3 MW HYDRO POWER PROJECT BY DARJEELING POWER PVT. LTD.

Document Prepared By

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Summary:

M/s VKU Certification Pvt. Ltd. (here after referred as VKU) was commissioned by M/s EKI Energy Services Limited, has verified the greenhouse gas emission reductions reported for the project activity "3 MW Hydro Power Project by Darjeeling Power Pvt. Ltd." (VCS ID 1739) in India, covering monitoring period from 02-January-2018 to 28-Feburary-2022 (Inclusive of both start and end dates) under first crediting period from 15-April-2016 to 14-April-2026 (Inclusive of both dates) with regard to the relevant requirements for VCS activities.

The purpose of the verification is to have an independent review of ex-post determination of the monitored reductions in GHG emission reductions and verify that the monitoring methodology was implemented according to the monitoring plan and monitoring data used to confirm the reductions in anthropogenic emissions by sources is sufficient, definitive and presented in a concise and transparent manner.

The verification scope of the project is:

- To verify that the project is implemented as described in the registered VCS Joint PD&MR/3/.
- To assess the project's compliance with other relevant rules including the host country legislation.
- To confirm that the monitoring system is implemented and fully functional to generate voluntary emission reductions without any double counting.
- To establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.
- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;

- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement;
- To verify that reported GHG emission data is sufficiently supported by evidence.

Verification was conducted using VKU's procedures in line with the requirements specified in the VCS Program Guide version 4.2/4/, VCS Standard Version 4.3/5/, VCS Validation and Verification Manual version 3.2/21/, CDM M&P, the latest version of the CDM Validation and Verification Standard 3.0/22/, and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques.

VKU followed the rule-based approach to perform this verification. During the course of verification, related to operation, monitoring and GHG emission reduction calculation of the VCS project activity in relation to all relevant VCS requirements for the project activity and the applied baseline and monitoring methodology and a total of 06 findings were raised, which includes: 04 Corrective Action Request (CARs); 02 Clarification Requests (CLs). All the raised findings were raised and successfully resolved by the PP. The same has been discussed in Appendix B of this verification report.

The verification team ensured that the reported emission reductions are complete and accurate in accordance with applicable VCS requirements in order to be certified therefore the verification team has detected no further uncertainties.

The GHG emission reductions were calculated on the basis of the approved methodology (AMS I.D) "Grid Connected Renewable Electricity Generation - Version 18.0/7/ and Tool to calculate the emission factor for an electricity system; Version 6.0 /29/ and the monitoring plan included in the registered VCS PD&MR/3/ version 03 dated 05-April-2018.

In conclusion, it is VKU's opinion that the project activity "3 MW Hydro Power Project by Darjeeling Power Pvt. Ltd" (VCS ID 1739) in India, meets all relevant requirements for VCS standard and guidelines and correctly applies the baseline and monitoring methodology (AMS I.D) Grid Connected Renewable Electricity Generation" Version 18.0 /7/. The monitoring system is in place and the emission reductions are calculated without material misstatement.

Hence, VKU is able to certify that the emission reductions from the project during the monitoring period from 02-January-2018 to 28-Feburary-2022 (Inclusive of both start and end dates) under first crediting period from 15-April-2016 to 14-April-2026 (Including both dates) amount to 58,694 tCO_2e.

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1 INTRODUCTION

1.1 Objective

M/s EKI Energy Services Limited Commissioned (hereafter referred as EKI) M/s VKU Certification Pvt Ltd (here after referred as VKU) to carry out second verification of the project "3 MW Hydro Power Project by Darjeeling Power Pvt. Ltd" (VCS ID 1739) in India for the period from 02-January-2018 to 28-Feburary-2022 (Inclusive of both start and end dates) under 1st crediting period[1] from 15-April-2016 to 14-April-2026 (Including both dates).

This report summarizes the findings of the verification of the project, performed on the basis of VCS Requirements and UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The purpose of the verification is to have an independent evaluation of a project activity by an accredited validation and verification body against the requirements of the VCS program guide Version 4.2/4/, VCS Standard version 4.3/5/ and GHG program applied, on the basis of the registered Joint VCS Project Description and Monitoring Report version 02 /3/.

The verification is for the period from 02-January-2018 to 28-Feburary-2022 (Inclusive of both start and end dates) under 1st crediting period from 15-April-2016 to 14-April-2026 (Including both dates).

The objectives of this verification exercise are, by review of objective evidence, to establish that:

- The project activity has been implemented and operated as per the registered Joint VCS project description and monitoring report (Joint VCS PD&MR) and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
- Monitoring report and other supporting documents are complete.
- The data is recorded and stored as per the monitoring methodology and approved monitoring plan.

To confirm that the monitoring system is implemented and fully functional to generate Verified Carbon units (VCUs) without any double counting, and to establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation

[1] The project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times

1.2 Scope and Criteria

The verification scope is:

- To verify that the project is implemented as described in the registered VCS Joint PD&MR/3/
- To assess the project's compliance with other relevant rules including the host country legislation.
- To confirm that the monitoring system is implemented and fully functional to generate voluntary emission reductions without any double counting.
- To establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.
- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement;
- To verify that reported GHG emission data is sufficiently supported by evidence.

The verification shall ensure that the reported emission reductions are complete and accurate in order to be certified.

The project is assessed against the requirements of VCS Standard version 4.3/5/, VCS program guide version 4.2/4/, VCS Validation and Verification Manual version 3.2/21/ and related rules and guidance. VKU has, based on the recommendations in the latest version of CDM Validation and Verification Standard/22/, VCS Validation and Verification Manual /21/ employed a rule-based approach (as criteria) in the verification, focusing on the identification of significant reporting rules and the reliability of project monitoring.

Verification is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring.

The method and criteria used for verification consisted of the following phases:

- Completeness check and desk review;
- Onsite interviews with stakeholders;

Resolution of outstanding issues and issuance of final verification report and applicable VCS Validation and Verification Deeds of Representation

1.3 Level of Assurance

All the revisions of the verification report before being submitted to the client were subjected to an independent internal technical review to confirm that all verification activities had been completed according to the pertinent VKU's procedure, with a **Reasonable level of assurance.**

The technical review was performed by a technical reviewer(s) qualified in accordance with VKU's qualification procedure. The verification team and the technical reviewers consist of the following personnel:

Role/Qualification	Last Name	First Name
VCS Team Leader & Technical Expert 1.2	Chouhan	Rakesh
Technical Reviewer & Technical Expert 1.2	Kumar	Sanjay

1.4 Summary Description of the Project

The project activity is a new facility (Greenfield) and the electricity delivered by the project activity is exported to the Unified Indian grid. The implementation of project activity ensures energy security, diversification of the grid generation mix a sustainable growth of the electricity generation sector in India. The project being a renewable energy generation activity, it leads to removal of fossil fuel dominated electricity generation. The project activity results in reductions of greenhouse gas (GHG) emissions that are real, measurable, and verifiable and also plays beneficial role in the mitigation of climate change.

The total installed capacity of the project is 3 MW and the power produced displaces an equivalent amount of power from the grid, which is fed mainly by fossil fuel fired power plants. The project was commissioned on 15-April-2016 which is the earliest date of commissioning of the Hydro power plant of the project activity and runs satisfactorily since then.

Shaung Mini Hydropower project was allotted to Darjeeling Power Pvt Ltd. for harnessing the power potential of Shaung stream. The Shaung Mini Hydropower is a run of river power project of 3 MW power generation on Shaung stream. Shaung stream is a tributary of river Bapsa. Power house is located near village Shaung. Diversion cum trench weir is proposed to withdraw the requisite design discharge +50% addition for de- silting. As per MR/1/, the electricity generated from the project is supplied to the unified Indian Grid which is confirmed from registered VCS Joint PD&MR/3/, previous validation and verification report /18/, JMRs issued by the HPSEBL/12/, Invoices issued by DPPL to the state utility/10/, PPA/14/ and interview with PP/24/. The Hydro power plant are commissioned on 15-April04-2016 and the date is verified against the registered VCS Joint PD&MR/3/and commissioning certificate/13/.

This information was verified during on site assessment and found to be in line with the details provided in the registered VCS Joint PD&MR/3/. The emission reductions from the project activity during the current verification period 02-January-2018 to 28-Feburary-202 (including both start and end dates) amount to 58,694 tonnes of CO_2e.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification was conducted using VKU's procedures in line with the requirements specified in the VCS Requirements, i.e., VCS Program Guide Version 4.2/4/, VCS Standard Version 4.3/5/. The GHG emission reductions are on the basis of the approved Baseline and monitoring methodology (AMS I.D) "Grid-connected renewable electricity generation from renewable sources" - Version 18.0/7/.

The verification consisted of the following three phases

- Document review;
- On-site assessment including Interviews and actual project scenario;
- Resolution of any Material Discrepancy and the issuance of the final verification report and certification.

The following sections outline each step in more detail.

2.2 Document Review

The monitoring report (MR) version 01 dated 13-May-2022, and version 02 dated 26-August-2022 and version 03 dated 10-October-2022 and final version 04 dated 11-December-2022/1/, the emission reduction calculations spreadsheet version 01 dated 13-May-2022 and version 02 dated 26-August-2022 and final version 03 dated 10-October-2022/2/, were assessed as part of the verification. In addition, the registered VCS Joint PD&MR/3/ in particular the baseline estimations and the monitoring plan for the project was reviewed.

