	WBE12816	WBE12784	WBE12817	WBE12815	WBE12818
Calibration Details	No Calibration was done for period (01-April 2021 to 16-January-2022), accordingly an error factor has been applied in ER estimation. The Error factor has been applied for full months from April 2021 to Jan 2022), 17-January-2022 to 16-January-2027					
Calibration Frequency	5 years					
Meter Location	TLDP IV, Kalijhora NHPC Limited					
Accuracy Class	0.2s					
Make of Meter	Secure					

The details of the Import Meters are given below.

Import Meter Details			
Meter Details	Main Meter	Main Meter	Main Meter
Meter Sl. No	WBE18371	RSH5D104	WBE12815
Meter Location	Vidyut Nagar	Power House	Kalijhora
Accuracy Class	0.5s	0.5s	0.5s
Make of Meter	Secure	Secure	Secure
Calibration	The import meters are owned by the state electricity board and are not under the control of PP and the calibration certificates of the import meters could not be traced for the current monitoring period. Therefore, the PP has applied an error factor factoring the maximum permissible error as per the accuracy class of the meters.		

5. **Monitoring times and periods**- The data is monitored on a continuous basis but is recorded on a monthly basis with the energy meters installed at the site.
6. **Data Accuracy**- As per clause 4.0, Metering Arrangement of the Power Purchase Agreement (PPA) the metering arrangement including its installation, testing, maintenance and collection transportation and processing of data required for energy exchange is governed as per the notification/ directives issued/or to be issued by Central

Electricity Regulatory Commission and as per relevant provisions contained in IEGC as amended from time to time. The Central Electricity Authority (CEA) notification regarding Installation and Operation of meters regulations, 2006, says that meters are required to be tested once in 5 years (refer clause 18 of the guideline)⁹. Thus, the meters recording the electricity exported are calibrated at least once in 5 years.

7. **Emission Reduction Calculation Approach-** The emission reductions are calculated as a product of the net electricity generated from the project activity and the combined margin emission factor. The calculation approach is explained in detail under section 3 of this document.
8. **Monitoring roles and responsibilities-** The following is the team structure for project monitoring:
 - i. **Unit Head:** Overall responsibility of compliance with the monitoring plan.
 - ii. **Power Plant In-charge:** Responsibility for completeness of data, reliability of data (calibration of meters), and monthly report generation
 - iii. **Shift In-charge:** Responsibility of daily report generation from the SCADA system/ log- books
9. **Managing Data Quality-** The Power plant In-charge prepares the report pertaining to the recorded values of the monitored parameters as by the shift-in- charge. The day-to-day records are verified, compiled and documented by Unit Head. The company has introduced a safe storage of data. NHPC is an ISO– 9000, and ISO– 14000 certified company having an integrated management system. It also ensures that requirements are met for the project as well.

⁹ CEA metering regulation clause 18 on page 12 of the regulation

http://www.powermin.nic.in/whats_new/pdf/Metering_Regulations.pdf

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

As per registered PD, Baseline emission is

$$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$$

Where:

BE_y : Baseline emissions in year y (tCO₂e/yr)

$EG_{PJ,y}$: Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the VCS project activity in year y (MWh/yr)

$EF_{grid,CM,y}$: Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO₂e/MWh)

Based upon monitoring values:

Baseline Emission:

$$\begin{aligned} BE_y &= 883,765 * 0.9678 \\ &= 855,307 \text{ tCO}_2\text{e (round down values)} \end{aligned}$$

5.2 Project Emissions

As per registered VCS PD, there are no any project emissions occurred for the project activity. Hence, $PE_{FF,y} = 0$.

5.3 Leakage

As per para 60 of ACM0002 version 16, No leakage emissions need to considered for the project. Hence, $LE_y = 0$.

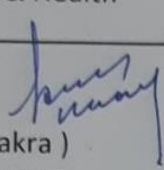
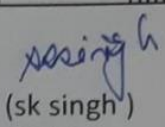
5.4 Net GHG Emission Reductions and Removals

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)
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01-April-2021 to 31-December-2021	597,401	0	0	597,401
01-Januray 2022 to 30-June-2022	257,907	0	0	257,907
Total	855,307	0	0	855,307

<u>Ex-ante emissions reductions /removals</u>	<u>Achieved emissions reductions/r emovals</u>	<u>Percent difference</u>	<u>Justification for the difference</u>
870,543 tCO ₂ e	855,307 tCO ₂ e	-1.75%	The actual Emission Reductions or this monitoring period is 1.75% lower than amount estimated ex ante for this monitoring period, The generation of electricity depends upon many other climatic conditions, which are not within the control of the project participant.

APPENDIX I: TRAINING DETAILS

Project Training Data 1-April 2021 to June 2022 Training Details					
Sl. N.	Training Event Name	Start Date	End Date	Participants	Remarks
1	General Safety Awareness, Electricity Safety & Basic Fire Safety	27.12.2021	29.12.2021	11	for TLDP-III&IV PS
2	Handling Medical Emergency unde OHSAS &IMS	29.11.2021	01.12.2021	20	
3	Yoga & Health	28.03.2021	31.03.21	19	for TLDP-III&IV PS
 (VK Lakra) GDGM(HR)  (sk singh) SM(HR)					