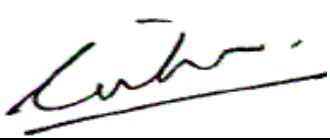
Verification and certification report form for CDM project activities

(Version 01.0)

Complete this form in accordance with the "Attachment: Instructions for filling out the verification and certification report form for CDM project activities" at the end of this form.

VERICATION AND CERTIFICATION REPORT	
Title of the project activity	7 MW Bundled Hydro power project at Himachal Pradesh of Raajratna Energy Holdings Pvt. Ltd
Reference number of the project activity	9111
Version number of the verification and certification report	03
Completion date of the verification and certification report	19/10/2016
Monitoring period number and duration of this monitoring period	First monitoring period 01/01/2013 to 31/10/2015 (Inclusive of both days)
Version number of monitoring report to which this report applies	05
Crediting period of the project activity corresponding to this monitoring period	Type: Fixed Crediting period Start date: 01/01/2013 Length: 01/01/2013 to 31/12/2022
Project participant(s)	M/s Raajratna Energy Holdings Pvt Ltd
Host Party	India
Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)	Sectoral Scope: 01 - Energy Industries (renewable / non-renewable sources AMS.I.D "Grid connected renewable electricity generation" version 17
Estimated GHG emission reductions or net anthropogenic GHG removals for this monitoring period in the registered PDD	55,788 tCO_{2e}
Certified GHG emission reductions or net anthropogenic GHG removals for this monitoring period	64,508 tCO_{2e}
Name of DOE	URS Verification Private Limited
Name, position and signature of the approver of the verification and certification report	Mukesh Singhal, CEO. 

SECTION A. Executive summary

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Brief summary of project activity (Purpose, General Description and Location):

The purpose of the registered project activity is to generate electricity based on hydro energy with total capacity of 5 MW, with two 2.5 MW horizontal pelton turbines. The project activity constructed on Belij Nallah, which is a tributary of river Ravi at Hibra village in Chamba district, Himachal Pradesh. The project activity exports electricity to the Himachal Pradesh state grid, through inter-connectivity with the nearest sub-station located at Jarangala The electricity is supplied to NEWNE grid and to contribute to climate change mitigation efforts and avoid emission of CO_2.

The project was developed by Belij Hydro Power Private Limited (BHPPL). The project activity consists of power house, turbine, generators, diversion weir, penstocks, switch yard, transformers and evacuation facility etc. The project conceptualized as two projects, with capacity 5 MW Belij and 2 MW Gehra projects, with a total of 7 MW small hydropower project. It is noted that the Gehra Hydro Power Private Limited (GHPPL) has discontinued with the project implementation. The project title still indicates 7 MW, however, the actual implemented capacity was only 5 MW. This issue has been identified and addressed during the project validation.

The power generated from the project activity is fed to regional grid i.e. NEWNE grid. The project activity was commissioned on 17/06/2012 as verified with commissioning certificate issued by HPSEB and continuously generating and delivering the electricity to NEWNE grid. The PP has chosen fixed crediting period for the project activity, which is starting from 01/01/2013 to 31/12/2022. The project activity was registered on UNFCCC on 24/12/2012.

During this monitoring period (01/01/2013 to 31/10/2015 (inclusive of both days)), the net electricity exported by project is 76,800 MWh to NEWNE grid. Thus, emission reduction occurred during this monitoring period is 64,508 tCO_{2e}.

Scope of verification:

The scope of the verification is the independent and objective review and ex post determination of the monitored reductions in GHG emission by the project activity. The verification is based on the validated and registered project design document and the monitoring report. The project is assessed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance.

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 verification is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

Verification process and conclusion:

URS Verification Private Ltd has performed the 1st periodic verification of the CDM project “7 MW Bundled Hydro power project at Himachal Pradesh of Raajratna Energy Holdings Pvt. Ltd”, India with UNFCCC reference number of 9111, registration date of 24/12/2012 and crediting period from 01/01/2013 to 31/12/2022 (Fixed). The verification includes confirming the implementation of the monitoring plan of the registered PDD Version 03.1 dated 11/12/2012 and the application of the monitoring methodology as per AMS I.D, “Grid connected renewable energy generation”, Version 17 dated 03/06/2011. A site visit was conducted for two days on 05/02/2016 and 06/02/2016 to verify the implementation of project activity and verify monitoring plan and data submitted in the monitoring report, emission reduction sheet.

URS performs the verification work using a Periodic Verification Checklist prepared following the VVS. The checklist gives the assessment team a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;

- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report.

URS verified the implementation of the monitoring plan and the data presented in the Monitoring Report for the period in question. This involved a site visit and a desk review of the monitoring report. This verification report describes the findings of this assessment.

URS confirms the following has been reviewed:

(a) The registered PDD, including the monitoring plan and the corresponding validation report;
(b) Monitoring report and emission reduction estimation;
(c) The applied monitoring methodology;
(d) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;
(e) All information and references relevant to the project activity's resulting in emission reductions.

URS confirms that the project is implemented in accordance with the validated and registered Project Design Document. The monitoring system is in place and the emission reductions are calculated without material misstatements. Based on the information observed at site and evaluated verification team confirmed that the implementation of the project has resulted in 64,508 tCO_{2e} emission reductions during period 01/01/2013 to 31/10/2015 (inclusive of both days)..

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Lead Assessor Team Leader	EI	Machcha	Vijay Kumar	URS Verification Pvt. Ltd, Noida (Central Office)	Y	Y	Y	Y
2.	Assessor	IR	Kumar	Ashok	URS Verification Pvt. Ltd, Noida (Central Office)	Y	Y	Y	Y
3.	Technical Expert	IR	Kumar	Ashok	URS Verification Pvt. Ltd, Noida (Central Office)	Y	Y	Y	Y
4.	Technical Expert	EI	Machcha	Vijay Kumar	URS Verification Pvt. Ltd, Noida (Central Office)	Y	Y	Y	Y

B.2. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	**EI**	Sharma	Shivraj B	URS Verification Pvt. Ltd., Noida, India (Central Office)
2.	Approver	**IR**	Singhal	Mukesh	URS Verification Pvt. Ltd., Noida, India (Central Office)

SECTION C. Application of materiality

C.1. Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	*N.A.*			

The actual emission reductions in the monitoring period are 64,508 tCO_2e, which are higher than the estimated emission reductions 55,788 tCO2e (for an equivalent period of 1034 days) as per the registered PDD, which is higher than the corresponding estimated emission reductions as per the PDD for a comparable period. It was noted that the reason was the excess power generation from the project activity during the monitoring period, due to availability of excess water from catchment and upstream areas, such as, heavy rain fall, snow, floods inflow into river, which are natural phenomenon and are not under the control of PP. The actual emission reductions during the monitoring period are higher by 15.63% of the estimated emission reduction in registered PDD. The reasons for excess generation by the project activity have been cross checked with appropriate evidences available based publicly available data and publications to ascertain that the excess generation was only due to natural factor, with no direct control or influence by the PP. A detailed assessment has been carried out along with evidences submitted as part of CL 10 in this regard, provided under Appendix 3 of this report. It is found as per the URS assessment that even with an additional power generation of 15.63%, the project activity still does not cross the benchmark WACC for this parameter, as provided under sensitivity analysis of registered PDD. The excess power generation is not affecting the information provided during the registration and URS ascertained the validity of project additionality.

Hence there is no requirement of applying Guidelines on Application of Materiality in Verifications in the project activity. The verification team has checked the monitoring data for the entire monitoring period and the same is found to be correct. The verification team confirms that the claimed emission reductions are free from material errors, omissions or misstatements, with a reasonable level of assurance.

C.2. Consideration of materiality in conducting the verification

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Not Applicable. Please refer section C.1 above

SECTION D. Means of verification

D.1. Desk review

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Verification was conducted using URS procedures in line with the requirements specified in the CDM M&P. the latest version of the CDM Validation and Verification Standard and relevant decisions of the COP/MOP and the CDM EB and applying the standard auditing techniques.

The verification consisted of the following three phases:

- Desk Review
- On-site Assessment
- The resolution of outstanding issues and the issuance of the final verification report and certification.

All the documents reviewed and referenced during the verification are listed in Appendix 3 attached with this report below.