The following table lists the documentation that were reviewed during the verification:

/1/	EKI: VCS monitoring report for "3 MW Hydro Power Project by Darjeeling Power Pvt. Ltd., • Version 01 of 13-May-2022 • Version 02 of 26-August-2022 • Version 03 of 10-October-2022 • Final Version 04 of 11-December-2022
/2/	EKI: Emission Reduction Calculation Spreadsheet • Version 01 of 13-May-2022 • Version 02 of 26-August-2022 • Final version 03 of 10-October-2022
/3/	EKI: Registered VCS Joint PD&MR for the project "3 MW Hydro Power Project by Darjeeling Power Pvt. Ltd." version 03 dated 05-April-2018
/4/	VCS: VCS Program Guide, version 4.2 of 22-June-2022
/5/	VCS: VCS Standard, version 4.3 of 22-June-2022 VCS: VCS Standard, version 3.7of 21-June-2017
/6/	VCS: Monitoring report Template VCS Version 4.1
/7/	CDM Executive Board: Baseline and Monitoring Methodology AMS I.D. "Grid Connected Renewable Electricity Generation" Version 18.0
/8/	UNFCCC: Project search: https://cdm.unfccc.int/Projects/projsearch.html
/9/	Gold Standard Foundation: https://registry.goldstandard.org/projects?q=&page=1
/10/	Monthly JMR issued by state utility i.e, Himachal Pradesh State Electricity Board Limited (HPSEBL) for the monitoring period 02-January-2018 to 28-February-2022(Inclusive of both start and end dates)
/11/	Certificates of Calibration for main meters and check meters belonging to the project activity
/12/	Invoice issued by PP to state utility- Himachal Pradesh State Electricity Board Limited (HPSEBL) for the monitoring period 02-January-2018 to 28-February-2022(Inclusive of both start and end dates)
/13/	Commissioning certificate of the project activity issued by state electricity authority dated 23-April-2016
/14/	Power Purchase Agreements signed between Project Proponent and state electricity authority (HPSEBL) dated 20-May-2016 valid for 40 years from the date of signing
/15/	Letter of declaration from PP regarding not having created or sought any other form of environmental credit for the same period
/16/	Monthly generation reports issued by O&M contractor
/17/	Central Electricity Authority (Installation and Operation of Meters) Regulations Notified on 17-04-2006 No. 502/70/CEA/DP&D Amendments Notified on 26-06-2010 No. 502/6/2009/DP&D/D-I
/18/	LGAI Technological Center, S.A. (Applus+ Certification): Joint Validation & Verification report "3 MW Hydro Power Project by Darjeeling Power Pvt. Ltd." version 02 of 05-April-2018 for the period 15-April-2016 to 01-January-2018 Weblink-https://registry.verra.org/app/projectDetail/VCS/1739

/19/	Site Visit Photographs videos and attendance sheet dated 23-July-2022
/20/	VERRA Webpage: https://registry.verra.org/app/projectDetail/VCS/1739
/21/	VCS Validation and verification manual version 3.2 dated 19-October-2016
/22/	CDM Validation and Verification Standard version 3.0 dated 23-October-2021
/23/	Grievance Register present at site
/24/	On site personnel interview
/25/	GPS map camera used for location during onsite visit and Google earth for desk review of the DPPL plant.
/26/	Diesel purchase receipt for the monitoring period 02-January-2018 to 28-February-2022 (Inclusive of both start and end dates)
/27/	REC website Renewable Energy Certificate Registry of INDIA https://www.recregistryindia.nic.in/index.php/publics/faqs
/28/	Measuring Scale purchase Invoices to measure diesel consumption for the current verification period 02-January-2018 to 28-February-2022 (Inclusive of both start and end dates)
/29/	Tool to calculate the emission factor for an electricity system - Version 06.0

2.3 Interviews

An on-site inspection has been performed by the assessment team. However, the representatives of the PP and O&M contractors were interviewed personally by assessment team on 23-July-2022 i.e., personnel responsible for monitoring of the project activity, data collection and management, and QA/QC procedure.

The details of the people interviewed are mentioned in the table below.

S. No.	Name	Designation	Topic
1	Sanjeev Negi	Engineer of DPPL	Project Implementation and technical details of the Project like breakdown details, calibration of meters and monitoring of required monitored parameters and implementation of QA/QC Procedure.
2	Shashi Paul	Plant in-charge	
3	Rakesh Kumar	Fitter Mechanic	
4	Lakh Raj	JE Electrical	Project Implementation, data management, recording, monitoring and archiving.
5	Vishal Thakur	Electrician	Data archiving, breakdown details and maintenance of generation records

The topics covered during interview ranges from general features and implementation of project to technical details of the project like calibration details, monitoring and measuring system and data collection, recording and archiving procedures. The assessment was drawn based on the feedback received during site visit coupled with the documentation.

S. No.	Name	Designation	Category	Topic
1	Manoj Kumar	Technician	Local Stakeholder	• Project activity implementation and its impact on social, economic and environmental condition of the local people. • The ongoing communication procedure and the address of their grievance by the project proponent • The employment generation due to project activity implementation.
2	Shivraj	Cleaner		

There were no negative comments received during the stakeholder consultation interview conducted on site and more detail is enlisted in the section 4.2.2 below

2.4 Site Inspections

An On-site visit was undertaken by the verification team on 23-July-2022 at the Project site in Shaung, stream Kinnaur site in the state of Himachal Pradesh to carry out the following.

a) An assessment of the implementation and operation of the registered project activity as per the registered VCS Joint PD&MR/3/ and MR/1/

b) A review of information flows for generating, aggregating and reporting the monitoring parameter

c) Interviews/24/ with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in VCS Joint PD&MR/3/.

d) A cross check between information provided in the monitoring report and data from other sources such as plant logbooks, inventories, purchase records or similar data source

e) A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the VCS Joint PD&MR/3/, the applied methodology including applicable tool(s), and, where applicable, the applied standardized baseline

f) A review of calculations and assumptions made in determining the GHG data and emission reductions;

An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

2.5 Resolution of Findings

The objective of this phase of the verification is to resolve any outstanding issues which need to be clarified for VKU's positive conclusion on the project description. To guarantee transparency a verification protocol has been customized for the project. The protocol shows in a transparent manner the requirements, means of verification and the results from verifying the identified criteria. The verification protocol consists of three situations described below: -

A corrective action request (CAR) is raised if one of the following occurs:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;

- Inconsistent application of assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions;

- Issues identified in a FAR during previous assessment i.e., in validation or verification report to be cross verified during verification have not been resolved by the project participants.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

In summary, 2 CLs and 4 CARs were raised during this verification which were closed successfully and details are given under Appendix B of this report.

2.5.1 Forward Action Requests

Based on the review of the Joint Validation & Verification report /18/, no FAR was raised which needs to be closed during the current is verification. Also no FAR is raised during current verification.

2.6 Eligibility for Validation Activities

VKU has not undertaken any validation activities as part of the verification and does not hold accreditation for validation of any relevant sectoral scope Hence this section is not applicable.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project has not applied under any other GHG program except VCS. The project is registered under VCS only with registration ID 1739. This was confirmed by checking VERRA registry website for the project and, it was found that the project was registered with VCS. Simultaneously other registry websites were also checked such as CDM, GS and GCC but team could not find any such project registered on these registries thus it was confirmed that the project does not claim any emission reduction from other registries. This was further confirmed from the declaration/15/ submitted by PP in which they claimed that same GHG emission reductions of the project from VCS for the current monitoring period will not be claimed under other registries except VCS. Similar exercise of independently searching for such project registration or claim for current monitoring period was performed for other GHG related benefits such as REC and I-REC benefits and based on both independent assessment and declaration submitted by PP/15/, the assessment team accepted the claim that there is no double counting from this project activity for current monitoring period. Thus, ensuring emission reduction generated from the project activity will not be double counted hence accepted by the assessment team.

1. https://www.recregistryindia.nic.in/
2. http://cdm.unfccc.int/

3. http://www.goldstandard.org/

4. https://verra.org/verra-standards-and-programs/

Rejection by other GHG programs

The Project is not rejected by other GHG programs. A declaration/15/ for the same is checked and found correct by the assessment team. Also, assessment team independently verified with the following registries and checked projects from the PP matching the same project design and found that no such project either exists or were rejected by the registries.

The details of the registries checked are as follows:

1. http://cdm.unfccc.int/

2. https://www.recregistryindia.nic.in/

3. http://www.goldstandard.org/

4. https://verra.org/verra-standards-and-programs/

3.2 Methodology Deviations

There is no methodology deviation identified during the current monitoring period. Also, there were no methodology deviations identified during previous Joint validation and verification/18/.

3.3 Project Description Deviations

Deviation-1

PP has requested the deviation in section 1.8-Description of the project activity of VCS Joint PD&MR version 3 dated 05-April-2018/3/ in the current monitoring period 02-Jaunary-2018 to 28-Feburary-2022 /1/. PP has mentioned the generation voltage as 6.6 kV which is stepped up to 33 kV by a power transformer and is then transmitted through an overhead line to a 33 kV substation at Nathpa of Himachal Pradesh State Electricity Board. The metering is provided at the Nathpa sub-station which is the point where the power gets exported to the grid, but in actual generation voltage of the TDPS generator is 11 kV, it is stepped up to 33 kV by a power transformer and is then transmitted through an overhead line to a 33 kV substation at Bagtoo of Himachal Pradesh State Electricity Board. This was confirmed during onsite visit/17/ by the assessment team and now the description is in line with the actual scenario in place at the project site. The metering is provided at the project site which is the point where the power gets exported to the grid, therefore transmission losses 0.90% of units supplied from shaung, SHEP is considered. Thus, this deviation is sought for the change in generation voltage and change in sub-station which is a permanent type of deviation and doesn't alter the project design, additionality, emission reduction and its calculations thus, accepted by VKU Certification.

Deviation-2

PP has requested the deviation in section 4.3 Monitoring Plan of VCS Joint PD&MR version 3 dated 05-April-2018/3/ about the transmission losses calculation which is practiced onsite but was not incorporated in section 4.3 of VCS Joint PD&MR /3/ at the time of Joint Validation and Verification /18/. The process is now included in section 4.3 of current monitoring period report from 02-Jaunary-2018 to 28-Feburary-2022 (Including both dates) /1/ as per the current practice and accepted by VKU Certification by thorough desk review of the ER sheet/2/, JMRs/10/ and Invoices/12/ and interview with the site personnel during onsite visit/17/. This change is of permanent nature and does not have any impact on project design, additionality, emission reduction and its calculations

Deviation-3

PP has requested the deviation in section 4.3 Monitoring Plan of VCS Joint PD&MR version 3 dated 05-April-2018 /3/ to include the details of procedure of Emergency preparedness in section 4.3 of Monitoring report /1/ for current monitoring period which was left to be included in the Joint PD&MR and at the time of Joint Validation and Verification /18/. The procedure to measure energy when both the meters are not working and also measure taken for any breakdown/fault in the plant has been updated in section 4.3 of the monitoring report of current monitoring period from 02-January-2018 to 28-February-2022 (Including both dates) /1/ which is as per the current practice and PPA/14/ in place and this deviation is of permanent nature and doesn't alter the project design, additionality, emission reduction and its calculations thus, accepted by VKU Certification by thorough desk review and onsite visit/17/.

