Verification Report

UCR ID: 115

Prepared by

Naturelink Solutions Pvt. Ltd.

Title	**11 MW bundle of Small-scale Hydro Power Project by M/s. Balaji Energy Pvt. Ltd.**
Project Owner	**M/s Balaji Energy Pvt. Ltd.**
Project Location	**Village: Somasila, Dist.: Nellore, State: Andhra Pradesh, India.** **Coordinates: 14°29'15.0"N 79°18'25.0"E**
Date	**29/04/2024**

COVER PAGE Project Verification Report Form (VR)	
BASIC INFORMATION	
Name of approved UCR Project Verifier / Reference No.	Naturelink Solutions Pvt. Ltd
Type of Accreditation	☐ CDM Accreditation ☐ ISO 14065 Accreditation ☒ UCR Approved Verifier
Approved UCR Scopes and GHG Sectoral scopes for Project Verification	Sectoral Scope: 01 Energy Industries
Validity of UCR approval of Verifier	May - 2022 onwards
Completion date of this VR	29/04/2024
Title of the project activity	11 MW bundle of Small-scale Hydro Power Project by M/s. Balaji Energy Pvt. Ltd.
Project reference no. (as provided by UCR Program)	115
Name of Entity requesting verification service	M/s. Creduce Technologies Private Limited (Aggregator) M/s. Balaji Energy Pvt. Ltd. (Project owner)
Contact details of the representative of the Entity, requesting verification service (Focal Point assigned for all communications)	Shailendra Singh Rao (Creduce) shailendra@credcue.tech M/s. Balaji Energy Pvt. Ltd. balajibepl@rediffmail.com
Country where project is located	India
Applied methodologies	AMS-I.D: Grid connected renewable electricity generation– Version 18.0
Sectoral Scope(s):	1 Energy industries (renewable - / non-renewable sources)
Project Verification Criteria: Mandatory requirements to be assessed	☒ UCR Verification Standard ☒ Applicable Approved Methodology

	☐ Applicable Legal requirements /rules of the host country ☒ Eligibility of the Project Type ☒ Start date of the Project activity ☒ Meet applicability conditions in the applied methodology ☒ Credible Baseline ☒ Do No Harm Test ☒ Emission Reduction calculations ☒ Monitoring Report ☒ No GHG Double Counting ☐ Others (please mention below)
Project Verification Criteria: Optional requirements to be assessed	☒ Environmental Safeguards Standard and do-no-harm criteria ☐ Social Safeguards Standard do-no-harm criteria
Project Verifier's Confirmation: The *UCR Project Verifier* has verified the UCR project activity and therefore confirms the following:	The UCR-approved verifier Naturelink Solution Pvt. Ltd., verifies the following with respect to the UCR Project Activity "11 MW bundle of Small-scale Hydro Power Project by M/s. Balaji Energy Pvt. Ltd." ☒ The project aggregator has correctly described the project activity in the Project Concept Note/9/ including the applicability of the approved methodology AMS-I.D/4/ and meets the methodology applicability conditions and has achieved the estimated GHG emission reductions, complies with the monitoring methodology and has calculated emission reductions estimates correctly and conservatively. ☒ The project activity is likely to generate GHG emission reductions amounting to the estimated 45,808 tCO_2e, as indicated in the monitoring report Ver.1/10/ & Ver.2/19/, which are additional to the reductions that are likely to occur in the absence of the Project Activity and complies with all applicable UCR rules, including ISO 14064-2 and ISO 14064-3.

	☒ The project activity is not likely to cause any net-harm to the environment and/or society ☒The project activity complies with all the applicable UCR rules and therefore recommends UCR Program register the Project activity with above mentioned labels.
Project Verification Report, reference number and date of approval	Verification Report UCR Reference no.: NSPL/VR/2024/03/UCR/09 UCR ID: 115 Version: 1.0 Date: 29/04/2024
Name of the authorised personnel of UCR Project Verifier and his/her signature with date	 Mr. Shyam Mandliya GHG Assessor Naturelink Solution Pvt. Ltd. Date: 29/04/2024

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1. Project Verification Report

1.1 Executive Summary

The verification work has been contracted by project aggregator Creduce Technologies Pvt Ltd and M/s. Balaji Energy Pvt. Ltd. to perform an independent verification of its UCR project titled **"11 MW bundle of Small-scale Hydro Power Project by M/s. Balaji Energy Pvt. Ltd." UCR approved project ID:115**, to establish a number of CoUs generated by the project over the crediting period from 01/01/2022 to 31/12/2022 (both days included).

Verification for the period: 01/01/2022 to 31/12/2022

In our opinion, the total GHG emission reductions over the crediting / verification period stated in the Monitoring Report (MR)/19/, submitted are found to be correct and in line with the UCR guidelines. The GHG emission reductions were calculated on the basis of UCR guideline which draws reference from, the standard baseline, AMS-I. D: Grid connected renewable electricity generation– Version 18.0/4/. The verification was done remotely by way of video calls, and submission of documents for verification through emails.

It is certified that the emission reductions from the 11 MW bundle of Small-scale Hydro Power Project by M/s. Balaji Energy Pvt. Ltd. (UCR ID – 115) for the period 01/01/2022 to 31/12/2022 amounts to **45808** CoUs (**45808 tCO_2e**).

Objective

The objective of this verification is to have an independent third-party assessment of whether the project activity conforms to the qualification criteria set out in the UCR Program Manual/1/, UCR CoU Standard/2/ and UCR verification standard/3/ to attain real, measurable, accurate and permanent emission reductions.