D.2. On-site inspection

Duration of on-site inspection: 05/02/2016 to 06/02/2016				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	Review of Project Description, Project design and Implementation of the project and other salient features of the project.	Hibra village, Chamba district, Himachal Pradesh, state, India	05/02/2016	Ashok Kumar, Vijay Kumar Machcha
2.	Monitoring plan and monitoring parameters measurement Operational and data collection Procedures.	Hibra village, Chamba district, Himachal Pradesh, state, India	05/02/2016	Ashok Kumar, Vijay Kumar Machcha
3.	Quality control and quality assurance procedures in place.	Hibra village, Chamba district, Himachal Pradesh, state, India	05/02/2016	Ashok Kumar, Vijay Kumar Machcha
4.	Operational and management structure existing at site to monitor emission reductions.	Hibra village, Chamba district, Himachal Pradesh, state, India	05/02/2016	Ashok Kumar, Vijay Kumar Machcha
5.	Review of calculations, cross-check between data reported in MR and other sources, checking monitoring equipment, calibration details, observation of monitoring practices, data management procedure	Hibra village, Chamba district, Himachal Pradesh, state, India	05/02/2016	Ashok Kumar, Vijay Kumar Machcha

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Chaudhary	Jagdish Kumar	Project In-Charge (Belij Hydro Power Pvt. Ltd.)	05/02/2016	Project Description, Project design and Implementation of the project and other salient features of the project, Information flows for generating, aggregating and reporting the monitoring parameters	Ashok Kumar, Vijay Kumar Machcha
2	Kaushik	Vivek	Sr. Eng. (Mech.) .(Belij Hydro Power Pvt. Ltd.)	05/02/2016	Monitoring plan, Quality control and quality assurance procedures in place.	Ashok Kumar, Vijay Kumar Machcha
3	Mohiuddin		Sr. Eng. (Elec.) (Belij Hydro Power Pvt. Ltd.)	05/02/2016	Monitoring parameters measurement Operational and data collection Procedures.	Ashok Kumar, Vijay Kumar Machcha
4	Lal	Sohan	Jr. Eng. (Mech.) (Belij Hydro Power Pvt. Ltd.)	05/02/2016	Operational and management structure existing at site to monitor emission reductions	Ashok Kumar, Vijay Kumar Machcha
5	Singh	Pratap	Operator, HPSEB Sub Station	05/02/2016	Calibration Details of the meters installed at sub-station, Replacement of meters, aggregation of generation by individual power producer etc.	Ashok Kumar, Vijay Kumar Machcha

D.4. Sampling approach

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Not Applicable. No sampling approach is applied in the project activity.

D.5. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form	0	1	0
Compliance of the project implementation with the registered PDD	0	1	0

Post-registration changes	0	0	0
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline	0	0	0
Compliance of monitoring activities with the registered monitoring plan	1	3	0
Compliance with the calibration frequency requirements for measuring instruments	2	1	0
Assessment of data and calculation of emission reductions or net removals	2	0	0
Others (please specify)	0	0	0
Total	5	6	0

SECTION E. Verification findings

E.1. Compliance of the monitoring report with the monitoring report form

Means of verification	Compliance of monitoring report with monitoring report form has been verified by document review and review of the data and information presented. The monitoring report provided by PP has been verified and cross checked with monitoring report template and instructions for completing monitoring report form.
Findings	The monitoring report provided was the latest version of Monitoring report form. However, The description of project activity provided under section A.1, A.2 and A.4 of MR is not in line with Instructions for filling out the monitoring report form. In addition, there are few incomplete and incorrect details provided in the MR, such as, number of days in the current monitoring, clarity on project participants details, information on installed technology, energy exported and calibration details error. Hence, CAR 1 was raised and subsequently the PP revised the MR as per the requirements of instruction for filling out the monitoring report form. PP has provided the revised Monitoring report as per the requirements of the template. The assessment team has found the revised Monitoring Report corrected appropriately and is accepted.
Conclusion	The PP has submitted revised MR, which is in line with the requirements of instruction for filling out the monitoring report form. Based on the MR review as submitted by PP, assessment team confirmed that the same is in line with the guidance and latest monitoring report form and instruction therein as available in UNFCCC.

E.2. Remaining forward action requests from validation and/or previous verification

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This is the first verification for the project activity. No forward Action request was observed from the validation Report (No. - 53607109- 09/472) dated 18/12/2012.

E.3. Compliance of the project implementation with the registered project design document

Means of verification	Compliance of the project implementation with registered project design document has been verified by document review, review of the data and information presented, review of the registered monitoring plan, the monitoring methodology including applicable tool(s), onsite site inspection and review of registered PDD, Validation report and Monitoring report.
Findings	The Project has been registered as CDM activity on 24/12/2012 having the Reference number 9111 (https://cdm.unfccc.int/Projects/DB/RWTUV1356201362.35/view) The project activity involves in installation of 5 MW Hydro electric power project, with two 2.5 MW horizontal pelton turbines. The project activity constructed on Belij Nallah, which is a tributary of river Ravi at Hibra village in Chamba district, Himachal Pradesh. Belij nallah joins river Ravi on right bank just downstream of Hibra village in district Chamba, Himachal Pradesh. The project was developed by

	Belij Hydro Power Private Limited (BHPPL). The project activity consists of power house, turbine, generators, diversion weir, penstocks, switch yard, transformers and evacuation facility etc. The project activity diverts Belij nala inflow by constructing a trench weir. The diverted inflows are carried through conveyance channel to a surface de silting tank, which is designed to exclude all silt particles. The silt free inflows are carried through cut and cover channel and D-shaped head race tunnel up to fore bay. The inflow is lead to power house through penstock to feed 2 Nos. of Pelton turbines driven generating units of 2.50 MW each, totalling 5 MW. The project activity exports electricity to the Himachal Pradesh state grid, through inter-connectivity with the nearest sub-station located at Jarangala The electricity is further supplied to NEWNE grid. The total capacity of project activity, technical specifications of the turbine, generator, transformers and energy meters installed in the project activity have been checked during the on-site visit and found to be in line with the total capacity and technical specifications provided in the registered PDD and thus no change or deviation in the capacity and technical specifications were observed during the monitoring period from 01/01/2013 to 31/10/2015 (inclusive of both days). During the site visit, the project location and geographical co-ordinates of project activity has also been verified. However, it is noted that the geo-graphical co-ordinates provided in the MR were not matching with the project location, which in turn resulted in the change of geographical co-ordinates in the revised MR. However, the revised geo co-ordinates in the MR are not in line with the registered PDD. As a result, there was a finding (CAR 2) was raised in this regard and PP has revised the MR and PDD with respect to the correct project geographical co-ordinates related to both power house and weir. This resulted in correction of project geographical co-ordinates in the registered PDD. A PRC report with respect to the correction of geographical co-ordinates is attached along with this report, based on the MR and revised PDD submitted by PP The project activity was commissioned on 17/06/2012 and the project has started its commercial operation and exporting electricity to the NEWNE grid. The project activity registered with UNFCCC on 24/12/2012 and as per registered PDD the start date of the crediting period of this project activity considered from 01/01/2013. The project activity is in continuous operation from the date of commissioning, except few shutdowns/break downs due to various reasons, such as, scheduled maintenance, weather events, grid non-availability etc.,. During this monitoring period (01/01/2013 to 31/10/2015), the project activity has exported a total net electricity of 76,800 MWh to NEWNE grid and resulted in emission reduction of 64,508 tCO_2 during this monitoring period, which is higher than the estimated amount of emission reduction i.e. 55,788 tCO_2. The monitoring report contains a comparison of the actual emission reductions claimed in the monitoring period with the estimation in the registered PDD. The actual emission reductions during this monitoring period are found to be higher than the values estimated in the registered PDD for the monitoring period. A clarification was raised to assess the reason for higher generation of emission reductions during the monitoring period. It is observed that the same is due to the additional inflow of water, which is not under the control of PP. However, the impact of such additional power generation is assessed by DOE. It is found that even with an additional power generation of 15.63%, the project activity still does not cross the benchmark WACC for this parameter, as provided under sensitivity analysis of registered. Hence, the response of the PP has been accepted by the DOE. Further details of the same can be traced in Materiality assessment and CARs/CLs tables in Appendix 3. The following points have been checked to verify the applicability of the methodology AMS I. D. Version 17 to the project activity. • The project activity is renewable energy generation units, such as hydro electric project, supplying electricity to a national or a regional grid.

	• The Project activity is green-field electricity generation project from hydro energy and the total capacity of the project is 5 MW, which is well within the limit of 15 MW stipulated for the chosen methodology i.e. AMS I. D. Version 17. The project activity does not involve in any non-renewable components, a capacity addition, co-generation and retrofit or modification to an existing facility. • The electricity generated from the project activity is exported to the NEWNE grid which is dominated by fossil fuel fired power plants and in the absence of the project, the electricity would have been supplied by fossil fuel or non-renewable power generating unit in the grid. The project is installation of new power plant at a site where there was no renewable energy power plant of this capacity operating prior to implementation of the project. However, the following were observed during the on-site visit: 1. During the site visit, the project location and geographical co-ordinates of project activity has also been verified. However, it is noted that the geo-graphical co-ordinates provided in the MR were not matching with the project location, which in turn resulted in the change of geographical co-ordinates in the MR. However, the revised geo co-ordinates in the MR are not in line with the registered PDD. As a result, there was a finding raised in this regard and PP has revised the MR and PDD with respect to the project geographical co-ordinates related to both power house and weir. This resulted in correction of project geographical co-ordinates in the registered PDD. A PRC report with respect to the correction of geographical co-ordinates is attached along with this report, based on the MR and revised PDD submitted by PP. 2. The actual emission reductions during this monitoring period are found to be higher than the values estimated in the registered PDD for the monitoring period. A clarification was raised to assess the reason for higher generation of emission reductions during the monitoring period. It is observed that the same is due to the additional inflow of water, which is not under the control of PP. However, the impact of such additional power generation is assessed by DOE. The above deviations have been detailed in subsequently sections of this report.
Conclusion	Based on the document review and site visit, it is confirmed that the project is implemented and equipment is installed as described in the registered PDD. Thus, assessment team confirmed that the project was implemented and equipment installed as described in the registered PDD. Thus, same is in line with the para 385 of the VVS ver 09.0.