3.4 Grouped Project

This is not a grouped project. Therefore, this section is Not Applicable.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

During the onsite audit with PP representative, it was concluded that the project is implemented as per the requirement of the registered VCS Joint PD&MR/3/ and approved monitoring plan. The total capacity of the project activity is 3 MW. During the current monitoring period, it was observed that there was no unforeseen incident/event evolved which can impact the operation of the project activity in the current monitoring period except the less availability of water for six months from month of November to April for each year in the monitoring period from 02-January-2018 to 28-Februrary-2022. The project underwent continuous operation and only scheduled maintenance as per the manufactures specification which is acceptable to the assessment team. Moreover, there is no unforeseen incident which can affect the applicability of the methodology and thus the same is acceptable to the assessment team.

The project location was verified by the assessment team through Google earth during desk review and GPS map camera software during onsite visit /25/. Moreover, assessment team confirm that the latitude and longitude as mentioned in the registered VCS Joint PD&MR/3/ and VCS Joint Validation and Verification Report/18/.

Project Investor	DOC	Project Type	Capacity (MW)	Location	State	Latitude	Longitude
Darjeeling Power Pvt. Ltd.	15-04-2016	Hydro	3 MW	Shaung, Kinnaur	Himachal Pradesh	31°26'40" N	78°12'38" E

Starting date of the operation of the project activity is 15-April-2016 which is the date of commissioning/commercial operation of the Hydro power plant. Assessment team checked the commissioning certificate/10/ and confirmed that the date of commissioning for the Hydro power plant is correct.

Assessment team also confirmed during the onsite visit that there is a change in project design as discussed in section 3.2.1 of this report about the TDPS generator voltage and transmission loss calculation procedure in section 4.3 of monitoring report. The rest of the project design and implementation is as per the description provided in the registered VCS Joint PD&MR/3/.

The technical parameters have been verified with the name plates details of Hydro power plant and was also cross checked from the technical manual of the manufactures. The same could be verified from the VCS Joint Validation & Verification Report/18/. Assessment team confirms that the technical parameters are consistent with the registered VCS Joint PD&MR/3/. The technical specifications of the major components of the Hydro power plant are as follows.

The Component list for 3 MW Hydro power project is provided below

Sr. No.	Particulars	Details
1.	Horizontal twin jet Pelton Wheel Turbine all the accessories	1
2.	Electro hydraulic Micro Processor basedDigital Governor with all accessories	1
3.	Inlet Ball Valve	1
4.	Penstock Butterfly Valve withaccessories	1
5.	Oil Pressure Pumping System forGovernor and MIV	1
6.	Neutral Grounding Panel	1
7.	Lightning Arrestor and VoltageTransformer cubicle	1
8.	11 KV Breaker Panel	1
9.	Auxiliary Transformer	1
10.	Estimated design Life time	30 years.

Technical specifications of generator: -

Number of Generators	1
Rated Output	3000 KW + 25% over load
Power Factor	0.85
Rated Voltage	3.3 KV +/- 10%
Frequency	50 Hz
Range of Frequency Variation	50 +/- 3%
Number of Phases	3, star connected
Inertia Constant	Not less than 1.0
Short Circuit Ratio	Not less than 1.0

Technical specifications of turbines.

Number of Turbines	1
Type	Horizontal Shaft Pelton
Power Factor	3191 KW + 20% Overload
Rated Net Head	530.27 meter
Nominal Discharge	0.70 Cumecs
Maximum Pressure Rise	25%
Maximum Speed Rise	25%

The assessment team confirmed through onsite visit/19/ with PP representative that there is no proposed or actual change to the project design during this monitoring period. It was observed that the monitoring plan was implemented as per the registered VCS Joint PD&MR/3/and applied methodology, (AMS I.D), Version 18.0/7/. The organizational role and responsibility as mentioned in the registered VCS Joint PD&MR/3/is followed onsite. All the emergency preparedness as mentioned in the registered VCS Joint PD&MR/3/ is followed onsite and no discrepancies were found regarding the same.

Assessment team concludes the following:

- There are no material discrepancies between project implementation and the project description provided in the registered VCS Joint PD&MR/3/.

- The monitoring plan is implemented completely and monitoring system (i.e., process and schedule for obtaining, recording, compiling and analyzing the monitored data and parameters) is appropriate.

- There are no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology /7/.

- The GHG emission reductions or removals generated by the project have not been included in any emissions trading program or any other mechanism that includes GHG allowance trading/15/.

- The project has not received or sought any other form of environmental credit, or has become eligible to do so since previous validation and verification /19/.

- The project is registered under VCS only. PP has submitted the declaration/15/ stating, they will not claim same GHG emission reductions of the project from VCS for the current monitoring period when project is seeking to get GHG emission reduction from VCS. The same was verified by checking in other GHG programs including GS Registry, CDM, GCC, UCR.

- The project activity complies with four indicators for sustainable development i.e., social wellbeing, economic wellbeing, environmental wellbeing and technological wellbeing, in the interim approval guidelines for Clean Development Mechanism (CDM) projects from India as discussed under section 1.11 of MR /1/. Assessment team has verified the same during on site visit /19/ and found all the indicators to be effective and applicable for the project activity.

The Project activity has implemented activities that results in 3 SDG Contributions; 7.2, 13 and 8.6.

7.2.1: Renewable energy share in the total final energy consumption- 62,040 MWh of renewable electricity has been supplied to Indian grid during the current monitoring period that helped to increase the renewable energy share in the energy mix. The total energy supplied to Indian Grid by the project activity during its lifetime is 87,817 MWh (25,777 +62,040).

13: Tonnes of greenhouse gas emissions avoided or removed- By supplying 62,040 MWh of clean electricity to Indian grid, the project avoided release of 58,694 tCO2e in to the atmosphere during the current monitoring period. The greenhouse gas emissions avoided by the project activity during its lifetime 83,080 tCO_2e (24,386 +58,694).

8.6: Proportion of youth (aged 15-24 years) not in education, employment or training -Overall, 05 trainings were provided since project commissioning and those 5 project trainings were provided in the current monitoring period.

S. No.	Energy supplied by the project activity to grid during its lifetime (MWh)	GHG emissions avoided by the project activity during its lifetime (tCO_2e)	Proportion of youth (aged 15-24 years) not in education, employment or training	Monitoring Period dates
1	24,386	44,257	0	15-April-2016 to 01-January-2018
2	62,040	58,694	5	02-January-2018 to 28-Feburary-2022 (Current Monitoring period)

In view of the information' as verified above the assessment team is able to conclude that the project has been implemented as described in the Joint VCS PD&MR /3/.

4.2 Safeguards

4.2.1 No Net Harm

The project activity does not cause any harm to the local ecology. It primarily requires the installation of the Hydro power project, interfacing the generators with the State Electricity Board by setting up HT transmission lines and installation of other accessories.

Also, as per the Central Pollution Control Board of India notification small hydro project of less than 25 MW falls under White Category and are practically non-polluting.

Also following safety and structural features are incorporated to combat any adverse impact on ecology of the project area:

1. The placement of raised crested diversion weir across the river, has been done with due considerations to the effect on fish present in water. The weir is located at an altitude of +/- 1100 m above main sea level where the climate remains pleasant throughout the year. Critically important to the survival of fish population are water quality, water temperature and mobility. Catchment area upstream of the diversion weir is sparsely populated with plenty of vegetation. As such quality of water remains good throughout the year to facilitate fish population.

2. Some species of migratory fish normally ascend the tributaries of Bapsa river during the spawning season. However, in Bapsa river, no large size fishes are reported to be available. Water in the river flows in a shallow depth and thus remains sufficiently warm to keep the existing fish species surviving. Cold water fish species such as trout is not present in water.

3. The most common method for allowing fish to pass by an artificial obstruction such as the raised crested diversion weir as in the case of 3 MW Hydro project is the fish ladder. The design of Fish passage of 3 MW H.E. Project, Himachal Pradesh has been carried out largely in-line with the recommendations contained in "Design of Small Dams, United States Department of the Interior, Bureau of Reclamation". Examples of the type of fish ladder provided for 3 MW Hydro project have been depicted in a technical paper titled "Atlantic States Marine Fisheries Commission Fish Passage Working Group Upstream Fish Passage Technologies for Managed Species" published in September 2010.

4. Implementation of 3 MW Hydro project was taken-up under the guidelines laid down by HPJVNL - The appointed Nodal Agency of the Govt. of Himachal Pradesh. Himachal Pradesh is having a large number of small hydropower projects had been implemented as per the guidelines laid down by its State Nodal Agency HIMURJA. Thus, taking cue from HIMURJA, the Nodal Agency of Himachal Pradesh namely HPJVNL had laid down similar guidelines for implementation of small hydro schemes by the Private Developers.

5. As per the guidelines, it was mandatory to release Sacrificial Discharge, which would be Greater of 10% of Discharge which is available for 130 days in a 50% dependable year or 0.3 m^3/sec whichever is greater. Accordingly, for 3 MW Hydro project, sacrificial discharge of 1.761 m^3/sec, which is equal to 10% of the discharge available or 130 days in a 50% dependable year is being continuously released from the diversion weir. This discharge is being released perennially through a V-notch provided within the body of the weir. The V-notch abuts the left side wall of the gate pier and feeds the fish ladder and thus serves the twin purpose of releasing the desired minimum flow as well as providing the passage for movement of fish.