Scope

The scope of the verification is the independent, objective review and ex-post determination of the monitored reductions in GHG emission by the project activity.

1. To verify the project implementation and operation with respect to the registered PCN/9/.
2. To verify the implemented monitoring plan with the registered PCN/9/ applied baseline and monitoring methodology.
3. To verify that the actual monitoring systems and procedures follow the monitoring plan.
4. To evaluate the GHG emission reduction data and express a conclusion whether the reported GHG emission reduction data is free from material misstatement
5. To verify that reported GHG emission data is sufficiently supported by evidence.
6. Agreement stating assurance to avoid double accounting/8/ for the project to be verified, along with required proof.

The project is assessed against the requirements of the UCR Program Manual/1/, UCR CoU Standard/2/ and UCR verification standard/3/, ISO 14064-2.

Due professional care has been exercised and ethical conduct has been followed by the assessment team during the verification process. The verification report is a fair presentation

of the verification activity. The validation of the project is not part of the present assignment and project is deemed validated post-registration by UCR.

1.2 Description of the Project

The proposed project activity involves construction and operation of Small-Scale hydel project in the state of Andhra Pradesh in India. The project activity generates clean energy by utilizing the hydro potential of the water flowing in the Somasila irrigation channel. It causes minimum environmental impacts and will reduce dependence on fossil fuels.

The proposed bundled project activity is promoted by M/S Balaji Energy Pvt. Ltd. (herein after called as project proponent PP). The project activity aims to harness kinetic energy of water (renewable source) to generate electricity. Project activity is displacing the gross electricity generation i.e., 50,899 MWh from the NEWNE grid, which otherwise would have been imported from the NEWNE grid.

The details of the project activity are verified with the PCN/9/, MR Ver.1/10/ & Ver.2/19/ and relevant documents submitted for verification as mentioned in appendix-2.

The technical specification is listed below;

Specification	Somasila S.H.P (2 x 4 MW)
Approach channel	
Length	49 m
Bed Width	12 m
Bed Level	+77 m
Intake Structure	
Type	10.95 m diameter, Octagonal Structure with trash rack and vertical intake shaft
Floor Level	+77 m
Top Level	+84 m
Head Race Tunnel	
Shape	Circular/Horse Shoe, RCC lined
Diameter	4.75 m
Length	243 m
Gate Shaft	
Diameter	6.60 m, RCC Lined
Top Level	+108 m
Surge Shaft	
Type	Restricted Orifice Type, RCC Lined
Diameter	17.60 m
Orifice diameter	3.85 m
Top Level	+108 m

Specifications	Somasila NFC Mini Hydro Electric Project (2x1.5 MW)
Power scheme	
Type of Project	Dam toe based Low head Project
Source of water system	Water flowing into the north feeder canal from head regulator
Hydrology	
Source of water	Pennar river
Number of drops	Water level difference of Somasila dam & FSL of NFC
Maximum (Gross)	19 m

Design head (Gross)	17 m
Rated head (Net)	15 m
Power draft	22 Cumecs
Rated Flow Per unit	11 Cumecs
Maximum flow per unit	12 Cumecs
Flow availability	8 months from September to April in a water year based on cropping pattern
Intake attached to existing 2 Nos vents	
Diameter	3.2 m
Length including forked tubes	20 m
Surgepool	
Internal diameter	12 m
Bottom of Surge Pool	76.50 m

As mentioned in the monitoring report Ver.2/19/ and emission reduction calculation sheet ver.2/20/ submitted for verification, the project replaces anthropogenic emissions of greenhouse gases (GHGs) estimated to be 45808 tCO_2e for the verification period, there on displacing 50899 MWh amount of electricity from the generation of fossil-fuel based power plants connected to the Indian electricity grid.

The proposed project activity is installation and operation of Small-Scale Hydel Power Project comprising of 4 units of hydro Turbine and Generators with an aggregated installed capacity of 11 MW. The project is a small-scale activity. The methodology applied in the monitoring report is verified against the AMS-I. D: Grid connected renewable electricity generation - Version 18.0/4/ total emission reductions (ERs) achieved through the project activity during the monitoring period is summarised below:

Summary of the Project Activity and ERs Generated for the Monitoring Period	
Project start date	• Somasila SHP (2x4 MW) – 29/11/2017 • Somasila NFC Mini Hydro Electric Project (2x1.5 MW) – 07/11/2017
Start date of this Monitoring Period	01/01/2022
Carbon credits claimed up to	31/12/2022
Total ERs generated (tCO_2e)	45808
Leakage Emission	0
Project Emission	0

1.3 Project Verification team, technical reviewer and approver:

1.3.1 Project verification team

Sr. No.	Role	Last name	First name	Affiliation	Involvement in		
					Doc review	Remote inspection	Interviews
1.	Team Leader	Mandliya	Shyam	Naturelink Solutions Pvt. Ltd.	Yes	Yes	Yes

2.	Technical Expert	Prajapati	Divya	Naturelink Solutions Pvt. Ltd.	Yes	Yes	Yes

1.3.2 Technical Reviewer of the Verification report

Sr. No.	Role	Type of resource	Last name	First name	Affiliation
1.	Internal Technical Reviewer	IR	Amin	Shardul	Naturelink Solutions Pvt. Ltd.