E.4. Post-registration changes

E.4.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline

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No temporary deviations are sought for current monitoring period.

E.4.2. Corrections

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During document review and on-site visit of project activity, the verification team has identified correction in project location with respect to project geographical co-ordinates mentioned in registered PDD. The verification team checked the project co-ordinates and found that the same are not matching with the MR,

in turn with the registered PDD. Based on this inaccuracy found in project geographical co-ordinates, verification team has raised this issue as a CAR and accordingly PP has revised project monitoring report and PDD. The geographical co-ordinates of the project based on registered PDD and actual/after correction are provided below.

Particulars	Geographical Coordinates of Power House	Geographical Coordinates of Weir
Corrected		
Longitude	76º 32' 22.7'' E	76^0 34' 75.5" E
Latitude	32º 47' 90.0'' N	32º 49' 25.3'' N
As per registered PDD		
Longitude	76º23'51'' E	76^0 20' 0.42" E
Latitude	32º29'33'' N	32º 32' 15.41'' N

It was an error and the PP has revised the information as per the actual geographical co-ordinates of the project activity. PP has submitted revised PDD in latest available PDD template (CDM-SSC-PDD–FORM, version 08.0). The verification team has accepted this change as it is a minor error that does not affect the design or features of the project and is in compliance to Appendix 1 of Project Standard, version 9, thus approval from CDM EB is not required.

This change is in line with para 1 of Appendix 1 of CDM project Standard and fall under the category of changes that do not require prior approval of the Board. In line with para 305 of VVS, DOE confirms that the corrected information reflects actual project information.

E.4.3. Changes to the start date of the crediting period

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Not applicable as there are no changes to start date of crediting period.

E.4.4. Inclusion of a monitoring plan to a registered project activity

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Not applicable. The same monitoring plan is adopted by the PP as mentioned in the registered PDD.

E.4.5. Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline

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Not applicable. There are no permanent changes from the registered monitoring plan, as the PP adopted and practicing the monitoring as per the requirements.

E.4.6. Changes to the project design of a registered project activity

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There are no changes to the project design of the registered project activity during this monitoring period.

E.4.7. Types of changes specific to afforestation and reforestation project activities

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The project activity is a Greenfield Hydro power project; hence this section is not applicable.

E.5. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline

Means of verification	Compliance of monitoring plan with monitoring methodology has been verified by document review, review of the data and information presented, review of the registered monitoring plan, the monitoring methodology including applicable tool(s), valuation of data management and the quality assurance and quality control system, onsite site inspection,, review of registered PDD, Validation report and Monitoring report., review of Monitoring methodology AMS-I.D version 17.0.
Findings	The monitoring plan is in accordance with the approved methodology AMS.I.D version 17, which states that the monitoring shall consist of quantity of net electricity supplied to the grid in year y. In line with details provided in section B.7.1 of revised PDD, Quantity of net electricity supplied to the grid in year y are measured. Also, the quantity of diesel consumed once in a year. Project activity consists of one main meter and one check meter for each feeder at grid interconnection point to monitor the electricity exported and imported from NEWNE grid. The tri-vector meters continuously measured the electricity export and import. The data reporting procedure by the project participant has been identified and assessed during site visit. . Main meter is primary meter used for joint meter reading. The monthly Joint Meter Reading of the main meter has been cross-checked with the sales invoice. The verification team has onsite checked the monitoring report, monthly JMRs and respective sales invoices of the project confirmed the value used for ER calculation is correct. Hence, accepted. The calibration certificates for meters installed at grid-connection point are submitted by PP. During the monitoring period 01/01/2013 to 31/10/2015, there were a total of six calibrations were carried out for every six months interval for main and check meters for each of the feeder as provided below:

Meter number	Installed as	Feeder number	Date of calibration
Calibration 1			
11068616	Main meter	1	18-12-2012
11069603	Check meter	1	18-12-2012
11068614	Main meter	2	18-12-2012
11068622	Check meter	2	18-12-2012
Calibration 2			
11070245	Main meter	1	14-06-2013
11070247	Check meter	1	14-06-2013
11069070	Main meter	2	14-06-2013
11068620	Check meter	2	14-06-2013
Calibration 3			
11069603	Main meter	1	17-12-2013
11068616	Check meter	1	17-12-2013
11068622	Main meter	2	17-12-2013
11068614	Check meter	2	17-12-2013
Calibration 4			
11070247	Main meter	1	04-06-2014
11070245	Check meter	1	04-06-2014
11068620	Main meter	2	04-06-2014
11069070	Check meter	2	04-06-2014
Calibration 5			
11069603	Main meter	1	12-12-2014

	11068616	Check meter	1	12-12-2014
	11068622	Main meter	2	12-12-2014
	11068614	Check meter	2	12-12-2014
	Calibration 6			
	11070245	Main meter	1	06-05-2015
	11070247	Check meter	1	06-05-2015
	11069070	Main meter	2	06-05-2015
	11068620	Check meter	2	06-05-2015

The interconnection points were located at Jarangala sub-station (33 kV). There were no errors identified for any of the meters listed above during the respective calibrations.

Conclusion	Corresponding to the paragraph 394 to 400 of VVS version 09.0, verification team has verified the registered monitoring plan, including the data and parameters required to be monitored, measurement procedures, monitoring frequency and QA/QC procedures and the verification team is able to confirm that the registered monitoring plan is in accordance with the approved methodology AMS-I.D version 17.

E.6. Compliance of monitoring activities with the registered monitoring plan

E.6.1. Data and parameters fixed ex ante or at renewal of crediting period

As per the registered PDD, the fixed ex-ante parameter are the "Simple Operating Margin emission factor of the NEWNE Grid", "Build Margin emission factor of the NEWNE Grid" and "The grid CO_2 emission factor in year y", "Net calorific value of HSD", "Density of HSD" and "Emission Factor of HSD", which are fixed for the entire crediting period. The values of the fixed ex-ante parameters applied during the first monitoring period are the same as mentioned in the registered PDD. The fixed ex-ante data and parameter has been listed in the monitoring report and confirmed by the verification team as correct and consistent with that stated in the registered PDD.

Means of verification	Data and parameters fixed ex-ante has been verified by document review, review of the data and information presented, review of the registered and revised PDD, the monitoring methodology including applicable tool(s), onsite site inspection, Validation report and Monitoring report, CEA database of CO_2 India.
Findings	**$EF_{grid,OM,y}$ tCO_2e/MWh (Simple Operating Margin of the NEWNE Grid)**

Particulars	Discussion and verification assessment
Verified value	1.0049 tCO_2e/MWh
Source of value	Central Electricity Authority(CEA) of CO_2 India Database as given In user guide version 5.0 dated November 2009, http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm and according to the procedure outlined in section B.6 of the registered PDD
Justification	The value is consistent with registered PDD and defined fixed for entire crediting period of the project activity.

Conclusion	The value is consistent with registered PDD and defined fixed ex-ante for the entire crediting period of the project activity. The fixed ex-ante data and parameter has been listed in the monitoring report and confirmed by the verification team as correct and consistent with that stated in the registered PDD.