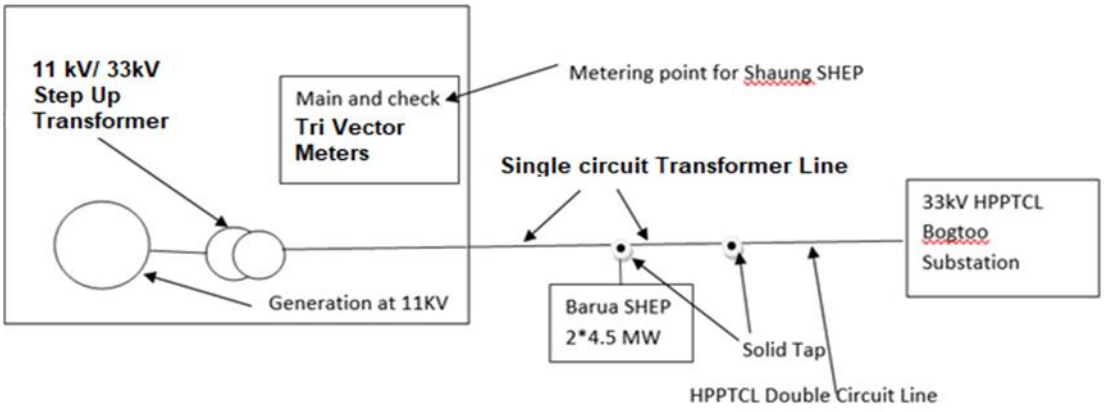
6. Design head being 54.5 m, although silt particles greater than 0.5 mm size could have been permitted to remain in the diverted water without causing appreciable early removal of metal from the turbine runners, a surface type de-silting tank has been provided to remove silt particles down to 0.2 mm size. The de-silting tank has been provided immediately downstream of the intake gates. The Dufour type de-silting tank comprises of twin basins placed parallel to each other and silt flushing pipes release the accumulated silt particles about 150 m downstream of the weir. The removal of silt particles, which leads to flushing of the de-silting tank; is accomplished through opening of the silt flushing gates provided on the silt flushing pipes. In addition to the above, a silt flushing valve placed centrally in the left side wall of the de-silting tank has been provided. This valve is opened occasionally to remove the excessive silt load during monsoon months.

7. The river bed where silt flushing discharge is released comprises of rocky and boulder strata, which does not get uprooted due to the action of silt laden flushing discharge which is released at a high velocity.

8. As stated earlier, silt trapping and flushing operations are required to be carried out only during the monsoon months when discharge in the river is quite high. During this period, river discharge often exceeds the discharge which is required to be passed through the intake gates. Since the small reservoir created upstream of the diversion weir always remains filled upto the brim, the high incoming discharge in the river overtops the weir and flows further downstream. The silt particles released from the silt flushing pipes are thus carried away further downstream by the river discharge overtopping the weir.

9. Bapsa river is a tributary of the mighty river Satluj. The entire range of the river between the diversion weir site and confluence point with River Satluj thus remains largely unaffected because of the silt flushing operations carried out in the de-silting tank 3 MW Shaung H.E. Project.

10. Water in River Bapsa remains largely clean for almost 9 months of the year (except the three monsoon months). Silt flushing gates of the two silt flushing pipes as well as the centrally placed silt flushing valve therefore, remain "shut" for almost 9 months. However, to keep the system in a healthy operating condition, these gates and the silt flushing valve are opened for about 15-20 minutes once every month even during the non-monsoon period when there is no silt in the water.



HPPTCL - Himachal Pradesh Power Transmission Corporation Limited
SHEP - Small Hydro Electric Project
KV - Kilovolt
MW - Maga Watt

SLD of the Project activity.

4.2.2 Local Stakeholder Consultation

The Project is already registered with VCS and registered VCS Joint PD&MR/3/; sections 2.2 describe the Local Stakeholder Consultation Process as in-line with VCS requirement. The Local Stakeholder Meetings were organized for local stakeholder consultation and informed local stakeholder regarding the meeting. The followings are the local stakeholders for the project activity:

- Local community
- Local village administration

- Technology suppliers
- Local vendors

All the stakeholders have been invited through public notice to attend the stakeholders meeting. The details of the Stakeholder Meetings are as follows:

Date of invitation – 01-Feburary-2011

Date of Meeting – 08-Feburary-2011

Location of Meeting - Project site, Shaung, Himachal Pradesh

In the introductory speech, the representative of Darjeeling Power Pvt. Ltd (Project Investor), Mr. Shyam Sundar welcomed the gathering and given a brief about the climate mitigation project activity. Subsequent to the introductory speech, stakeholders were explained about the electricity generation from hydro project is an environmentally friendly power generation technology contributing to reduction in GHG emissions. They were also explained about the benefits of the hydro power projects like, increasing energy availability and improving quality of power and its assistance to the local population by providing employment opportunities to both skilled & unskilled labours.

Meeting started with opening speech by representative of project participant. He introduced all guests on dais. The representative of project participant explained technical aspects of project to stakeholders. He also explained about social, environmental & economic benefits of the project. He also elaborated about carbon mechanism & its requirement for the current project. After the detailed discussions, the session was open for questions from stakeholders.

Most of the questions were related to employment opportunities, economic development, free electricity supply, benefits from project to villagers and other development activities.

The process of local stakeholder consultation is continuous. During the current monitoring period, the project proponent has kept grievance register in plant site office and sought comments/grievances/suggestions from local stakeholders including local community, government agencies and NGOs. Besides, the PP has also kept provision for submitting comments/grievances/suggestions from local stakeholders through direct mail. However, no major comments/grievances/suggestions have been received from the aforementioned stakeholders during the current monitoring period and verified from the grievance register placed at site/23/

4.3 AFOLU-Specific Safeguards

This is a non- AFOLU Project hence not applicable for this verification

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The project monitoring has been carried in accordance with the registered VCS Joint PD&MR/3/ and the monitoring report/1/. It involves 2 parameters to be monitrored $EG_{PJ,y}$ (Quantity of net electricity generation supplied by the project (3 MW Hydro) plant/unit to the grid in year y; MWh) and QC_{Diesel} (Volume of Diesel Consumed per annum; Litres) according

to the monitoring plan and monitoring report/1/. The parameter $EG_{PJ,y}$ value is sourced from JMRs/11/ and Invoices/12/. Proper calibrated meters of 0.2s accuracy class installed at site regularly monitor the import and export value which is monthly aggregated in JMRs. The parameter QC_{Diesel} value is sourced from Plant records for monitoring diesel consumption by the DG_{set}. ER sheet prepared by PP has been reviewed by assessment team thoroughly by cross checking the values of JMRs and Invoices submitted by PP and found correct including all the formulae and conversions and aggregations.

The monitoring plan laid in the registered VCS Joint PD&MR/3/ is being followed at the site/19/. The assessment team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values) in the MR/1/.The emission reductions are based on the net electricity generated and exported from the project. PP has provided all the sufficient data for current monitoring period. The values of the parameter net electricity generation supplied to the grid by each phase used in deriving the GHG emission reduction could be very well correlated between the data sets and ER spreadsheet/2/ provided by PP. The verification of each monitoring parameter has been discussed later in section 4.5.

The calculation method and formulae used in calculating baseline emission is in compliance to the methodology used i.e., AMS I.D. Version 18.0 /7/. Since project activity is a Hydro power project and no other kind of fossil fuel has been used in the current monitoring period on site thus no leakage emission is considered according to the methodology used. Project emissions are considered due to combustion of 1,449 litres of diesel in DG_{set} which amounts to 7 tCO_2e project emissions for the current monitoring period.

The assessment team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values) in the MR/1/. The emission reductions are based on the net electricity exported to the grid and diesel consumption in DG_{set}. PP has provided all the sufficient data for current monitoring period. The value of the parameter net electricity generation supplied to the grid by the project activity in deriving the GHG emission reduction could be very well correlated between the data sets and ER spreadsheet/2/ provided by PP.

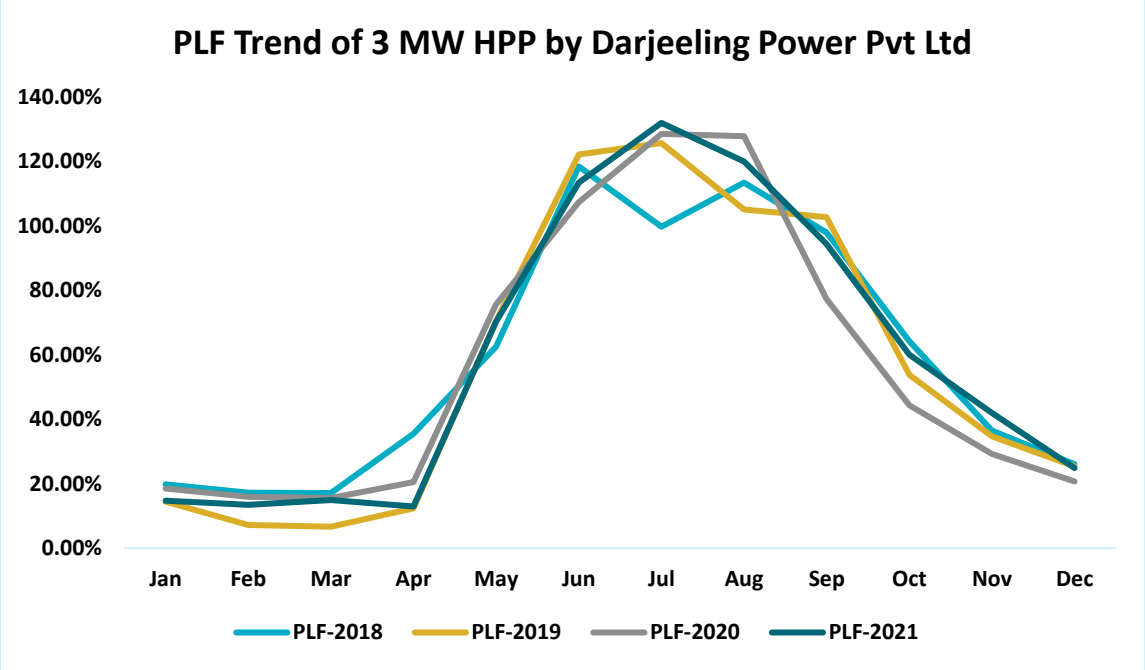
The expected emission reduction from the project activity for current monitoring period are 68,268 tCO_2e, whereas actual emission reductions achieved are 58,694 tCO_2e for the current monitoring period, which is 14.02% lower than what was anticipated.

Based on the analysis of the PLF generation for the last 4 years the assessment team found the following patterns in PLF for this project activity.