2 Verification Process

2.1 Desk/document review

The desk review was conducted by the verification team that included:

- A review of data and information presented to assess its completeness
- A review of the initial PCN/9/, MR Ver.1/10/, MR Ver.2/19/, emission reduction calculation sheet Ver.2/20/, Methodology - AMS-I.D V 18.0/4/.
- A cross-check between information provided in the MR Ver.1/10/, MR Ver.2/19/ and data from other sources such as certificate of share of electricity generated by hydro turbines/13/, Detailed Project Reports/17/ or similar data sources;
- A review of calculations and assumptions made in determining the GHG data and emission reductions calculation Ver.2/20/;

The list of submitted documents is available in a subsequent section of this verification report under the appendix - 2 “Document reviewed or referenced”.

2.2 Remote Inspection

As per the UCR Verification standard version 2.0, the verification team conducted remote inspection of project activity via video conferencing on 10/04/2024 as mentioned in the below table.

Date of remote inspection:	10/04/2024			
No.	**Activity performed During remote inspection**	**Site location**	**Date**	**Project Personnel**
1.	Opening meeting	Project location	10/04/2024	Mr. Kashyap Trivedi - Associate Consultant, CTPL Mr. Dara Penchalaiah – Site In-charge, BEPL Mr. Ridha Ahmed – Director, BEPL
2.	Remote inspection of all installation	Project location	10/04/2024	Mr. Kashyap Trivedi - Associate Consultant, CTPL Mr. Dara Penchalaiah – Site In-charge, BEPL Mr. Ridha Ahmed – Director, BEPL

3.	Closing meeting	Project location	10/04/2024	Mr. Kashyap Trivedi - Associate Consultant, CTPL Mr. Dara Penchalaiah – Site In-charge, BEPL Mr. Ridha Ahmed – Director, BEPL

The following parameters were assessed but not limited to:

- An assessment of the implementation and operation of the registered project activity as per the registered PCN/9/;
- A review of information flows for generating, aggregating, and reporting the monitoring parameters;
- Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the PCN/9/ and MR Ver.1/10/ & Ver.2/19/;
- A cross-check of the monitoring equipment including calibration reports and observations of monitoring practices against the requirements of the PCN/9/ and MR Ver.1/10/, Ver.2/19/ and selected methodology/4/;
- 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.

2.3 Interviews

No.	Interview			Date	Subject
	Last name	First name	Affiliation		
1.	Penchalaiah	Dara	Site In Charge - M/s. Balaji Energy Pvt. Ltd.	10/04/2024	Hydro turbine specification and connections, energy meter readings, transformer specification, hydro power generation operations details with presentations, Monitoring plan, calibration details of the energy meter
2.	Ahmed	Ridha	Director - M/s. Balaji Energy Pvt. Ltd.	10/04/2024	Legal ownership of the project, Implementation of the project, Start date and crediting period, Double counting of the carbon credits, Project boundary, hydro power generation operations details with presentations
3.	Trivedi	Kashyap	Associate Consultant – Creduce Technologies Pvt. Ltd.	10/04/2024	Project Overview, PCN, Monitoring Report, Methodology, eligibility criteria, Baseline emissions, Emission Reduction Calculation details

2.4 Clarification request (CLs), corrective action request (CARs) and forward action request (FARs) raised

Areas of Project Verification findings	No. of CL	No. of CAR	No. of FAR
Green House Gas (GHG)			
Identification and Eligibility of project type	1	NIL	NIL
General description of project activity	NIL	1	NIL
Application and selection of methodologies and standardized baselines	--	--	--
• Application of methodologies and standardized baselines	NIL	NIL	NIL
• Deviation from methodology and/or methodological tool	NIL	NIL	NIL
• Clarification on applicability of methodology, tool and/or standardized baseline	NIL	1	NIL
• Project boundary, sources and GHGs	NIL	NIL	NIL
• Baseline scenario	NIL	NIL	NIL
• Estimation of emission reductions or net anthropogenic removals	NIL	1	NIL
• Monitoring Report	NIL	NIL	NIL
Start date, crediting period and duration	NIL	NIL	NIL
Environmental impacts	NIL	NIL	NIL
Project Owner- Identification and communication	NIL	NIL	NIL
Others (please specify)	1	NIL	NIL
Total	2	3	NIL

3 Project Verification findings

3.1 Identification and eligibility of project type

Means of Project Verification	The project is eligible as per UCR General project eligibility criteria and guidance Version 6.0/2/ which is acceptable since the project has not been registered under any other GHG program and the project activity was commissioned on 29/11/2017(2x4 MW) & 07/11/2017(2x1.5 MW). The commissioning certificates/14/ of the hydro power plant at somasila provided by APSPDCL has been verified in this regard. Prior to the commencement of the project activity, the project owner got approval for the installation and operation of hydro power plant from Southern Power Distribution Company (APSPDCL) in the district of Nellore, Andhra Pradesh and PO has signed wheeling agreement/12/ with Andhra Pradesh State Power Distribution Company Ltd (APSPDCL) to supply electricity to the identified user M/s. Pushpit Steels Private Limited & M/s. VIKI Industries Pvt. Ltd. The project also delivers real, measurable and additional emission reduction of 45808 tCO_2e over the crediting period (01/01/2022 to 31/12/2022). Project applies an approved CDM monitoring and baseline methodology AMS-I.D: Grid connected renewable electricity generation - Version 18.0./4/
Findings	CL 01 was raised.
Conclusion	The project is eligible as per the requirements of the UCR General project eligibility criteria and guidance Version 6.0/2/. Further project verification team cross checked the other GHG programmes like Clean Development Mechanism (CDM) Registry, VERRA Registry, Gold Standard (GS) Registry for the information regarding the consistency of the title of the project activity, GPS coordinates, Legal Ownership of the Project activity and confirmed that the project was not submitted or registered under any other GHG programmes and non-voluntary non-GHG Programs.