Means of verification	Data and parameters fixed ex-ante has been verified by document review, review of the data and information presented, review of the registered monitoring plan, the

<table>
<tr><td></td><td>monitoring methodology including applicable tool(s), evaluation of data management and the quality assurance and quality control system, onsite site inspection,, review of registered PDD, Validation report and Monitoring report, CEA database of CO_2 India.</td></tr>
<tr><td>Findings</td><td><u>$EF_{grid,BM,y}$ tCO_2e/MWh (Build Margin of the NEWNE Grid)</u>

<table>
<tr><th>Particulars</th><th>Discussion and verification assessment</th></tr>
<tr><td>Verified value</td><td>0.6751 tCO_2e/MWh</td></tr>
<tr><td>Source of value</td><td>Central Electricity Authority(CEA) of CO_2 India Database as given In user guide version 5.0 dated November 2009, http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm and according to the procedure outlined in section B.6 of the registered PDD</td></tr>
<tr><td>Justification</td><td>The value is consistent with registered PDD and defined fixed for entire crediting period of the project activity.</td></tr>
</table></td></tr>
<tr><td>Conclusion</td><td>The value is consistent with registered PDD and defined fixed ex-ante for the entire crediting period of the project activity. The fixed ex-ante data and parameter has been listed in the monitoring report and confirmed by the verification team as correct and consistent with that stated in the registered PDD.</td></tr>
</table>

<table>
<tr><td>Means of verification</td><td>Data and parameters fixed ex-ante has been verified by document review, review of the data and information presented, review of the registered monitoring plan, the monitoring methodology including applicable tool(s), evaluation of data management and the quality assurance and quality control system, onsite site inspection, review of registered PDD, Validation report and Monitoring report, CEA database of CO_2 India.</td></tr>
<tr><td>Findings</td><td><u>$EF_{CO2,grid,y}$ tCO_2e/MWh (The grid CO_2 emission factor of NEWNE Grid)</u>

<table>
<tr><th>Particulars</th><th>Discussion and verification assessment</th></tr>
<tr><td>Verified value</td><td>0.8400 tCO_2e/MWh</td></tr>
<tr><td>Source of value</td><td>Central Electricity Authority(CEA) of CO_2 India Database as given In user guide version 5.0 dated November 2009, http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm and according to the procedure outlined in section B.6 of the registered PDD</td></tr>
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<tr><td>Findings</td><td><u>Density of HSD</u>

<table>
<tr><th>Particulars</th><th>Discussion and verification assessment</th></tr>
<tr><td>Verified value</td><td>0.83 kg/lt</td></tr>
<tr><td>Source of value</td><td>Central Electricity Authority(CEA) of CO_2 India Database as given In user guide version 5.0 dated November 2009, http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm and according to the procedure outlined in section B.6 of the</td></tr>
</table></td></tr>
</table>

		registered PDD
	Justification	The value is consistent with registered PDD and defined fixed for entire crediting period of the project activity.
Conclusion	The value is consistent with registered PDD and defined fixed ex-ante for the entire crediting period of the project activity. The fixed ex-ante data and parameter has been listed in the monitoring report and confirmed by the verification team as correct and consistent with that stated in the registered PDD.	

Means of verification	Data and parameters fixed ex-ante has been verified by document review, review of the data and information presented, review of the registered monitoring plan, the monitoring methodology including applicable tool(s), evaluation of data management and the quality assurance and quality control system, onsite site inspection, review of registered PDD, Validation report and Monitoring report, IPCC guidelines.
Findings	**Emission Factor of HSD** **Particulars** | **Discussion and verification assessment** Verified value | 74.1 tCO_2e/TJ Source of value | IPCC Default Value, Table 1.4, Chapter 1, Volume 2, 2006 IPCC Guidelines for National Greenhouse Gas Inventories and according to the procedure outlined in section B.6 of the registered PDD Justification | The value is consistent with registered PDD and defined fixed for entire crediting period of the project activity.
Conclusion	The value is consistent with registered PDD and defined fixed ex-ante for the entire crediting period of the project activity. The fixed ex-ante data and parameter has been listed in the monitoring report and confirmed by the verification team as correct and consistent with that stated in the registered PDD.

E.6.2. Data and parameters monitored

Means of verification	$EG_{BL,y}$ has been verified by document review, review of the data and information presented, review of the registered monitoring plan, the monitoring methodology including applicable tool(s), onsite site inspection, review of registered PDD, Validation report and Monitoring report.
Findings	Data/parameter: $EG_{BL,y}$: Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh). Value: 76,800 MWh. This parameter is being calculated from the difference of the electricity exported to the grid and electricity imported from the grid. One Set of Main and Check Meters are provided for each of the two feeders that supply electricity to the substation. The accuracy Class of the Meters and the associated equipments is 0.2s Class as per the requirements and recorded in monthly JMRs. The verification team has checked the JMRs of the meter and cross checked values with the respective sales invoices and it is found to correct. Monitoring is carried out continuously and recorded on monthly basis. The verification team has also checked the calibration certificates of energy meters and found that the meters were calibrated in line with the calibration frequency defined in the registered PDD and PPA. However, it is noted that there were calibration delays observed during the monitoring period. This was communicated to PP for necessary clarifications and corrections. CAR 7 was raised and discussed in detail under E7 of this report. Project activity exports electricity through a common transmission line and the same was constructed by three project developers, PP is one of the project developers. The power is supplied to the common pooling station by separate transmission lines from each of the three project activities. At the common transmission line separate meters (before pooling point) are installed to measure the amount of power being supplied by each project. Power is being further supplied through the common transmission line to

	Jarangala sub-station, using two feeders, which contains one main and check meters each. The transmission losses from common pooling station to Jarangala substation are borne by the three project developers in proportionally for their respective project. However, all the calculations of the energy supplied by each of the project developer is being calculated through a common agreement signed by them and the calculations further cross checked and approved by HPSEB during each month JMR. The energy export values approved in the JMR are final for all parties, billing and payments are being carried out on the same basis. The emission reduction calculations are carried only based on the net energy exported to grid by the project activity derived in the JMRs each month. The JMRs of the project activity reflect all the above indicated arrangement and procedure followed to arrive at net energy exported by the project activity and the other two involved projects. JMR also contains the transmission losses, which are calculated by HPSEB. The difference between the electricity exported and the electricity imported and the transmission losses results in the net quantity of electricity supplied by the project activity. The assessment team has checked the JMRs, sales invoices and payments, ER sheet & Monitoring report and are found to be correct. The procedure for the monitoring of the parameters has been clearly described in the monitoring plan under section B.7.1 and B.7.2 of the registered PDD. The monitoring plan of the project activity has been duly implemented by the PP at the project activity site in accordance with the registered monitoring plan. However, there are few findings (CAR 3) with respect to the organization structure for data monitoring, collection, data archiving and calibration, monitoring requirement and procedures and calibration frequency mentioned under QA/QC procedure of section C. Also, shutdown details of the project are not provided in the MR, which resulted in finding (CAR 4). The common pooling station (as detailed above) related agreement among the project developers was not submitted for verification and URS has requested to submit the same (CL 8) to ensure compliance of the monitoring plan with the registered PDD. PP has submitted necessary additional documents, revised the MR after necessary corrections and re-submitted the same, which is found to be acceptable. The monitoring mechanism, including the data collection system, is found to be effective and reliable and it has been verified during the site visit of the project activity and through the document review.
Conclusion	The assessment team has checked all the descriptions provided in the MR and found consistent with JMRs. The verification team on-site checked all the energy meters (Main Meter, Check Meter) and verified the calibration records. The meters were properly configured and checked and found appropriate with the registered monitoring plan. As confirmed during the onsite assessment the parameter is continuously monitored, and recorded monthly. Hence, monitoring frequency is as per the monitoring plan. Corresponding to the paragraph 389 to 393 of VVS version 09.0, URS can confirm that the monitoring of the project activity has been carried out in accordance with the monitoring plan provided in the revised PDD.

Means of verification	$FC_{i,j,y}$ has been verified by document review, review of the data and information presented, review of the registered monitoring plan, the monitoring methodology including applicable tool(s), onsite site inspection, review of registered PDD, Validation report and Monitoring report.
Findings	Data/parameter: $FC_{i,j,y}$ - Quantity of HSD consumed in DG Set in the project activity during the year *y* Value: 1,375 Litre This parameter is determined by recording the quantity of diesel consumed by the DG set during its operation. During the plant shutdown, grid failure or any other emergency situations, project activity operates the DG set for meeting its electricity needs. Whenever there is operation of DG set, the PP records the quantity of diesel consumed by the DG set after each operation and a separate log book is

	maintained for this purpose. The level indicator of dipstick provides respective usage of diesel by the DG set. After each time operation, the diesel tank of the DG set is refilled to full level for the subsequent monitoring. The records are aggregated on monthly and yearly basis. The recording is carried out on Litre basis and same is converted to kg based on the diesel density factor as fixed ex-ante in the registered PDD. The measurements are carried out using calibrated dipstick as per the interval mentioned in the PDD, once in year. The assessment team has checked the log records maintained, purchase invoices and measurement practice during the on-site visit. The procedure for the monitoring of the parameters has been clearly described in the monitoring plan under section B.7.1 and B.7.2 of the registered PDD. The monitoring plan of the project activity has been duly implemented by the PP at the project activity site in accordance with the registered monitoring plan. The monitoring mechanism, including the data collection system, is found to be effective and reliable and it has been verified during the site visit of the project activity and by means of document review.
Conclusion	The assessment team has checked all the descriptions provided in the MR and found the details are consistent with log records maintained and fuel purchase invoices. The verification team checked the procedure followed, dip-sticks used for measurement and respective calibration records. As confirmed during the onsite assessment, the parameter is being monitored as and when the operation of DG set occurs, recorded immediately and consolidated on monthly basis. Hence, monitoring carried out as per the monitoring plan. Corresponding to the paragraph 389 to 393 of VVS version 09.0, URS can confirm that the monitoring of the project activity has been carried out in accordance with the monitoring plan provided in the registered PDD.