2018	PLF-2018	2019	PLF-2019	2020	PLF-2020	2021	PLF-2021
Jan	19.77%	Jan	14.47%	Jan	18.47%	Jan	14.78%
Feb	17.26%	Feb	7.23%	Feb	15.92%	Feb	13.42%
Mar	17.10%	Mar	6.66%	Mar	15.57%	Mar	14.96%
Apr	35.50%	Apr	12.31%	Apr	20.53%	Apr	12.93%
May	62.47%	May	70.44%	May	75.65%	May	70.28%

Jun	118.46%	Jun	122.22%	Jun	107.45%	Jun	113.45%
Jul	99.77%	Jul	125.74%	Jul	128.58%	Jul	132.00%
Aug	113.44%	Aug	105.10%	Aug	127.87%	Aug	120.06%
Sep	98.00%	Sep	102.77%	Sep	77.31%	Sep	94.42%
Oct	64.16%	Oct	53.72%	Oct	44.31%	Oct	60.02%
Nov	36.52%	Nov	34.73%	Nov	29.27%	Nov	41.93%
Dec	26.06%	Dec	25.39%	Dec	20.69%	Dec	24.90%
Average PLF	**59.04%**		**56.73%**		**56.80%**		**59.43%**

Upon plotting the data where the PLF was plotted month wise for the 4 years the following graph was obtained



From the graph it can be observed that the PLF varies for the last 4 years due to various factors that are beyond the control of the PP, primarily due to immoderate water flow during summers, the PLF peaks up during May, June, July and August months. The PLF exceeds 100% in these months while barely achieving 20-25% in the rest of the months.

Hence the assessment team concludes that the average PLF achieved during this monitoring period of 58% is due to factors beyond the control of the PP and is lower than the PLF considered in the registered Joint VCS PD&MR/3/.

The verification of each monitoring parameter has been discussed later in section 4.5 This lower generation of emission reduction is due to lower PLF achieved in current monitoring period which is highly driven by water availability and snow melt and PP do not have any control on it. In section 4.5 of this report and section 5.4 of MR /1/ calculations has been stated which are appropriately

presented in ER spreadsheet /2/ that has been verified by the assessment team from JMRs issued to PP by State utility/10/& invoices issued by PP to state electricity authority /12/ submitted to assessment team by PP.

Hence VKU states that the calculation method and formulae used in calculating baseline emission is in compliance to the tool used/29/ and methodology used i.e., AMS I.D. Version 18/7/. Since project activity is a Hydro power project no leakage emissions are considered according to the methodology used. Project emissions are considered due to combustion of 1449 litres of diesel in DG_{set} which amounts to 7 tCO_2e project emissions for the current monitoring period.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

During the verification, all relevant documents were checked to assess the correctness and quality of data submitted by the project participants, which are used to determine emission reductions.

All records needed for monitoring are archived in line with the requirements of the registered monitoring plan. No significant, lack of evidence and missing data were detected during verification. Hence, the verification team confirms that the monitoring system ensures required quality of the monitoring system to ensure the quality of the monitored data. All internal data are subjected to QA/QC measures.

The monitoring parameters in the project activity are "Quantity of net electricity generation supplied by the project (3 MW Hydro) plant/unit to the grid in year y, **$EG_{PJ,y}$ (MWh)** and Volume of Diesel Consumed per annum, **QC_{Diesel} (Litres)**. These parameters are monitored through controller reading of Hydro turbines generator and the reading of bulk energy meters installed at substation.

The below tables describe how the parameter **$EG_{PJ,y}$** and **QC_{Diesel}** is to be measured according to the monitoring plan, has been verified to confirm that the actual monitoring complies with the monitoring plan, monitoring data has been thoroughly assessed and that the calibration requirements are meet.

<table>
<tr><td>Parameter</td><td colspan="2">Quantity of net electricity generation supplied by the project (3 MW Hydro) plant/unit to the grid in year y, $EG_{PJ,y}$ (MWh)</td></tr>
<tr><td>Means of verification</td><td colspan="2"><table>
<tr><th>Criteria/Requirements</th><th>Assessment/Observation</th></tr>
<tr><td>Measuring /Reading /Recording frequency</td><td>The parameter is continously monitored but calculated and recorded on monthly basis.

The value of net electricity generation supplied to the grid is as per Joint Meter Reading Report.

Net electricity supplied to grid is calculated as the difference of the measured values of</td></tr>
</table></td></tr>
</table>

		"export", "import" and "transmission losses" of electricity through the dedicated SEB (State electricity board) energy meter installed at the delivery point (i.e., at Bagtoo substation).
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is on monthly basis in line with the monitoring plan as outlined in the registered Joint VCS PD&MR /3/ and monitoring methodology/7/.
	Monitoring equipment	Bidirectional Tri vector meter is used.
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The accuracy of the monitoring equipment used to measure the input values such as import and export to calculate net electricity generation value is 0.2s, which is as per the registered Joint VCS PD&MR /3/ which is as per the norm defined in the PPA/14/.
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes. The accuracy of monitoring equipment's is valid for the entire range.
	Calibration frequency /interval:	Calibration frequency of the meters is once is 5 years.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Yes. The calibration frequency is once in 5 years as outlined in the registered Joint VCS PD&MR /03/ is in accordance with the national standards of CEA - Electricity Act, 2003. /17/.

	Is the calibration of measuring equipment carried out by an accredited person or institution?	Calibration of the measuring equipment's is carried out by state utility of Himachal Pradesh State Electricity Board Limited (HPSEBL)
	Is(are) calibration(s) valid for the whole reporting period?	Yes, Calibration of meters is valid for the current monitoring period.
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes. The calibration is carried out appropriately.
	How were the values in the monitoring report verified?	Cumulative value of $EG_{PJ,y}$ for entire monitoring period is reported in the monitoring report/1/, and monthly values in the ER calculation sheet/2/. The monthly values were verified from the credit notes issued by state utility and found to be consistent. Value of this parameter for the current monitoring period was verified as 62,040.82 MWh
	If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of $EG_{PJ,y}$ were further cross checked with the monthly invoices raised by the PP /12/ to and found to be consistent.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	On site personnel interview/24/ with the project stakeholder of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable. The desk review of O&M agreements and register monitoring plan and its implementation in the current monitoring period is dine to satisfactorily verify that the system is in place.

	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CAR#01, CAR#02 and CAR#03 were raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The emission reduction calculation for the project activity is estimated based on the electricity supplied by the hydro power plant. Since 100% data was verified, the team can ascertain that the values taken for emission calculation are free from material errors.	

Parameter	**Volume of Diesel Consumed per annum, QC_{Diesel} (Litres)**	
Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	The parameter is calculated as per the consumption rate recorded in log book record of diesel consumption. The diesel consumed is monitored as and when consumed on the basis of level measuring scale and recorded it in records.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The parameter is monitored on daily basis and reporting frequency is in line with the monitoring plan as outlined in the registered Joint VCS PD&MR /3/ and monitoring methodology/7/.
	Monitoring equipment	Measuring scale with least count of 1mm.

		Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The accuracy class of measuring scale is 1mm	
		Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes, as a new measuring scale is used every year.	
		Calibration frequency /interval:	One year	
		Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Yes	
		Is the calibration of measuring equipment carried out by an accredited person or institution?	Not Applicable as the calibration is not conducted by an accredited person, instead a practice of purchasing new measuring scale is established.	
		Is(are) calibration(s) valid for the whole reporting period?	Yes	
		Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes	

	How were the values in the monitoring report verified?	Cumulative value of QC_{Diesel} for entire monitoring period is reported in the monitoring report/1/, and monthly values in the ER calculation sheet/2/. The monthly values were verified from the diesel receipts/26/ and log book records verified during onsite visit. Value of this parameter for the current monitoring period was verified as 1,449 litres.	
	If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of diesel consumed figures were further cross checked with the purchase receipt monthly by the PP /26/ and found to be consistent.	
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	On site personnel interview with the project stakeholder of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable. The desk review of plant log book record of diesel consumption and purchase invoices of measuring scale/28/ and registered monitoring plan and its implementation in the current monitoring period is done to satisfactorily verify that the system is in place.	
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.	
Findings	CAR#01, CAR#02 and CAR#03 were raised and resolved		
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.		

	The emission reduction calculation for the project activity is estimated based on the electricity supplied by the hydro power plant. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.

Parameters fixed ex ante:

$EF_{grid,OM,y,}$; tCO2/MWh: It is the operating margin CO2 emission factor in year y; the mentioned value of 0.9843 tCO2/MWh is consistent with the registered Joint VCS PD&MR/3/.

$EF_{grid,BM,y}$; tCO2/MWh: It is build margin CO2 emission factor in year y; the mentioned value of 0.9083 tCO2/MWh is consistent with the registered Joint VCS PD-MR /3/.

$EF_{grid,CM,y}$; tCO2/MWh: It is the combined margin CO2 emission in year y the mentioned value of 0.9462 tCO2/MWh is consistent with the registered Joint VCS PD&MR 1/3/.

$NCV_{Diesel,y}$; GJ/m^3, GJ/ton): It is the net calorific value of Diesel; the mention value of 43.3 GJ/ton is consistent with the registered Joint VCS PD&MR /3/

$EFCo_{2,Diesel,y}$; tCO2/TJ: It is the CO2 emission factor of Diesel; the mention value of 74.8 tCO2/TJ is consistent with the registered Joint VCS PD&MR /3/.

Calibration of meters:

During the verification assessment of the project activity, accuracy of all the metering have been checked and found appropriate. The installation and working conditions of the meters were checked during the site inspection and were found to be satisfactory.