3.2 General description of project activity

Means of Project Verification	The project activity aims to harness kinetic energy of water (renewable source) to generate electricity. The net generated electricity from the project activity is sold to M/s. Pushpit Steel Private Limited and M/S Viki Industries Private Limited through wheeling agreement/12/ with APSPDCL.

	The proposed project activity is installation and operation of Small-Scale Hydel Power Project comprising of 4 units of hydro Turbine and Generators with an aggregated installed capacity of 11 MW. The project activity has applied AMS-I.D: Grid connected renewable electricity generation– Version 18.0/4/ falls into the small-scale category as per applied CDM methodology. A wheeling agreements/12/ is signed between M/s. Balaji Energy Pvt. Ltd. and APSPDCL for the identified consumers M/s. Pushpit Steels Private Limited and M/s. Viki Industries Pvt. Ltd. for consumption of electricity generated by hydro turbine generator. The project activity generated total 50899 MWh electricity and displacing 45808 tCO_2e. The project activity generates clean energy by utilizing the hydro potential of the water flowing in the Somasila irrigation channel. It causes minimum environmental impacts and will reduce dependence on fossil fuels. In the absence of the project activity, the equivalent amount of power would have been generated by the operation of grid-connected fossil fuel-based power plants and by the addition of new fossil fuel-based generation sources into the grid. The Location details has been verified during the online assessment and geo coordinates verified through google earth/maps. The technical specification mentioned in the PCN/9/ is verified against the technical specifications/15/ & DPRs/17/ provided by Snehal Powertel Solutions Pvt. Ltd & PP.
Findings	CAR 01 was raised
Conclusion	The description of the project activity is verified to be true based on the review of PCN/9/, MR Ver.2/19/, Commissioning Certificates/14/, Technical specifications/15/, DPRs/17/ and wheeling agreements/12/ of Hydro power plant components.

3.3 Application and selection of methodologies and standardized baselines

3.3.1 Application of methodology and standardized baselines

Means of Project Verification	The project activity applied AMS-I. D: Grid connected renewable electricity generation– Version 18.0/4/ falls into the small-scale category as per CDM methodology. Standardized baseline is “In the absence of the project activity, the equivalent amount of electricity would have been imported from the grid (which is connected to the unified Indian Grid system (NEWNE Grid)), which is carbon intensive due to being predominantly sourced

	from fossil fuel-based power plants" which is as per the project activity and clearly mentioned in PCN/9/ and MR Ver.1/10/ & Ver.2/19/.
Findings	No finding was raised
Conclusion	The methodology applied is appropriately meeting the requirements of UCR General project eligibility criteria and guidance/2/, standardized baseline. The methodology version is correct and valid. The referenced methodology is applicable to project activity.

3.3.2 Clarification on applicability of methodology, tool, and/or standardized baseline

Means of Project Verification	**Applicability as per AMS-I. D version 18.0**	**Verifier assessment**
	1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: a. Supplying electricity to a national or a regional grid; or b. Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	The project activity "11 MW bundle of Small-scale Hydro Power Project by M/s. Balaji Energy Pvt. Ltd." incorporates installation and operation Hydro power plant for supplying of electricity to the identified consumer. Hence, option (b) applied here is appropriate as PP has signed wheeling agreements/12/ with APSPDCL to supply electricity to the M/s. Pushpit Steels Pvt. Ltd. And M/s. VIKI Industries Pvt. Ltd. This was confirmed during the online assessment and through document review of wheeling agreement/12/ and certificate for share of electricity generated by hydro power project from SPDCL/13/.
	2. This methodology is applicable to project activities that: a. Install a greenfield plant; b. Involve a capacity addition in (an) existing plant(s); c. Involve a retrofit of (an) existing plant(s); d. Involve a rehabilitation of (an) existing plant(s)/ unit(s); or e. Involve a replacement of (an) existing plant(s).	The project is green field plant and involves installation and generation of electricity from total 11 MW (2x4 MW + 2x1.5 MW) capacity of hydro turbine generator connected to the Indian national grid. The electricity generated from project activity is exported to the Indian national grid, there by displacing electricity from the grid which would have otherwise been generated by operation of grid connected power plants and by addition of new

		generation sources into the grid. The project activity generates 50899 MWh of electricity and displaces 45808 tCO_2e.
	3. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: a. The project activity is implemented in an existing reservoir with no change in the volume of reservoir; b. The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m2. c. The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is grated than 4 W/m^2	This Small-Scale Hydro power project is implemented on an irrigation channel of an existing reservoir with no change in the volume of the reservoir. Hence, option (a) of criteria 3 is applied here and is found appropriate.
	4. If the new unit has both renewable and non-renewable components (e.g., a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	The project activity is a 11 MW hydro power project, i.e., the only component is a renewable power project below 15 MW, thus the criterion is not applicable to this project activity.
	5. Combined heat and power (co-generation) systems are not eligible under this category.	The project activity does not involve co-generation. Hence this criterion is not applicable.
	6. In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct6 from the existing units.	No capacity addition in the existing renewable plant. This is new installation of hydro power plant which was verified and confirmed through online assessment and interviews with project owner and their representatives.