Means of verification	$NCV_{i,j,y}$ has been verified by document review, review of the data and information presented, review of the registered monitoring plan, the monitoring methodology including applicable tool(s), review of registered PDD, Validation report and Monitoring report.
Findings	Data/parameter: $NCV_{i,j,y}$ - Net calorific value of HSD Value: 9975 kcal/kg This parameter is a default value considered from Central Electricity Authority (CEA) CO_2 baseline database. As per the registered monitoring plan, latest version of the data base required to be considered during each monitoring period. Accordingly, PP has considered the CO_2 baseline database version 11 dated April 2016. However, PP has not included this parameter under version 04 of the monitoring report. Hence, CAR 11 was raised to address the same and closed successfully, with appropriate corrections under taken in the MR. The latest CEA version has been checked and found that the default value remains the same from the time of project registration (version 05) till date (version 11). Hence, there is no change in the value of parameter observed and PP has applied the same appropriately. The procedure for considering the latest default value has been clearly described in the monitoring plan under section B.7.1 of the registered PDD. PP has applied the same in accordance with the registered monitoring plan. The monitoring mechanism, is found to be effective and reliable and it has been verified by DOE through independent review by means of publicly available data.
Conclusion	The assessment team has checked all the descriptions provided in the MR and found the details are consistent with CEA CO2 baseline database version 11. The verification team checked the procedure followed, and version applied. As this parameter is a default value considered from publicly available and authentic source, the same has been cross checked by DOE and found to be ok. Hence, monitoring carried out as per the monitoring plan. Corresponding to the paragraph 389 to 393 of VVS version 09.0, URS can confirm that the monitoring of the project activity has been carried out in accordance with the monitoring plan provided in the registered PDD.

E.6.3. Implementation of sampling plan

Means of verification	N/A
Findings	N/A
Conclusion	N/A

E.7. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	Compliance with the calibration frequency requirements has been verified by document review, review of the data and information presented, review of the registered monitoring plan, the monitoring methodology including applicable tool(s), quality assurance and quality control system, onsite site inspection,, review of registered and revised PDD, Validation report and Monitoring report, evaluation of calibration certificates.
Findings	According to the monitoring plan of the registered PDD, the monitoring meters are to be calibrated once in six month. The calibration is done once in six months as per the PPA between the PP and the HPSEB. There are two sets of meters being used by the project activity at the inter connection point at the substation and one set is being replaced with another calibrated set once in every six months. For each feeder (two) there are two sets of such meters used.

Monitoring equipment	Feeder I Main and check meters (Jarangala Substation HPSEB)
Monitoring parameter	$EG_{BL,y}$
S.No.	Meters Set 1: 11068616 11069603 Meters Set 2: 11070245 11070247 The meters under each set mentioned above have been used as main and check meters alternatively during replacement each time. The complete reference of when the meters were used as main and check meters can be referred clearly in the table provided under section E.5 above.
Make	L&T
Type	ER300P
Accuracy	0.2 S
Calibration frequency requirement	Once in six months
Calibration date	Meters Set 1: 11068616 - 18/12/2012, 17/12/2013, 12/12/2014 11069603 - 18/12/2012, 17/12/2013, 12/12/2014 Meters Set 2: 11070245 - 14/06/2013, 04/06/2014, 06/05/2015 11070247 - 14/06/2013, 04/06/2014, 06/05/2015 On feeder 1, at any given time, only one main and one check meters are used, from set 1 or set 2 listed above alternatively to meet the calibration requirements of six monthly intervals as per the PPA and monitoring plan.
Validity	One year from the date of calibration
Are there delays in Calibration?	There are minor delays observed in the calibration requirements. The same has been addressed under CAR 7, by applying correction factor for the respective months, as described in this section below.

Calibration Entity	Power grid corporation of India, Northern Region

Monitoring equipment	Feeder II Main and check meters (at Jarangala Substation HPSEB)
Monitoring parameter	$EG_{BL,y}$
S.No.	Meters Set 1: 11068614 11068622 Meters Set 2: 11069070 11068620 The meters under each set mentioned above have been used as main and check meters alternatively during replacement each time. The complete reference of when the meters were used as main and check meters can be referred clearly in the table provided under section E.5 above.
Make	L&T
Type	ER300P
Accuracy	0.2 S
Calibration frequency requirement	Once in six months
Calibration date	Meters Set 1: 11068614 - 18/12/2012, 17/12/2013, 12/12/2014 11068622 - 18/12/2012, 17/12/2013, 12/12/2014 Meters Set 2: 11069070 - 14/06/2013, 04/06/2014, 06/05/2015 11068620 - 14/06/2013, 04/06/2014, 06/05/2015 On feeder 2, at any given time, only one main and one check meters are used, from set 1 or set 2 listed above alternatively to meet the calibration requirements of six monthly intervals as per the PPA and monitoring plan.
Validity	One year from the date of calibration
Are there delays in Calibration?	There are minor delays observed in the calibration requirements. The same has been addressed under CAR 7, by applying correction factor for the respective months, as described in this section below.
Calibration Entity	Power grid corporation of India, Northern Region

As listed above calibration of the meters has been under taken once in six months as per the registered monitoring plan and PPA requirements. However, it is noted that there were calibration delays found during this monitoring period. The delay in the calibration requirement have been identified for the months of June 2013, December 2013, December 2014 and June 2015, when the replacement of meters had taken place. There were a total of 5 times meter replacement had taken place during this monitoring period. Out of which, there was no calibration delay for June 2014, rest of the 4 times, as listed above and in section E5, were found to be with calibration delays.

PP has appropriately identified the calibration delays and applied 0.02% of correction factor, as the energy meters are of 0.2 class. The calculations of correction factor application have been reviewed and found to be conservatively calculated, by applying the factor for the entire month in which delay was found.

Transmission loss calculations have also been reviewed and found to be applied in

line with the JMRs of the respective months.
As a result of applying correction factor of 0.02% for four months, namely, June 2013, December 2013, December 2014 and June 2015, the total emission reductions of the project have been reduced from 64,520 tCO2e to 64,508 tCO2e. The corrections have been undertaken in line with 'Appendix. Calibration of VVS version 09'. To address this, CAR 7 was raised by the verification team and closed successfully.

The emission reductions of the project activity are calculated based on final export values mentioned in the JMR. However, the JMR refers to the meter at the common pooling station for apportioning of electricity exported by the project activity during a specific month. Hence, the same forms part of monitoring requirements. The electricity supplied to common pooling station is being measured by the CPS meters as mentioned below, which is checked and found that the calibrated as per the monitoring requirements:

Monitoring equipment	CPS meter (at Common Pooling Station)
Monitoring parameter	$EG_{BL,y}$
S.No.	11068619 (in service from commissioning to August 2015) 09142019 (August 2015 onwards)
Make	L&T
Type	ER300P
Accuracy	0.2 S
Calibration frequency requirement	Once in six months
Calibration date	11068619 – 22/07/2012, 21/01/2013, 21/07/2013, 20/01/2014, 20/07/2014, 19/01/2015, 19/07/2015 09142019 – 27/07/2015
Validity	One year from the date of calibration
Are there delays in Calibration?	There are no delays observed in the calibration requirements
Calibration Entity	Yadav Measurements Pvt Ltd

The project activity also monitors the diesel/HSD consumed by the DG set on-site which is used in case of power failure or emergency situations. The measurements of the diesel consumption are under taken using dipstick. The same is found to be calibrated as per the requirements of the registered PDD, as detailed below:

Monitoring equipment	Dip stick (for diesel consumption measurement)
Monitoring Parameter	Q_{HSD}
S.No.	BHPPL/DS/001 – For Regular use BHPPL/DS/002 – Stand by
Make	N/A
Type	N/A
Accuracy	Mark 1 = 2.4 liters
Calibration frequency requirement	Once in a year
Calibration date	BHPPL/DS/001 - 15/06/2013, 15/06/2014, 15/06/2015 BHPPL/DS/002 - 15/06/2013, 15/06/2014, 15/06/2015