Details of meters are provided in below table:

Meter Number and Type	Make and Type	Calibration Dates	Calibration valid till	Delay in Calibration
HPU05424 (Main Meter)	Secure, E3M024	22-January-2016	21-January-2021	No Delay
HPU05425 (Check Meter)		22-January-2016	21-January-2021	No Delay
HPU05424 (Main meter)		01-February-2017	31-January-2022	No Delay
HPU 05425 (Check meter)		01-February-2017	31-January-2022	No Delay
		HPU005424 (Main Meter), HPU005425 (Check Meter) replaced with HPU 06383 (Main meter), HPU 06384 (Check meter) on 02-August-2017		
HPU 06383 (Main meter)		01-August-2017	31-July-2022	No Delay
HPU 06384 (Check meter)		01-August-2017	31-July-2022	No Delay
HPU 06383 (Main meter)		18-August-2018	17-August-2023	No Delay
HPU 06384		18-August-2018	17-August-2023	No Delay

(Check meter)				
HPU 06383 (Main meter)		12-August-2019	11-August-2024	No Delay
HPU 06384 (Check meter)		12-August-2019	11-August-2024	No Delay
HPU 06383 (Main meter)		01-October-2021	30-September-2026	No Delay
HPU 06384 (Check meter)		01-October-2021	30-September-2026	No Delay
Substation meters				
HPU005623 (Main Meter)		01-August-2017	31-July-2022	No Delay
HPU005624 (Main Meter)		01-August-2017	31-July-2022	No Delay

Assessment on delay in calibration:

The energy meter calibration certificates/11/ are checked by assessment team with respect to their calibration validity, accredited entity, accuracy class, make and calibration date and found that the calibration details provided in the MR are correct. From the verification of above table, verification team also confirms that the energy meter calibrations are valid for the complete monitoring period i.e., from 02-January-2018 to 28-Febuarray-2022 (inclusive of both the dates).

The verification team has checked all the meters and confirmed that the meters were working satisfactorily. Also, the calibration of meters is completely under purview of state utility and PP has no control over the same as confirmed through interviews of site personnel and PPA /14/signed by the PP with state utility/12/.

Hence it can be concluded that the approach followed by the PP is conservative and in line with the guidelines provided under paragraph 3.4.2 of VCS Validation and Verification manual version 3.2/21/ and also in line with the para 366 of CDM Validation and Verification Standard /22/. The registered Joint VCS PD&MR/3/ & MR /1/ and onsite audit observations confirm that the metering equipment are sealed and maintained by the state utility.

The assessment team has verified the monthly credit notes issued by the state utility and confirmed that only the data recorded through main meters is used to calculate net electricity supplied to the grid consequently for ER calculations.

In view of the above discussion the assessment team is able to confirm that evidence used to determine the GHG reductions and removals are sufficient and appropriate with respect to quality and quantity.

GHG Calculations:

The emission reduction as per the applied methodology equals the baseline emissions. The formula provided for the calculation of baseline emissions is:

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

Where:

BE_y = Baseline Emissions in year y; tCO_2e

$EG_{PJ,y}$ = Quantity of net electricity generation supplied by the project activity to the grid in year y (MWh)

$EF_{grid,CM\ y}$ = Combined Margin CO_2 emission factor in year y (tCO_2e/MWh

The baseline emissions for the project activity for the current monitoring period are as follows.

Parameter	$EG_{PJ,y}$	$EF_{grid,CM,y}$	BE_y
Year	MWh	tCO_2/MWh	tCO_2e
02-January-2018 to 31-December-2018	15568.73	0.9462	14.731
01-January-2019 to 31-December -2019	14983.32	0.9462	14.177
01-January-2020 to 31-December -2020	15009.89	0.9462	14.202
01-January-2021 to 31-December -2021	15699.42	0.9462	14,854
01-January-2022 to 28-Feburary-2022	779.46	0.9462	737
		Total	58,701

Since the project activity is a hydro power project and plant needs extra energy supply through DG_{set} thus the project emission from diesel consumption is considered for this project in the following way: -

Project emissions would cover all the emissions which will result from operation of the project.

The only source of emissions from the project activity is the DG_{set} at the plant and the associated emissions due to operation of the same have been calculated in the following manner

$PE_y = EF_{Diesel} * QC_{diesel}$

Where:

PEy = Project Emissions (tCO_2e)

EF_{Diesel} = Emission Factor of Diesel (tCO_2e/litre)

QC_{Diese} = Quantity of diesel consumed (litres)

Parameter	EF_{Diesel}	QC_{diesel}	PE_y
Year	Litres	tCO_2e/litre	tCO_2e
02-January-2018 to 31-December-2018	164	0.00269	1.00
01-January-2019 to 31-December-2019	873	0.00269	3.00
01- January -2020 to 31-December-2020	109	0.00269	1.00
01-January 2021 to 31-December-2021	297	0.00269	1.00
01- January -2022 to 28-Febuary-2022	6	0.00269	1.00
		Total (tCO_2e)	7

The verification team confirms that appropriate methods and formulae for calculating baseline emissions and project emissions have been followed. The assumptions, emission factors and default values that were applied in the calculations are justified. The verification team confirms that appropriate methods and formulae for calculating baseline and project emissions have been followed and total baseline emissions achieved were 58,701 tCO_2e and project emissions achieved were 7 tCO_2e. Thus, the net GHG emission reduction and removal achieved for the current verification are 58,701 tCO_2e - 7 tCO_2e = 58,694 tCO_2e.

The assumptions, emission factors and default values that were applied in the calculations are justified. The actual emission reduction achieved are 14.02% less than the estimated figure to match the monitoring period as per registered VCS Joint PD&MR/3/, which is due to the low PLF achieved by the project activity during the current monitoring period which is completely governed by the availability of water and melting of snow which is a natural phenomenon and same is beyond the control of PP.

This comparison is submitted in the ER sheet along with a justification confirming that this event of lower power generation was an unforeseen situation and also not under the direct control of PP. Since the emission reduction is less than the estimated emission reduction, no further justification is required.

All the data were made available and have been monitored as per required monitoring frequency. The means of verification for the values of parameters, used for baseline emission calculation and project emission calculation, is described above.

VKU is of the opinion that this method of calculation of emission reductions is accurate and results in conservative estimation of emission reduction and is in line with the applicable VCS requirements.

4.6 Non-Permanence Risk Analysis

There is no non-permanence risk rating determined by the project proponent for the project activity hence not applicable.

5 VERIFICATION CONCLUSION

VKU Certification Pvt. Ltd. (here after VKU) has performed second verification of first crediting period reported for the project activity "3 MW Hydro Power Project by Darjeeling Power Pvt. Ltd" in India, VCS Registry Project ID 1739, for the period 02-January-2018 to 28-Feburary-2022 (Inclusive of both start and end date), with regard to the relevant requirements for VCS activities. As described in the report from section 1 to 4, VKU has performed the entire verification according to the verification criteria for projects and their GHG emission reductions or removals set out in VCS Standard Version 4.3/5/. The project participants of the "3 MW Hydro Power Project by Darjeeling Power Pvt. Ltd" project is responsible for:

- The preparation of greenhouses gas emissions data and the reported greenhouse gas emission reductions from the project on the basis set out in the monitoring plan contained in the registered VCS Joint PD&MR/3/ version 3.0 of 05-April-2018.
- The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of greenhouse gas emission reductions of the project.

It is the responsibility of VKU to express an independent verification opinion about the project's conformity with the requirements of VCS Standard version 4.3 /5/and GHG program applied, on the reported greenhouse gas emission reductions from the project.

Based on documented evidence and corroborated by an on-site assessment, VKU can confirm that:

- The project has been implemented and operated as per the registered VCS Joint PD&MR/3/;
- The monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS Standard version 4.3/5/ requirements;
- The monitoring is in place as per the applied baseline and monitoring methodology/7/
- The monitoring plan in the registered VCS Joint PD&MR/3/is as per the applied baseline and monitoring methodology /7/ and tool applicable/29/.

VKU Certification; verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. VKU Certification planned and performed the verification by obtaining evidence and other information and explanations that VKU Certification considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated. It is VKU's opinion that the GHG emission reduction stated in the final monitoring report version 4.0 of 11-December-2022 for the "3 MW Hydro Power Project by Darjeeling Power Pvt. Ltd" in India for the period 02-January-2018 to 28-Feburary-2022 (Inclusive of both start and end dates) are fairly stated.

The GHG emission reductions are calculated on the basis of approved methodology (AMS I.D) version 18.0/7/ and the monitoring plan included in the registered VCS Joint PD&MR, version 3.0 of 05-April-2018/3/.

Hence VKU is able to certify that the emission reduction from the project during the monitoring period 02-January-2018 to 28-Feburary-2022 (Inclusive of both start and end dates) amounts to 58,694 tCO_2e.

Verified GHG emission reductions and removals in the above verification period:

The following table shows the Net Emission Reduction from 02-January-2018 to 28-Feburary-2022 (Inclusive of both start and end dates).

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
Year 2018 (02-January-2018 to 31-December-2018)	14,731	1	0	14,730
Year 2019 (01-January-2019 to 31-December-2019)	14,177	3	0	14,174
Year 2020 (01-January-2020 to 31-December-2020)	14,202	1	0	14,201
Year 2021 (01-January-	14,854	1	0	14,853

2021 to 31-December-2021)				
Year 2022 (01-January-2022 to 28-February-2022)	737	1	0	736
Total	**58,701**	**07**	**0**	**58,694**

APPENDIX X: ABBREVIATIONS

Abbreviations	Full texts
BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CER(s)	Certified Emission Reduction(s)
CH4	Methane
CL	Clarification Request
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DPPL	Darjeeling Power Private Ltd.
EB	Executive Board
EF	Emission Factor
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MoV	Means of Verification
MR	Monitoring Report
NGO	Non-governmental Organization
ODA	Official Development Assistance
PD	Project Description
PE	Project Emission
PP(s)	Project Participant(s)
Ref.	Document Reference
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
UNFCCC	United Nations Framework Convention on Climate Change
VCU	Verified Carbon Unit
VKU	VKU Certification Ltd.
VCS	Verified Carbon Standard
VVS	Validation and Verification Standard
VVB	Validation and verification body