	7. In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	There is no retrofit or replacement in the project activity, hence it is not applicable.
	8. In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid, then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as "AMS-I.C.: Thermal energy production with or without electricity" shall be explored.	The project activity is a greenfield 11 MW hydro power project; hence, this criterion is not applicable to this project activity.
	9. In case biomass is sourced from dedicate plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	The project activity is new greenfield activity of hydro power plant and does not involve biomass, hence this criterion is not applicable.
Findings	CAR 02 was raised	
Conclusion	The verification team confirms that all the applicability criteria set by the applied CDM methodology/4/ and its eligible tools are met. The relevant information against those criteria is also included in the PCN/9/ and MR Ver.2/19/. The selected CDM methodology for the project activity is applicable.	

3.3.3 Project boundary, sources and GHGs

Means of Project Verification	As per the applied methodology AMS-I. D version 18.0/4/, the spatial extent of the project boundary includes industrial, commercial facilities consuming energy generated by the system. The components of the project boundary mentioned in the section B.4 of PCN/9/ were verified against the para 18 of the applied methodology. The project verification team conducted desk review of the implemented project to confirm the appropriateness of the project

	boundary identified and GHG sources required by the methodology have been included within the project boundary. The project location is clearly depicted with the help of a pictorial depiction in section A.3. of the PCN/9/ and duly verified by the project verification team via geographical coordinates, commissioning certificates/14/ of the project activity & wheeling agreements/12/ between Balaji Energy Pvt. Ltd. and APSPDCL.
Findings	No finding was raised
Conclusion	The project verification team was able to assess that complete information regarding the project boundary has been provided in PCN/9/ and MR Ver.2/19/ and could be assured from the DPRs/17/, commissioning certificates/14/, geographical coordinates and wheeling agreements/12/. The project verification team confirms that the identified boundary is relevant and all emissions sources are included in the project activity.

3.3.4 Baseline scenario

Means of Project Verification	The baseline scenario as per paragraph 19 of the applied methodology, prescribed the baseline scenario of the project activity. In the absence of the project activity, the users would have been supplied electricity from the national grid. As per the UCR General project eligibility criteria and guidance/2/; "The project owner has opted UCR recommended emission factor of 0.9 tCO_2/MWh for the 2013-2020 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Emission factors for the post 2020 period is to be selected as the most conservative estimate between the national electricity/power authority published data set and UCR default of 0.9 tCO_2/MWh".
Findings	No finding was raised
Conclusion	The project verification team concluded that the identified baseline scenario reasonably represents what would occur in the absence of the project activity. The calculated baseline emission for each vintage year of crediting period is rounded down as per UCR CoU verification standard /3/.

3.3.5 Estimation of emission reductions or net anthropogenic removal

<table>
<tr><td>Means of Project Verification</td><td>
The project verification team checked whether the equations and parameters used to calculate GHG emission reductions or net anthropogenic GHG removals for PCN/9/ and MR Ver.1/10/ & ver.2/19/ is in accordance with applied methodology. Project Verification team checked section B.5 and C.5.1 of the PCN/9/ & MR Ver.2/19/ respectively to confirm whether all formulae to calculate baseline emissions, project emission and leakage have been applied in line with the underlying methodology.

The emission reduction calculation has been carried out as per the CDM SSC methodology AMS-I.D, Version 18.0/4/.

$BE_y = EG_{BLy} X EF_{CO2,y}$

Where,

BE_y = Baseline Emissions in year y; tCO_2

EG_{BLy}= Quantity of net electricity displaced as a result of the implementation of the CDM project activity in year y (MWh)

$EF_{CO2,y}$ = Combined margin CO_2 emission factor for grid connected power generation in year y.

Project emissions:

As per paragraph 25 of the applied methodology, For most renewable energy project activities, $PE_y = 0$. Since Hydro power is a GHG emission free source of energy project emission considered as Zero for the project activity.

Leakage Emissions:

As per the paragraph 29 of the applied methodology AMS-I.D Version 18.0, there are no emissions related to leakage in this project.

Emission reductions

As per Paragraph 30 of the applied methodology, emission reductions are calculated as follows

$ER_y = BE_y - PE_y - LE_y$

Where:

ER_y = Emission reductions in year y (tCO_2)

BE_y = Baseline Emissions in year y ($t CO_2$)

PE_y = Project emissions in year y ($t CO_2$)

LE_y = Leakage emissions in year y ($t CO_2$)

<table>
<tr><th>Year</th><th>Electricity generated (MWh)</th><th>Emission factor (tCO_2/MWh)</th><th>Total Emission reduction (tCO_2e)</th></tr>
<tr><td>2022</td><td>50899.0</td><td>0.9</td><td>45808</td></tr>
</table>
</td></tr>
<tr><td>Findings</td><td>CAR 03 was raised</td></tr>
</table>

Conclusion	The combined margin emission factor as per "CO_2 Baseline Database for the Indian Power Sector" current version 18, December 2022 by CEA/6/ is 0.918 tCO_2/MWh which results into higher emission factor than the UCR recommended emission factor of 0.9 tCO_2/MWh; Hence for 2022 vintage UCR default emission factor remains conservative as per UCR General project eligibility criteria and guidance/2/. Project Verification team confirm that the algorithms and formulae proposed to calculate project emissions, baseline emissions, leakage and emission reductions in the PCN/9/ and MR Ver.2/19/ is in line with the requirements of the selected methodology AMS-I.D, version 18.0/4/ For emission reduction calculation, the assessment team confirms that; All assumptions and data used by the project participants are listed in the PCN/9/ and MR Ver.2/19/ including their references and sources. All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PCN/4/ and MR Ver.1/10/ & Ver.2/19/. The baseline methodology and the applicable tool(s) have been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions.