	Validity — One year from the date of calibration **Are there delays in Calibration?** — There are no delays observed in the calibration requirements **Calibration Entity** — Chartered Engineer –Ranjan Kar, with Regn No: F-1214140 In the initial MR versions submitted, there were no details provided for verification with respect to the calibration certificates for the meters installed at common pooling station (CPS) and respective replacement details. A finding (CL 5) has been raised to address the same. Also, calibration certificates for the dipstick used for measurement of diesel consumption by DG set were not provided by PP along with initial submissions. In addition, there were few incorrect details identified in the provided calibration details in the MR. As a results, a two findings (CL 6 & CL7) have been raised. PP has submitted the necessary documents for verification and revised the MR with respect to the monitoring. The same have been assessed by URS and accepted.
Conclusion	The project activity supplies electricity to the Jaranagala sub-station of HPSEB by two feeders. Each feeder of the project activity is provided with one main meter and one check meter. The meters of each feeder were calibrated once in a six months as per the requirements of the monitoring plan. For feeder one, the energy meter calibrations were carried out on 18/12/2012, 17/12/2013, 12/12/2014 for first set of meters 11068616 & 11069603 at Jarangala substation. Similarly, energy meter calibrations were carried out on 14/06/2013, 04/06/2014, 06/05/2015 for second set of meters 11070245 & 11070247. For feeder two, the energy meter calibrations were carried out on 18/12/2012, 17/12/2013, 12/12/2014 for first set of meters 11068614 & 11068622 at Jarangala substation. Similarly, energy meter calibrations were carried out on 14/06/2013, 04/06/2014, 06/05/2015 for second set of meters 11069070 & 11068620. For the meter installed at CPS, the energy meter calibrations were carried out on 22/07/2012, 21/01/2013, 21/07/2013, 20/01/2014, 20/07/2014, 19/01/2015, 19/07/2015 for meter 11068619 and 27/07/2015 for meter 09142019, as per the requirements. There were calibration delays observed for JMR meters installed at Jarangala substation, for the months of June 2013, December 2013, December 2014 and June 2015, when the replacement of meters had taken place. CAR 7 was raised to address the same and closed successfully. For the dip stick used at the project site for diesel consumption measurement, the calibrations were carried out on 15/06/2013, 15/06/2014, 15/06/2015 for both dipsticks with reference numbers BHPPL/DS/001 (For Regular use) and BHPPL/DS/002 (Stand by), as per the monitoring requirements. This complies with the requirement of para 394 to 400 of VVS version 09.0. The calibration records checked for measuring instruments are provided in Appendix 3 of this report. In line with the para 394 to 400 of VVS ver 09.0, by checking the calibration reports, URS confirms that the calibration of meters are carried out at specified frequency as per PPA and it meets the requirement of frequency specified in the registered monitoring plan in registered PDD. Thus, same is in also line with the 394 to 400 of VVS ver 09.0.

E.8. Assessment of data and calculation of emission reductions or net removals

E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	Calculations of baseline GHG emissions has been verified by document review, review of the data and information presented, review of the registered monitoring plan, the monitoring methodology including applicable tool(s), evaluation of data

	management onsite site inspection,, review of registered PDD, Validation report and Monitoring report, Review of applied methodology AMS-I.D version 17.0, CO_2 Baseline Database for the Indian Power Sector prepared by Central Electricity, Authority, Version 5.1, IPCC guidelines
Findings	As per the methodology AMS-I.D. (Version 17, EB 61), the emission reductions (ER_y) are calculated as: $ER_y = BE_y – PE_y - LE_y$ Where, BE_y= baseline emissions $BE_y = EG_{Bly} * EF_{CO2,grid,y}$ Where, EG_{Bly} Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh) $EF_{CO2,grid,y}$: The grid CO_2 emission factor in year *y*, calculated ex-ante and will not be updated during the crediting period, the value is 0.840 tCO_2e/MWh. Quantity of net electricity supplied to the grid in year y (EG_y) is obtained from the JMRs of the project activity, which is the result of difference between the electricity exported to the grid, the electricity imported from the grid and transmission losses. This monitoring period covers from 01/01/2013 to 31/10/2015 (inclusive both days). The electricity exported to and imported from the grid are continuously monitored through the energy meters and the output is consolidated monthly. The monthly JMR reading records were cross checked with the sale receipts. The baseline emission has been calculated by multiplying the quantity of net electricity supplied to the grid in year Y and the grid CO_2 emission factor. The verification team has checked the monthly readings with the monthly JMR. The monthly JMR value has been cross checked against the invoice raised to the electricity board and found to be correct. The JMRs are provided for the entire month and monitoring period starts from 01/01/2013 and ends on 31/10/2015. There is no overlapping or mismatch of JMRs with this Monitoring period observed. However, during the verification, few of the JMRs submitted are found to be incomplete and not readable. PP was requested to provide the same (CL 9). Subsequently, PP has provided all the necessary documents appropriately for verification. The verification team has reviewed all the data and found correct and consistent with the values as available in ER sheet. Thus, the values considered for baseline emission calculation was found to be correct and accepted. The net electricity exported to grid during the monitoring period is 76,800 MWh and the baseline emissions work out to be 64,508 tCO_2e.
Conclusion	During this monitoring period, the project activity has exported a total of 76,800 MWh of net electricity as per JMR records. Accordingly, the total baseline emissions work out to be 64,508 tCO_2e. The net electricity exported to the grid has been cross checked with the invoices issued by the PP. All the evidences has been provided to and checked by the verification team and confirmed as credible and consistent. The baseline emissions are found to be correct.

E.8.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	Project GHG emissions has been verified by document review, review of the data and information presented, onsite site inspection, review of registered PDD Validation report and Monitoring report, Review of applied methodology AMS-I.D version 17.0, Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion, Version 02
Findings	As per approved methodology AMS-I.D version 17.0, the project emission for Renewable energy projects is zero. However, the project activity uses DG sets as backup power in case of grid failure and emergencies. Hence the

	emissions from the DG set are considered. The emissions from diesel used during the DG set operation are calculated as below: $PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y}$ $COEF_{i,y} = NCV_{i,y} \times EF_{CO2,i,y}$ Where, PE_y the CO_2 emissions from fossil fuel combustion in process *j* during the year *y* (tCO_2e / yr); $FC_{i,j,y}$ Quantity of HSD consumed in DG Set in the project activity during the year y in liters $EF_{CO2,i,y}$ Emission Factor of HSD $NCV_{i,y}$ Net calorific value of HSD Quantity of HSD consumed in DG set in the project activity during the year y ($FC_{i,j,y}$) is obtained from the log records maintained at the project site as per the the operation of DG set. The emission factor ($EF_{CO2,i,y}$) was fixed ex-ante during the project registration and net calorific value ($NCV_{i,y}$) is monitored default value as per the latest version of CEA CO_2 data base. The project emissions from the diesel/HSD are calculated by multiplying the quantity of diesel with the emission factor and corresponding NCV to arrive at the results. This parameter is determined, whenever there is operation of DG set, the PP records the quantity of diesel consumed by the DG set after each operation and a separate log book is maintained for this purpose. The level indicator of dipstick provides respective usage of diesel by the DG set. The records are aggregated on monthly and yearly basis. The recording is carried out on Liters basis and same is converted to kgs based on the diesel density factor as fixed ex-ante in the registered PDD. The assessment team has checked the log records maintained, purchase invoices and measurement practice during the on-site visit. The procedure for the monitoring of the parameters has been clearly described in the monitoring plan under section B.7.1 and B.7.2 of the registered PDD. The monitoring plan of the project activity has been duly implemented by the PP at the project activity site in accordance with the registered monitoring plan. The monitoring mechanism, including the data collection system, is found to be effective and reliable and it has been verified during the site visit of the project activity and by means of document review. The $NCV_{i,y}$ is checked against the latest version 11 of CEA CO_2 data base and found to be applied correctly. The project emission calculations are carried out based on the records provided for the entire months for verification. The monitoring period starts from 01/01/2013 and ends on 31/10/2015 and all the details provided are found to be appropriate.
Conclusion	During this monitoring period, the project activity has consumed a total of 1375 litres of diesel as per log records. Accordingly, the total project emissions work out to be 3.56 tCO_2e, same is considered as 4 tCO_2e conservatively. The log records have been cross checked with the purchase records from the stores. All the evidences has been provided to and checked by the verification team and confirmed as credible. The project emissions calculations are found to be correct.

E.8.3. Calculation of leakage GHG emissions

Means of verification	Leakage has been verified by document review, review of the data and information presented, the monitoring methodology including applicable tool(s), evaluation of data management, review of ER calculation sheet, review of registered PDD, Validation report and Monitoring report, Review of applied methodology AMS-I.D version 17.0.
Findings	There are no leakage emissions as energy generation equipment is not transferred

	from another project activity.
Conclusion	In line with registered PDD, the leakage LE_y is considered as zero is found correct