APPENDIX B: AUDIT FINDINGS

Type			Date	20-August-2022
CL#01			Reference	Section of Ver protocol:1 MR
Description of the Non-Conformance				
1. PP is requested to provide a declaration stating they are not claiming credits from any other form of GHG Program in section 1.9. 2. PP is requested to provide a declaration stating they are not claiming any other form of GHG related environmental credits and other form of emission trading and other binding limits in section 1.10 3. PP is requested to provide the supporting documents for the training conducted in the current monitoring period from 02-January-2018 to 28-February-2022 in section 1.11.				
1st Response from PP			**Date**	26-August-2022
1. Declaration stating, they are not claiming credits from any other form of GHG Program has been provided. 2. Declaration stating, they are not claiming any other form of GHG related environmental credits and other form of emission trading and other binding limits has been provided. 3. Training records have been provided.				
1st Assessment by Audit Team	**Status**	Open	**Date**	06-September-2022
Assessment team confirms from the submitted documents that PP has not submitted the declaration and training records to VVB for verification. Hence CL#01 is Open				
2nd Response from PP			**Date**	10-October-2022
Declarations and training records have been submitted.				
2nd Assessment by Audit Team	**Status**	Closed	**Date**	18-October-2022
Assessment team confirms that PP has submitted the declaration and training records of all 5 trainings conducted in current monitoring period to VVB for verification. Hence Accepted. CL#01 is closed				

Type			Date	26-November-2022

CL#02	Reference	Section of Ver protocol: MR

Description of the Non-Conformance

1. Please clarify the intention of the intervention, considering that the goal is to reduce the proportion of youth not in education in section 1.11 of MR
2. Please provide a block or SLD to schematically represent the description in section 2.1 of MR. Without the diagram it is not clear on the general layout of the project and to cross check the project design.
3. Please clarify whether this is the technical specifications or the component list of the project activity in section 3.1 of MR
4. As per the monitoring plan, the meter placed at the substation is used for generating invoices and is an important monitoring equipment with respect to measurement of energy from this project activity. The SLD does not mention it. Please clarify
5. As per calibration certificate the accuracy class is 0.2s. Please clarify
6. What is the monitoring and calibration procedure of the measuring scale in section 4.2 of MR
7. Please clarify the importance of mentioning CDM in the organisation chart mentioned in section 4.3 of MR
8. How is transmission losses taken into account? The invoices mention about the transmission loss; however, the registered monitoring plan does not mention about the same. Please clarify if this requires deviation as per section 3.19 of the VCS v4.3 requirements.
9. Actual value obtained is 0.016 tCO2e and the PP has rounded this up to 1, i.e., by a factor of 100 in section 5.2 of MR. Why was this rounding up not done for rest of the calculation above as part of conservativeness? PP is requested to clarify on the approach used.

1st Response from PP	Date	30-November-2022

1. Sentence is reframed now that project activity implemented to reduce the Proportion of youth (aged 15-24 years) not in education, employment or training
2. SLD has been added in section 2.1 of the MR.
3. Section 3.1 of the MR has been updated.
4. Section monitoring plan of the MR have been updated as meters placed at the project site is used for generation invoices as transmission losses 0.90% of the units supplied from Shaung SHEP is considered.
5. AS per the Calibration certificate the accuracy class is 0.2s that has been updated in section 4.2 of the MR.
6. PP has procured new measuring scale each year to measure the diesel consumption
7. Revised organisation chart has been provided in monitoring report
8. Deviation has been taken for transmission losses details.
9. Values of project emissions already rounded up as a conservative approach for all year

1st Assessment by Audit Team	Status	Open	Date	20-December-2022

1 PP has reframed the sentence in section 1.11 of MR and now it is consistent and hence accepted.

2. PP is requested to update the value of greenhouse gas emissions per year under "13.0 net impact on SDG indicator". Please clarify that the value mentioned is correct as the summation of the two verification values does not match.

3. SLD has been added by PP, However PP is requested to expand the abbreviations used in SLD

4. Section 4.3 monitoring plan of the MR for transmission loss calculation is now updated in revised MR version 04. Hence Accepted.

5. Accuracy class of meters is 0.2s and it is found to be correct in the revised MR version 4.0. Hence accepted.

6. PP is requested to provide evidence for new measuring scale each year to measure the diesel consumption.

7. Assessment team confirms that PP has revised the organisation chart provided in revised MR version 4.0. Hence accepted.

8. PP has taken a deviation in section 3.2 for transmission loss calculation and verified. Hence accepted.

9. For the project emission calculation, PP is requested to clarify how 0.016 tCO2e is equivalent to 1 in ER sheet and MR section 5.3.

CL#02 is Open

2nd Response from PP	**Date**	11-January-2023

The value of greenhouse gas emissions per year has been updated under "13.0 net impact on SDG indicator"

3. Abbreviations has been expended in SLD

6. Receipt of purchase of new measuring scale each year to measure the diesel consumption has been submitted.

9. Project emission is rounded up as a conservative approach for all year in ER sheet and MR. Please refer below details

			Without Rounded Up	Rounded up Value	
Year	EF_{Diesel}	QC_{diesel}	PE_y	PE_y	Unit
	A	B	C=A*B	D=Roundup(C,0)	
02-January-2018 to 31-December-2018	164	0.00269	0.44087	1.00	tCO_2e
01-January-2019 to 31-December-2019	873	0.00269	2.34683	3.00	tCO_2e
01-January-2020 to 31-December-2020	109	0.00269	0.29302	1.00	tCO_2e

01-January-2021 to 31-December-2021	297	0.00269	0.79841	1.00	tCO_2e
01-January-2022 to 28-February-2022	6	0.00269	0.01613	1.00	tCO_2e
PEy (As per PP consumption record)	1449		3.89526	**7.00**	tCO_2e

2nd Assessment by Audit Team	**Status**	Closed	**Date**	23-January-2023

2. Assessment team confirms that the value of greenhouse gas emissions per year has been updated under section 1.11 of revised MR version 4.0 for SDG Parameter-13 and thus accepted.

3. Assessment team confirms that the Abbreviations has been expanded in SLD in section 2.1 of revised MR version 4.0, thus accepted.

6. Assessment team confirms that PP has submitted the receipt of purchase of new measuring scale each year to measure the diesel consumption and found to be correct thus accepted.

9. Assessment team performed the normal operations in the ER sheet and found out that PE is coming as 3.89 tCO_2e which is found to be lower than 7 tCO_2e PE calculated by PP following the roundup operations. Hence the assessment team accepted PP's claim due to more conservativeness in values.

CL#02 is Closed

Type	**Date**	20-August-2022
CAR#01	**Reference**	Section of Ver protocol: ER Sheet

Description of the Non-Conformance

1. PP is requested to clarify why import value is taken as it is whereas the export value is multiplied with generation ratio for the day for the month of January-2018 and Feburary-2022.
2. PP is requested to provide the import and export value for December 2019 as per the JMRs provided to VVB.
3. PP is requested to provide a working hyperlink for CEA Database in Project emission sub-sheet of ER Sheet
4. PP is requested to provide the diesel consumption records such as log book records and purchase orders to verify the diesel consumed in the current monitoring period.

1stResponse from PP	**Date**	26-August-2022

1. Generation ratio has been calculated based on the day wise electricity generated by the project activity which is exported to the grid for respective months. Further Import of electricity is from the grid to the project activity is for start-up of plant or any maintenance work carried out during the operation of project activity. Hence generation ratio has been applied on export value and not on import value as a conservative approach.
2. Import and export value for December 2019 have been provided.
3. Hyperlink for CEA Database in Project emission sub-sheet of ER Sheet is being updated.
4. Diesel consumption log book records have been submitted.

1st Assessment by Audit Team	Status	Open	Date	06-September-2022

1. PP has clarified the application of generation ratio only on export and not on import value as it is a conservative approach. OPEN
2. PP has updated the revised ER sheet and updated the value of export and import for December 2019.
3. PP has updated the hyperlink for CEA Database in Project emission sub-sheet of revised ER Sheet.
4. PP has submitted the log sheet of diesel consumption record. However, PP has not submitted the purchase records of diesel consumption. OPEN
5. Additionally, PP is requested to provide the basis of the calculation of theoretical diesel consumption Project emissions in section 5.2. OPEN

Hence CAR#01 is Open

2nd Response from PP	Date	10-October-2022

1. To calculate generation ratio for import from state utility, PP do not have day wise electricity import values for respective months as it is not provided by state utility and PP don't have control over it. Hence, not possible to calculate the generation ratio for import value. So, import value is considered as it is as a conservative approach.
4. Purchase records of diesel consumption have been submitted.
5. Calculation of project emission has been updated as per VCS PD in monitoring report.

2nd Assessment by Audit Team	Status	Closed	Date	18-October-2022

1. Assessment team confirms that since project monitoring period starts from 02-January-2018 thus PP has calculated the generation for 30 days of January month for export value whereas same data is not available for import value thus it is nit considered in calculation.

4.Assessment team confirms the purchase records of diesel consumption have been submitted by PP and found to be consistent with the values mentioned in ER sheet. Hence it is accepted by VVB

5.PP has updated the calculation of project emission as per VCS PD&MR are found to be correct. Hence it is accepted by VVB

CAR#01 is Closed

Type			Date	20-August-2022
CAR#02			Reference	Section of Ver protocol: MR
Description of the Non-Conformance				
During the site visit of the 3 MW Hydro Power Project by Darjeeling Power Pvt. Ltd. It is noted that the rated generation voltage of the TDPS generator is 11 kV and it is stepped up to 33 kV and then transmitted through an overhead line to a 33 kV substation. However, it is mentioned on the page 7 of the VCS PD that the generation voltage is 6.6 KV. PP is requested to correct the same in section 3.1 of the MR.				
1st Response from PP			**Date**	26-August-2022
In section 1.8 Description of the project activity of Joint project description and monitoring report: VCS version 3 dated 05-April-2018 mentioned that the generation voltage is 6.6 kV, but in actual generation voltage of the TDPS generator is 11 kV and the same has been corrected in section 3.1 of MR. Thus, deviation is sought for the change in generation voltage. This is permanent type of deviation.				
1st Assessment by Audit Team	**Status**	Closed	**Date**	06-September-2022
During onsite visit it was noted that the rated generation voltage of the TDPS generator is 11 KV and it is stepped up to 33 kV and then transmitted through an overhead line to a 33 kV substation at Bagtoo of Himachal Pradesh State Electricity Board. The same has been updated in revised MR version 02 submitted to VVB for verification. Hence Accepted CAR#02 is Closed				

Type			Date	06-Spetember-2022
CAR#03			Reference	Section of Ver protocol: MR
Description of the Non-Conformance				
1. Assessment team has verified from the submitted documents that PP has not submitted the grievance register photograph kept on site. Kindly provide the same to verify the ongoing communication in section 2.2 of revised MR version 02. 2. PP is requested to clarify the stepped-up grid capacity as this is found to be inconsistent with the block diagram provided to VVB in section 3.1 of revised MR version 02.				