3.3.6 Monitoring Report

Means of Project Verification	The monitoring report Ver.1/10/ & Ver.2/19/ submitted by the PP has been verified thoroughly and is in compliance with the applicable methodology and UCR General project eligibility criteria and guidance/3/ for calculation of GHG emission reductions. The assessment team has reviewed all the parameters in the monitoring plan against the requirements of the applied methodology and confirmed that monitoring parameters are applied in line with the requirement of the methodology and relevant in the context of the program. The procedures have been reviewed by the assessment team through document review, interviews with the respective monitoring personnel and online assessment. As per the CEA guidelines/5/ for installation and operation of Meters, the energy meter shall be tested at least once in five years. Monitoring methodology, data management and calibration of the energy meter were also discussed with project owner.
Findings	No finding was raised

<table>
<tr><td>Conclusion</td><td>The project verification team confirms that,

The monitoring report Ver.2/19/ is in compliance with the applicable methodology and UCR General project eligibility criteria and guidance/3/.

The monitoring parameters reported in PCN/9/ and MR Ver.2/19/ adequately represents the parameters relevant to emission reduction calculation.

The number of CoUs generation is calculated based on accurately reported data. The calculation was done using an excel sheet where all the parameters were reported.

UCR recommended emission factor for electricity generation is opted which is conservative.

In the MR Ver.2/19/, emission reduction calculations sheet Ver.2/20/ are correctly calculated and reported. The monitoring report Ver.2/19/ meets the requirements of UCR project verification requirements.

The project proponent has carried out calibration of energy meter for the monitoring period.

Energy meter details:

<table>
<tr><th>Sr. no.</th><th>Meter No.</th><th>Make</th><th>Class</th><th>Calibration date</th></tr>
<tr><td>1.</td><td>APX01609</td><td>SECURE(P)300</td><td>0.2s</td><td>30/08/2018</td></tr>
<tr><td>2.</td><td>APX01084</td><td>SECURE(P)300</td><td>0.2s</td><td>31/08/2018</td></tr>
</table>
</td></tr>
</table>

3.4 Start date, crediting period and duration

Means of Project Verification	The Commissioning certificates/14/ of the installation of the project activity has been verified as per PCN/9/ and MR Ver.1/10/ & Ver.2/19/.
Findings	No finding was raised
Conclusion	The Hydro power plant was commissioned on 29/11/2017(2x4 MW) & 07/11/2017(2x1.5 MW) by PP. The project crediting period is second monitoring period which is 01/01/2022 to 31/12/2022. The crediting period is also appropriate as per UCR General project eligibility criteria and guidance/2/.

3.5 Environmental impacts and safeguard assessment

Means of Project Verification	As The guidelines on Environmental Impact Assessment have been published by Ministry of Environment, Forests and Climate Change

	(MoEF&CC), Government of India (GOI) under Environmental Impact Assessment notification 14/09/2006. Further amendments to the notification have been done, The Hydro Power projects up to 25 MW are listed in white category, hence, No EIA required. The impact of the project activity on the environmental safeguards has been carried out. Out of all the safeguards no risks were identified to the environment due to the project implementation and operation. And the following have been indicated as positive impacts: Environment Air - CO_2 emissions: The project activity being renewable power generation avoids CO_2 emissions that would have occurred in baseline scenario due to the electricity generation in thermal power plants. Environment - Natural Resources: Replacing fossil fuels with renewable sources of energy. Impacts identified as 'Harmless': Solid waste Pollution: - Any Solid-waste if generated from the plant shall be discarded in accordance with host country regulation. The parameter is being monitored as 'Project Waste' and Proper mitigation action has been implemented for waste management. Land use: since the hydro power plant does not require larger area, there is no significant damage to land. Emission due to transportation of hydro power plant components: The emissions associated with the transport of the modules are insignificant compare to manufacturing facilities.
Findings	No finding was raised.
Conclusion	The project activity displaces fossil fuel consumption and provides affordable and clean energy. The project has also avoided total 45808 tCO_2e, hence it has positive impact. It is confirmed that there is no EIA is required as per host country rule mentioned in the CPCB letter/18/.

3.6 Project Owner- Identification and communication

Means of Project Verification	The information and contact details of the project owner has been appropriately incorporated in the PCN/9/ and MR Ver.1/10/ & Ver.2/19/. The legal owner of the project activity has been identified through the commissioning certificates/14/ and wheeling agreements/12/ of the hydro power project.

Findings	No finding was raised.
Conclusion	The project verification team confirms that the legal ownership of the project belongs to M/s. Balaji Energy Pvt. Ltd.

3.7 Others (Double Counting of Credits)

Means of Project Verification	The project activity was searched on other GHG programs to ensure that project is not registered in any other GHG programs like VERRA, Gold standard, GCC. An agreement stating that project activity will not cause double counting of the credits is also checked as per clause 1.8, Universal Carbon Registry Program Manual (Ver 4.0) August 2022/1/.
Findings	CL 02 was raised
Conclusion	Double accounting agreement/8/ is signed between PO and Aggregator and found to appropriate as per clause 1.8, Universal Carbon Registry Program Manual (Ver 4.0) August 2022/1/.