E.8.4. Summary of calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	GHG emission reduction calculations has been verified by document review, review of the data and information presented, review of the registered monitoring plan, the monitoring methodology including applicable tool(s), evaluation of data management and the quality assurance and quality control system, onsite site inspection,, review of registered PDD, Review of ER calculation sheet, Validation report and Monitoring report, Review of applied methodology AMS-I.D version 17.0,CO_2 Baseline Database for the Indian Power Sector prepared by Central Electricity Authority, Version 5, IPCC guidelines
Findings	According to the registered PDD and the MR, the GHG emission reductions of the project are calculated as follows: $ER_y = BE_y - PE_y - L_y$ Where: ER_y = Emission reductions BE_y = Baseline emissions PE_y = Project emissions L_y = Leakage There are no leakage emissions as energy generation equipment is not transferred from another project activity. Therefore, in line with registered PDD, the project emissions PE_y and leakage L_y are zero. The total emission reductions ER_y for the current monitoring period is calculated as : $ER_y = BE_y = EG_y * EF_y$ $BE_y = EG_y * EF_y$ = 76,800 MWh * 0.8400 tCO_2e/MWh = 64,508 tCO_2e $PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y}$ $COEF_{i,y} = NCV_{i,y} \times EF_{CO2,i,y}$ 1375 (l) * 0.83 (kg/l) * 0.0031233 (tCO_2e/kg) = 3.56 t CO_2e (rounded up conservatively) The verification team has reviewed all the data and found correct and consistent with the values as available in ER calculation sheet. Thus, the values considered for baseline emission and project emission calculation was found to be correct and accepted. The verification team has checked the JMRs, quantity of diesel used and cross checked data with invoices and found it to be correct. The net electricity exported to grid during the monitoring period is 76,800 MWh, the total quantity of diesel consumed by the project activity is 1,375 liters. Accordingly, the baseline emissions and project emissions of the project works out to be 64,512 tCO_2e and 4 tCO_2e respective. Thus, the net emission reductions are from the project are 64,508 tCO_2e.
Conclusion	The ER calculation sheet has provided to the verification team and confirmed as

	that the calculation is correct and conservative. The verification team has checked all the JMR, diesel consumption log records and the respective sale receipts and confirmed the calculation of emission reductions is correct and conservative. Quality Management procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel in the framework of this CDM project activity have been defined. On basis of site verification and document review, the verification team confirms that the CDM responsibility allocated is followed at the site and is the one as described in the monitoring plan. Quality assurance procedures are in place in line with the monitoring plan. Staffs are made aware of the quality assurance procedures. The operation and maintenance of the project activity is carried out by the team of PP directly. During the site visit, the verification team has interviewed the site personnel of the hydro power plant, who are involved in data collection, monitoring and archiving. The team found that these people are qualified and competent to carry out their responsibilities and confirmed that organization structure followed as defined in the monitoring plan. The site visit confirmed that monitoring and reporting is carried out consistently and records are kept in a secure and consistent manner. Data will be kept by the project participants during the crediting period and two years after for DOE's verification. The net electricity supplied to the NEWNE grid which is the mentioned in the monitoring report and emission reduction calculation sheet has been verified with the Monthly JMRs, diesel consumption records and the same has been cross verified with the records for sold electricity (invoices) and fuel purchase receipts. In order to calculate the emission reductions, the value of the net electricity exported to the grid is considered, in addition, project emissions of diesel/HSD consumption are estimated. During verification, the procedure for data transfer and compilation was also verified and found in compliance with the monitoring requirement. Thus, it is confirmed that quality of the evidences is reliable and satisfactory. Thus, it is ensured that the quality assurance and quality control procedures have been applied in accordance with the revised monitoring plan of the project activity. In line with para 403 of VVS ver 09.0, the verification team confirms the following: • The data used for the determination of the emission reductions were available for the monitoring period 01/01/2013 to 31/10/2015 (both days inclusive) and were in accordance with the monitoring plan which was checked to be correct by the verification team • The reported data has been checked with the JMRs and cross checked with electricity sales receipt. The calibration certificates were also checked. The monitored data was cross checked with sales receipts during site visit by the verification team; • The diesel consumption log records, respective fuel purchase bills and dip stick calibration certificates have been checked by the verified team; • The methods and formulae for calculating baseline emissions have been properly followed in accordance with the provisions in the registered PDD and applied methodology. The baseline and project emissions are calculated as per the procedure provided in the monitoring plan of the registered PDD. There are no leakage emissions in the project activity. • The assumptions, emission factors and default values that were applied in the monitoring report and the calculations have been justified

E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	Comparison of actual GHG emission reduction with estimates in registered PDD has been verified by document review, review of the data and information presented, onsite site inspection,, review of registered PDD, Validation report and Monitoring report, review of ER calculation sheet, Review of applied methodology AMS-I.D version 17.0.
Findings	PP has considered this monitoring period from 01/01/2013 to 31/10/2015 (both days inclusive) i.e.1034 days. Thus, the annual estimated emission reductions for

	this duration (1034 days) for the 1st periodic verification are 55,788 tCO_2e (=19693*1034/365) as per the registered PDD. Further, the actual emission reductions from 01/01/2013 to 31/10/2015 (both days inclusive) are 64,508 tCO_2e, which is higher than the corresponding estimated emission reductions as per the PDD for a comparable period.
Conclusion	The emission reductions are calculated based on the actual net electricity supplied to the grid by the project. The actual net electricity supplied to the grid from 01/01/2013 to 31/10/2015 (both days inclusive) are 76,800 MWh and diesel consumption to an extent of 1,375. Thus, the corresponding actual emission reductions from 01/01/2013 to 31/10/2015 (both days inclusive) are calculated to be 64,508 tCO_2e. The verification team has checked the monthly JMR report and confirmed the actual electricity supplied to the grid is correct and consistent. Therefore, the actual emission reductions for the monitoring period are calculated correctly and are found to be higher than the estimated emission reduction.

E.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	Difference from estimated values in registered PDD has been verified by document review, review of the data and information presented, onsite site inspection, review of registered PDD, Validation report and Monitoring report, review of ER calculation sheet, Review of applied methodology AMS-I.D version 17.0.
Findings	PP has considered this monitoring period from 01/01/2013 to 31/10/2015 (both days inclusive) i.e.1034 days. Thus, the annual estimated emission reductions for this duration (1034 days) for the 1st periodic verification are 55,788 tCO_2e (=19693*1034/365) as per the registered PDD. However, the actual emission reductions for the monitoring period are 64,508 tCO_2e, which are higher than the estimated ERs by 15.63%. Hence, there was a clarification requested (CL10) from PP in this regard. The PP has responded that there was excess power generation from the project activity during the monitoring period, due to availability of excess water from catchment and upstream areas, such as, heavy rain fall, snow, floods inflow into river, which are purely natural phenomenon and are not under the control of PP. Based on the response, URS assessed the impact of this additional power generation on the project activity. As per the registered PDD, the project activity is expected to export a total of 23,445 MWh of electricity during each year. Accordingly, for this monitoring period from 01/01/2013 to 31/10/2015 (both days inclusive - 1034 days), project activity was to export a total of 66416.79 MWh of electricity to the NEWNE grid. However, the total export from the project activity was 76,800 MWh (after application of correction factor), which is 15.63% excess. There was a total excess of 15.63% GHG emission reductions from the project activity due to excess generation. URS has raised a clarification request (CL 10) to address the same. The response provided by PP along with supporting evidences has been cross checked and found to be credible. Hence, the same is accepted and closed out. The detailed response and assessment can be found under Appendix 3 of this report. Also, the 'Values estimated in ex ante calculation of registered PDD' under section E.2 of MR were not estimated appropriately. Hence, this error was included under the same CL 10 for appropriate corrections.
Conclusion	The actual Emission reduction during the monitoring period are higher by 15.63% of the estimated emission reduction in registered PDD for the same period. The verification team has checked the monthly JMR report and confirmed the actual electricity supplied to the grid is correct and consistent. In addition, though the excess inflow of water is not under the control of PP, the impact of such additional generation is assessed by URS. It is found that even with an additional power generation of 15.63%, the project activity still does not cross the benchmark WACC for this parameter, as provided under sensitivity analysis of registered PDD. The excess power generation is not affecting the information provided during the registration and URS ascertained the validity of project additionality. Therefore, the actual emission reductions for this monitoring period covering

	period 01/01/2013 to 31/10/2015 (both days inclusive) are found to be calculated correctly and acceptable.

E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Means of verification	Actual GHG emission reduction during first commitment period and period from 1 January 2013 onwards has been verified document review, review of the data and information presented, onsite site inspection,, review of registered PDD, Validation report and Monitoring report, review of ER calculation sheet, Review of applied methodology AMS-I.D version 17.0.
Findings	Actual emission reductions achieved up to 31/12/2012 from the project acivity are zero tCO_{2e}. The emission reductions from 1st January 2013 onwards are 64,508 tCO_{2e} (till 31/10/2015). The verification team has checked the monthly readings with the monthly JMR. The monthly JMR value has been cross checked against the invoice raised to the electricity board and found to be correct. The JMRs are provided for entire months and complete monitoring period.
Conclusion	The verification team has checked the monthly JMR report and confirmed the actual electricity supplied to the grid is correct and consistent. Thus, actual emission reductions from the project activity are calculated correctly. The verification team has reviewed all the data and found correct and consistent with the values as available in ER calculation sheet. There are no emission reductions from the project activity up to 31/12/2012. Thus, the values considered for period from 1 January 2013 onwards are found to be correct and accepted.

SECTION F. Internal quality control

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The Verification Report and its respective versions have undergone an Internal Quality Control through an Independent Technical Review (ITR).

ITR is an independent process performed to examine that the process of verification has been carried out in conformance with the requirements of verification scheme as well as URS verification procedures and the conclusion is justified. The technical review is performed by designated competent person, Independent Technical Reviewer, in accordance with URS qualification scheme for CDM validation and verification. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.