3. PP is requested to clarify the inconsistency in the baseline emissions value in revised ER sheet and revised MR submitted to VVB.
4. PP is requested to clarify the inconsistency in values of Project emissions vintage wise in revised ER sheet and MR version 02 in section 5.4
5. PP is requested to update the serial number of the main and check meter as they are found to be inconsistent with the Meter replacement MOM provided to VVB in Appendix section.
6. PP is requested to provide the meter calibration certificates of all check meter for all the years for verification.
7. PP is requested to clarify if the date of replacement of energy meter is also the calibration date of new energy meter installed and how the energy was metered appropriately on the date of replacement of energy meter.
8. PP is requested to clarify the inconsistency in the date of calibration of Main meter for year 2019 and 2021.
9. PP is requested to provide the calibration certificates for the main meter and check meter for the substation meter.

1st Response from PP	Date	10-October-2022

1. The photograph of the grievance register kept on site has been provided to assessment team.
2. The stepped-up grid capacity is 33 KV, the same has been updated in the block diagram.
3. Baseline emissions value has been made consistent in MR as per ER sheet.
4. Vintage wise project emissions have been made consistent in section 5.4 of MR as per ER sheet.
5. Main and check meter serial no. has been made consistent in line with the Meter replacement MOM provided to VVB in Appendix section.
6. Meter calibration certificates of all check meter for all the years has been provided for verification.
7. Replacement date is not a calibration date of the new meter. State utility replaced old meter with the spare tested/calibrated new meter. The calibration details have been updated in the MR and provided to assessment team.
   Further, state utility applied following procedure to measure the consumption of energy when meter was replaced/calibrated.
   If both the main and check/backup meters are replaced then the correction applied to the consumption registered by the main meter to arrive at the correct consumption of energy for billing purposes for the period of two billing months prior to the month in which calibration/replacement has been done and up to the time of calibration/replacement of the meter.
   PP don't have the control over the above procedure applied by state utility.

8. Date of calibration of Main meter for year 2019 and 2021 has been updated.
9. Calibration dates for the main and check meter of the substation meter are taken from the Final verification report dated 05-April-2018 available on the VCS 1739 Verra website. https://registry.verra.org/app/projectDetail/VCS/1739

1st Assessment by Audit Team	Status	Open	Date	26-November-2022

1. PP has submitted the Grievance Register as well. Hence Accepted
2. Assessment team has verified the stepped-up grid capacity is 33 KV, the same has been updated in the block diagram. Hence it is accepted by VVB
3. Assessment team has verified the value of baseline emission found to be consistent. Hence it is accepted by VVB
4. Assessment team has verified the value of project emission found to be correct. Hence it is accepted by VVB
5. Assessment team has verified the main and check meter serial number found to be correct. Hence it is accepted by VVB
6. PP has provided all check meter calibration certificates and found to be correct. Hence it is accepted by VVB
7. In reply to CAR#03 sl no 07 query, PP has stated a procedure to measure energy when both the meters are not working. Please clarify why the monitoring measures mentioned is not part of emergency procedures. Also why is it not in line with section 3.19 of the VCS v4.3 with respect to project description deviation.
8. PP has updated the date of calibration found to be correct. Hence it is accepted by VVB
9. Assessment team has verified the calibration dates for the substation meter are found to be correct. Hence it is accepted by VVB

CAR#03 is Open

2nd Response from PP	Date	30-November-2022

Emergency preparedness details has been updated in section 4.3 of MR

2nd Assessment by Audit Team	Status	Open	Date	20-December-2022

Assessment team has checked the revised MR version 04 and it is found that the emergency procedure is updated but it is not consistent with the registered VCS Joint PD&MR and this is a deviation from the registered VCS Joint PD&MR. Hence not accepted.

CAR#03 is Open

3rd Response from PP	Date	11-January-2023

In section 4.3 monitoring plan of Joint project description and monitoring report: VCS version 3 dated 05-April-2018 details of procedure of Emergency preparedness are not mentioned. However, details procedure to measure energy when both the meters are not working and also measure taken for any breakdown/fault in the plant has been updated in section 4.3 of the monitoring report of monitoring period from 02-January-2018 to 28-February-2022 (Inclusive of both days). The change doesn't alter the project design, additionality, emission reduction and its calculations. The nature of deviation is permanent

3rd Assessment by Audit Team	Status	Closed	Date	17-January2023
Assessment team confirms that PP has updated the Emergency preparedness plan by taking Deviation-3 in section 3.2.2 of revised MR version 4.0 dated 11-December-2022. Hence accepted. CAR#03 is Closed.				

Type			Date	26-November-2022
CAR#04			Reference	Section of Ver protocol: MR
Description of the Non-Conformance				
1. PP is requested to use consistent date format throughout the MR 2. Please provide the location with direction, legend, coordinates as per the requirements of guidance in section 1.7 of MR 3. Please provide references to the energy generated and emission reduction data mentioned in section 1.11 of MR 4. Please indicate the distance from the power station in section 3.1 of MR 5. Please mention the relevant clause and the requirements leakage in section 5.3 of MR 6. As per the ER sheet the PLF achieved for the full years of the monitoring period ie., 2018, 2019, 2020, 2021 are 59.04%, 56.73%, 56.80% and 59.43% respectively. This is lower than the PLF mentioned in registered PD and validation report of 71%. PP is requested to clarify how this is consistent with the IRR and sensitivity analysis mentioned at the time of validation.				
1stResponse from PP			**Date**	30-November-2022
1. MR have been updated as per requirement. 2. Location with direction, legend, coordinates has been provided in section 1.7 of MR 3. References for the energy generated and emission reduction data has been provided in section 1.11 of MR 4. Distance from the power station has been updated in section 3.1 of MR 5. Relevant clause and the requirements leakage has been updated in section 5.3 of MR 6. Section 5.4 of the monitoring report have been updated.				
1stAssessment by Audit Team	**Status**	Open	**Date**	20-December-2022
1. Assessment team confirms that PP has updated the date format and consistent throughout the MR. Hence accepted 2. Assessment team confirms that PP has updated the location according to the MR template version 4.1. Hence accepted				

3. Assessment team confirms that PP has provided the references in section 1.11 of revised MR version 4.0. Hence accepted.

4. Assessment team confirms that PP has updated the distance from the power station in section 3.1 of revised MR version 4.0. Hence accepted.

5. Assessment team confirms that PP has updated the relevant clause and the requirements leakage in section 5.3 of revised MR version 4.0. Hence accepted

6. PP is requested to explain how PLF achieved for the full years of the monitoring period ie., 2018, 2019, 2020, 2021 are 59.04%, 56.73%, 56.80% and 59.43% respectively. This is lower than the PLF mentioned in registered PD and validation report of 71%. PP is requested to clarify how this is consistent with the IRR and sensitivity analysis conducted at the time of validation which was performed for PLF between +/- 10% of 71%.

CAR#04 is Open

2nd Response from PP	**Date**	11-January-2023

The PLF were considered at the time of validation 71.1 %, whereas actual PLF during current monitoring period is 59.40% for 2018, 56.73% for 2019, 56.80% for 2020 and 59.43% for 2021, The generation of electricity depends upon the water availability, which is influenced by natural phenomena of melting of snows and rainfall and not within the control of the project participant. The lower generation during the current verification period was hence due to lower availability of water during the same period from November to April months of each year, same is updated in monitoring report also.

2nd Assessment by Audit Team	**Status**	Closed	**Date**	23-Jaunary2023

Assessment team has verified the revised ER sheet and the monitoring report where PP has stated the PLF achieved by the plant over the entire monitoring period of 4 years and 2 months from 02-Jaunary-2018 to 28-Feburary-2022 (Inclusive of both dates). Upon thorough review of the data by the assessment team in section 4.4 of this report it was confirmed that PLF varies for the monitoring period years due to various factors that are beyond the control of the PP, primarily due to immoderate water flow during summers when PLF peaks up during May, June, July and August months. The PLF exceeds 100% in these months while barely achieving 20-25% in the rest of the months. Hence, the average PLF achieved during this monitoring period of 58% is due to factors beyond the control of the PP and is lower than the PLF considered in the registered Joint VCS PD&MR which is acceptable.

Hence CAR#04 is Closed

~~Type~~			~~Date~~	~~DD/MM/YYYY~~
~~FAR~~			~~Reference~~	~~Section of VAL/VER~~
~~Description of the Non Conformance~~				
~~1st Response from PP~~			~~Date~~	~~DD/MM/YYYY~~
~~1st Assessment by Audit Team~~	~~Status~~	~~Open/Closed~~	~~Date~~	~~DD/MM/YYYY~~

APPENDIX C: COMPETENCE STATEMENT

Team Leader-

Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Rakesh Chouhan
Nationality	India
Countries of Experience	India
Education Qualification	M. Tech- Energy Management B. E. - Chemical Engineering
Year of Experience	17 Years
Area of Expertise	Climate Change & Environment / Industry
Eligible Sectoral Scope	1. GHG emission reductions from fuel combustion

Roles

Team Leader	YES
Validator	YES
Verifier	YES
Financial Expert	No
Technical Reviewer	YES
TA Expert (TA1.1, TA1.2 and TA3.1)	YES

Technical Reviewer

Certification Pvt. Ltd. VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Sanjay Kumar
Nationality	Indian
Countries of Experience	India
Education Qualification	B.E. (Civil Engineering) M. Tech (Environmental Engineering)
Year of Experience	20 Years +
Area of Expertise	Climate Change & Environment Sustainable Development GHG Footprints
Eligible Sectoral Scope	TA 1.1 - Thermal energy generation and Renewables TA 1.2 - Renewables TA 3.1 - Energy Demand TA 6.1 - Construction TA 13.1 - Solid waste and wastewater TA 13.2 - Manure

Roles

Team Leader	YES
Validator	YES
Verifier	YES
Financial Expert	YES
Technical Reviewer	YES
TA Expert (1.1, 1.2, 3.1, 6.1, 13.1, 13.2)	YES