4 Internal quality control:

- Due professional care has been taken while reviewing the submitted document.
- There is no conflict of interest as the verifier has no other engagement with either the aggregator or project owner directly or indirectly.
- Verification team consists of experienced personnel.
- Technical review is performed by an independent person.

5 Project Verification opinion:

The project verification was conducted on the basis of UCR Program Manual/1/, UCR General project eligibility criteria and guidance/2/, UCR Verification standard /3/, AMS -I.D. Version 18.0 /4/, Wheeling agreements/12/, DPRs/17/, Calibration Reports/16/, Commissioning Certificates/14/, Project Concept Note (PCN)/9/, Monitoring Report (MR) Ver.2/19/ and documents mentioned in Appendix-2.

Verification team raised 02 Nos. of Clarification Requests (CLs) and 03 Nos. of Corrective Action Request. All the queries were closed satisfactorily.

It is hence certified with reasonable level of assurance that the emission reductions from the project Hydro Power Project by M/s Balaji Energy Pvt. Ltd. (UCR ID – 115) for the period 01/01/2022 to 31/12/2022 amounts to **45808** CoUs (45808 tCO_2e) as per the UCR Verification standard /3/.

6 Competence of team members and technical reviewers

No.	Last name	First name	Role and Affiliation	Technical Competence
1.	Mandliya	Shyam	Team Leader - NSPL	Mr. Shyam Mandliya holds master's degree in Chemical Engineering. He has expertise in environmental audits. He has performed environmental monitoring of different industries in Gujarat for air, water, and hazardous waste. He has also contributed to the community-based biogas project development.
2.	Prajapati	Divya	Technical Expert - NSPL	Ms. Divya Prajapati is having M. Tech. in Environmental Engineering. She is experienced in performing environmental impact assessments of various industries. She has also conducted Environmental Audit of CETP and TSDF sites and quantified GHG emissions from Solid Waste Disposal sites.
3.	Amin	Shardul	Technical Reviewer - NSPL	Mr. Shardul Amin holds M. Tech. degree in Thermal System Design. He has more than 7 years of experience in the field of waste-to-energy, thermochemical conversion technologies, and emission study. He is experienced GHG Auditor and has verified more than 50 emission reduction projects.

Appendix 1: Abbreviations

Abbreviations	Full texts
UCR	Universal Carbon Registry
BEPL	Balaji Energy Pvt. Ltd.
CPCB	Central Pollution Control Board
APSPDCL	Andhra Pradesh Southern Power Distribution Company Limited
APTRANSCO	Andhra Pradesh Transmission Company
CEA	Central Electricity Authority
NSPL	Naturelink Solutions Private Limited
MR	Monitoring report
PCN	Project Concept Note
VR	Verification Report
VS	Verification Statement
DAA	Avoidance of Double Accounting Agreement
COD	Commercial Operation Date
PO	Project Owner
PA/ PP	Project Aggregator / Project Proponent
PPA	Power Purchase Agreement
ER	Emission Reduction
CoUs	Carbon offset Units
tCO_2e	Tons of Carbon Dioxide Equivalent
kWh	Kilo-Watt Hour
MWh	Mega-Watt Hour
kW	Kilo-Watt
MW	Mega-Watt
CDM	Clean Development Mechanism
SDG	Sustainable Development Goal
CAR	Corrective Action Request
CL	Clarification Request
FAR	Forward Action Request
GHG	Green House Gas

Appendix 2: Document reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	UCR	UCR Program Manual	Version 4.0, August 2022	UCR website
2.	UCR	UCR General project eligibility criteria and guidance (CoU Standard)	Version 6.0, August 2022	UCR website
3.	UCR	UCR Program Verification standard	Version 2.0, August 2022	UCR website
4.	CDM	AMS-I. D: Grid connected renewable electricity generation	Version 18.0	CDM website
5.	CEA	Central Electricity Authority (Installation and Operation of Meters) (Amendment) Regulations, 2019	Dated 23/12/2019	-
6.	CEA	CO_2 baseline database for the Indian Power sector	Version 18.0 dated December 2022	-
7.	PA	Communication agreement between PP and PO	Dated 09/02/2022	PA
8.	Creduce	Assurance to avoid double accounting by project owners	Double accounting agreement signed on 02/04/2024	PA
9.	Creduce	Project concept note	Version 1.0, dated 26/05/2022	PA
10.	Creduce	Monitoring report	Version 1.0, dated 01/03/2024	PA
11.	Creduce	Emission reduction excel – “11 MW bundle of Hydro Power Project by M/s. Balaji Energy Pvt. Ltd.”	Version 1.0, dated 01/03/2024	PA
12.	APSPDCL & PO	Wheeling agreement	Dated 27/06/2014 (2x4 MW) & 27/06/2014 (2x1.5 MW)	PA
13.	APSPDCL & APTRANSCO	Monthly energy generation bills	-	PO
14.	APSPDCL	Certificates of Commissioning dated 29/11/2017 (2x4 MW) & 07/11/2017 (2x1.5 MW)	DEE/O/ATKR/AE-Comml/F.NO./D.NO: 1866/17 &	PA

			DEE/O/ATKR/AE-Comml/F.NO./D.NO: 1867/17	
15.	PO	Technical specification brochure of 2x4 MW & 2x1.5 MW Hydro Turbine Generator	-	PA
16.	Ganga Calibration Services	Test reports dated 31/08/2018(2x4 MW) & 30/08/2018(2x1.5 MW)	GCSPL/CAL/4317/8285(2x 4 MW) & GCSPL/CAL/4316/8282(2x 1.5 MW)	-
17.	PO	Detailed Project Report	Dated February 2012(2x1.5 MW) & August 2012(2x4 MW)	PO
18.	CPCB	CPCB	*CPCB letter F.No.B-29012/IPC-Vl/2017-18/ date 17/11/2017*	-
19.	Creduce	Monitoring report	Version 2.0 dated 04/04/2024	PA
20.	Creduce	Emission reduction excel – "11 MW bundle of Hydro Power Project by M/s. Balaji Energy Pvt. Ltd."	Version 2.0 dated 04/04/2024	PA
21.	B Fouress Pvt. Limited	SLDs	Dated 10/03/2016 (2x4 MW) & 18/05/2016 (2x1.5 MW)	PO

Appendix 3: Clarification request, corrective action request and forward action request

Table 1. CLs from this Project Verification

CL ID	01	**Section no.:** 3.1	Identification and eligibility of project type	**Date:** 01/04/2024
Description of CL				
As per Clause 2 of applied methodology AMS-I. D V18.0, kindly provide single line diagram to establish connection with national grid.				
Project Owner's response				**Date:** 18/04/2024
The Single Line Diagram for the both instances (2x1.5 MW + 2x4 MW) has been provided by the Project owner which contains flow of the electricity generation to supply to the grid which establishes the connection with national grid.				
Documentation provided by Project Owner				
Single Line Diagrams				
UCR Project Verifier assessment				**Date:** 20/04/2024
Single Line Diagram provided by Project owner has been verified to establish the connection with the national grid and it does explain the flow of the electricity generation to the supply to the national grid, which also proves that the methodology is correctly applied for the project activity. Hence, CL 01 is closed.				

CL ID	02	**Section no.:** 3.7	Others (Double counting of credits)	**Date:** 01/04/2024
Description of CL				
Document stating that the project activity will not cause double counting is not available as per requirement of clause 1.8, Universal Carbon Registry Program Manual (Ver 4.0) August 2022.				
Project Owner's response				**Date:** 04/04/2024
Double accounting agreement is provided.				
Documentation provided by Project Owner				
Double accounting agreement				
UCR Project Verifier assessment				**Date:** 06/04/2024
Double accounting agreement is checked and found to be conforming as per *clause 1.8, Universal Carbon Registry Program Manual (Ver 4.0) August 2022, hence CL 02 is closed.*				

Table 2. CARs from this Project Verification

CAR ID	01	**Section no.:** 3.2	General description of project activity	**Date:** 01/04/2024
Description of CAR				
In section A.1.3 & A.2 of MR ver.1 dated 01/03/2024, details of capacity and number of hydro turbines in project activity is not written correctly as per requirement of UCR CoU standard Ver.6 (page no. 8 to 10).				
Project Owner's response				**Date:** 04/04/2024
The capacity and numbers of hydro turbines is corrected as 2x4 MW + 2x1.5 MW in the monitoring report Ver.2.				
Documentation provided by Project Owner				
Monitoring Report Ver.2				
UCR Project Verifier assessment				**Date:** 06/04/2024
The details of capacity of the hydro turbines as 2x4 & 2x1.5 was verified in Ver.2 of the monitoring report. Hence, CAR 01 is closed.				

CAR ID	02	**Section no.:** 3.3.2	Clarification on applicability of methodology, tool, and/or standardized baseline	**Date:** 01/04/2024
Description of CAR				
In section C.2 of MR dated 01/03/2024, the applicable criteria is not justified as per requirement of the UCR CoU standard Ver. 6 9pg. No. 8 to 10) & Section 2.2 (Para. 4 to 11) of the applied methodology				
Project Owner's response				**Date:** 04/04/2024
The criteria of supplying electricity generated to the identified consumer is corrected in section C.2 of the MR Ver.2.				
Documentation provided by Project Owner				
Monitoring Report Ver.2				
UCR Project Verifier assessment				**Date:** 06/04/2024
The corrected applicable criteria as supplying generated electricity to identified consumer is verified and found correct in MR Ver.2. Hence, CAR 02 is closed.				

CAR ID	03	**Section no.:** 3.3.5	Estimation of emission reductions or net anthropogenic removal	**Date:** 01/04/2024
Description of CAR				
In section C.5.1 of MR dated 01/03/2024 and Emission Reduction sheet, CoUs generation data is not calculated as per requirements of the UCR CoU standard Ver.6 (page no. 8 to 10) & Clause 1.5.6 of the Universal Carbon Registry Program Manual (Ver 4.0) August 2022.				
Project Owner's response				**Date:** 04/04/2024
The round of the emission reduction in terms of tonne of CO_2e is rounded off by annual generation data and Emission reduction sheet Ver.2 is provided. MR Ver.2 is also corrected as per the ER sheet Ver.2.				
Documentation provided by Project Owner				
Monitoring Report Ver.2 & Emission Reduction Sheet Ver.2				
UCR Project Verifier assessment				**Date:** 06/04/2024
The Emission reduction sheet Ver.2 is verified for the round off of the emission reduction by annual generation and also it is checked with the MR Ver.2. Hence, CAR 03 is closed.				

Table 3. FARs from this Project Verification

FAR ID	**--**	**Section no.**		**Date:**
Description of FAR				
Project Owner's response				**Date:**
Documentation provided by Project Owner				

Photographs of the Remote site visit conducted on 10/04/2024