Name	Role
Shivraj Sharma	Technical Reviewer and Technical Area Expert TA 1.2

SECTION G. Verification opinion

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URS Verification Private Ltd has been contracted by M/s Raajratna Energy Holdings Pvt Ltd to perform the verification of the emission reductions reported for the CDM project "7 MW Bundled Hydro power project at Himachal Pradesh of Raajratna Energy Holdings Pvt. Ltd" with the UNFCCC registration number 9111 for the period 01/01/2013 to 31/10/2015 (both days inclusive).

URS Verification Private Ltd has performed the 1st periodic verification of the CDM project "7 MW Bundled Hydro power project at Himachal Pradesh of Raajratna Energy Holdings Pvt. Ltd", India with UNFCC reference number of 9111, registration date of 24/12/2012 and crediting period from 01/01/2013to 31/12/2022 (fixed). The verification includes confirming the implementation of the monitoring plan of the registered PDD Version 03.1 dated 11/12/2012 and the application of the monitoring methodology as per AMS I.D., Version 17 dated 03/06/2011. A site visit was conducted for two days on 05/02/2016 and 06/02/2016 to verify the implementation of project activity and verify monitoring plan and data submitted in the monitoring report, emission reduction sheet.

The verification activity is with regards to relevant requirements of CDM procedures which is based on the validated and registered project design document and the monitoring report for this project. Verification is performed in accordance with section I of Decision 3/CMP.1, and relevant decisions of the CDM EB and CoP/MoP. The scope of this engagement covers the verification and certification of greenhouse gas

emission reductions generated by the above project during the mentioned period as above, as reported in Monitoring Report of "7 MW Bundled Hydro power project at Himachal Pradesh of Raajratna Energy Holdings Pvt. Ltd", version 05, dated 10/10/2016.

The management of the M/s Raajratna Energy Holdings Pvt Ltd is responsible for the preparation, calculation and determination of GHG emission reductions from the project. The development and maintenance of records and reporting procedures are in accordance with the monitoring report.

URS confirms that the project is implemented in accordance with the validated and registered Project Design Document. The monitoring system is in place and the emission reductions are calculated without material misstatements. Based on the information observed at site and evaluated verification team confirmed that the implementation of the project has resulted in 64,508 tCO_2e emission reductions during period 01/01/2013 to 31/10/2015 (both days inclusive).

SECTION H.

SECTION I. Certification statement

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It is our responsibility to express an independent GHG verification opinion on the GHG emissions and on the calculation of GHG emission reductions from the project for the period 01/01/2013 to 31/10/2015 (both days inclusive) based on the reported emission reductions in the Monitoring Report, version 05, dated 10/10/2016 for the same period.

Based on documented evidences and corroborated by an on-site assessment URS Verifications confirms that:

- The project activity has been implemented and operated as per the revised PDD;
- The monitoring plan is in place as per the applied baseline and monitoring methodology;
- The monitoring report, data and calculation of the GHG emission reduction and other supporting documents provided are complete, verifiable and supports the emission reductions being claimed;
- The monitoring complies with the monitoring plan in the registered PDD;

The verification team confirms that the claimed emission reductions are free from material errors, omissions or misstatements, with a reasonable level of assurance. The corrections in PDD, which do not require prior approval are submitted along with request for issuance in line with para 158 of Project Cycle Procedure. These changes are as per Appendix 1 of CDM project Standard and fall under the category of changes that do not require prior approval of the Board. URS confirms that the project is implemented as described in the validated, registered and revised project design document. URS confirms that the material included in the revised PDD is materially the same as the information in the registered PDD. URS confirms that the project is implemented as described in the validated and revised project design document. The GHG emission reduction stated in the monitoring report version 05, dated 10/10/2016 for the "7 MW Bundled Hydro power project at Himachal Pradesh of Raajratna Energy Holdings Pvt. Ltd" for the period 01/01/2013 to 31/10/2015 (both days inclusive) are fairly stated.

Based on the information observed at site and evaluated verification team confirmed that the implementation of the project has resulted in 64,508 tCO_2e emission reductions during period 01/01/2013 to 31/10/2015 (both days inclusive) and would not have occurred in the absence of project activity.

Based on the information evaluated, we confirm the following:

Project Title:	7 MW Bundled Hydro power project at Himachal Pradesh of Raajratna Energy Holdings Pvt. Ltd
UNFCCC Reference Number:	9111
Registered PDD and Approved PDD Used for Verification:	Registered PDD Version 03.1 dated 11/12/2012
Methodology Used for Verification	AMS I.D, "Grid connected renewable energy generation", Version 17 dated 03/06/2011
Monitoring Period:	01/01/2013 to 31/10/2015 (inclusive of both days)

Total GHG Emission Reductions Verified from 15/12/2012 to 31/12/2012	0
Total GHG Emission Reductions Verified from 01/01/2013 to 14/12/2014	64,508 tCO_{2e}

Abbreviations

Abbreviations	Full texts
BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CDM-PCP	Clean Development Mechanism Project Cycle Procedure
CDM-PS	Clean Development Mechanism Project Standard
CDM-VVS	Clean Development Mechanism Validation and Verification Standard
CEA	Central Electricity Authority
CEF	Carbon Emission Factor
CER	Certified Emission Reduction(s)
CL	Clarification request
CO_2	Carbon dioxide
CO2e	Carbon dioxide equivalent
DG	Diesel Generator
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
HPSCCC	Himachal Pradesh State centre on climate change,
IMD	Indian Meteorological Department
IPCC	Intergovernmental Panel on Climate Change
JMR	Joint Meter Reading
LoA	Letter of Approval
MOC	Modalities of Communication Statement
MoV	Means of Verification
MP	Monitoring Plan
MR	Monitoring Report
NEWNE	North East West North-East
PDD	Project Design Document
PE	Project Emission
PP(s)	Project Participant(s)
PPA	Power Purchase Agreement
Ref	Document Reference
SS(s)	Sectoral Scope(s)
SSC	Small Scale
TA	Technical Area within the Sectoral Scope
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Clean Development Mechanism Validation and Verification Standard

Appendix 1. Competence of team members and technical reviewers

QUALIFICATION CERTIFICATE

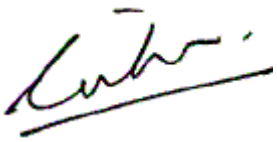
We declare that Mr. Ashok Kumar

is qualified as Validator/Verifier

for the Technical Area 1.1, 1.2, 13.1

Technical Area	Technical Area Description	Sectoral Scope
1.1	Thermal Energy generation	1
1.2	Renewable	1
13.1	Solid waste and wastewater	13

He is also qualified as Team Leader for validation/verification functions



CEO

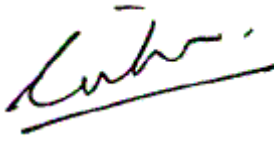
QUALIFICATION CERTIFICATE

We declare that Mr Vijay Kumar Machcha

is qualified as Validator/Verifier

for the Technical Area 1.2

Technical Area	Technical Area Description	Sectoral Scope
1.2	Renewables	1



CEO

QUALIFICATION CERTIFICATE

We declare that Mr. Shivraj B Sharma

is qualified as Technical Reviewer

for the Technical Area 1.2

Technical Area	Technical Area Description	Sectoral Scope
1.2	Renewable	1

He is also qualified as Team Leader for validation/verification functions

CEO

Appendix 2. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	CDM EB	AMS I.D "Grid-connected renewable electricity generation", version 17, dated 03/06/2011	Version 17, dated 03/06/2011 http://cdm.unfccc.int/methodologies/index.html	Others
2	CDM EB	Clean Development Mechanism Validation and Verification Standard, Version 09.0, dated 20/02/2015, Annex 14 of EB 82	Version 09.0, dated 20/02/2015, Annex 14 of EB 82 http://cdm.unfccc.int/Reference/Standards/index.html	Others
3	CDM EB	Clean Development Mechanism Project Standard, Version 09.0, dated 20/02/2015, Annex 13 of EB 82	Version 09.0, dated 20/02/2015, Annex 13 of EB 82 http://cdm.unfccc.int/Reference/Standards/index.html	Others
4	CDM EB	Clean Development Mechanism Project Cycle Procedures (PCP), Version 09.0, Annex 15 of EB 82.	Version 09.0, Annex 15 of EB 82. http://cdm.unfccc.int/Reference/Standards/index.html	Others
5	HPSEB	Commissioning or commercial date of operation letter with reference number - HPSEBL/CE (comm..)/(PSP)/Belij/2012-13 - 5207-17 dated 11/06/2012	Commissioning date of the project	Others
6	REHPL	Monitoring Report for the project titled "7 MW Bundled Hydro power project at Himachal Pradesh of Raajratna Energy Holdings Pvt. Ltd", version 1 dated 22/12/2015	Version 1 dated 22/12/2015	Project Participant
7	REHPL	Monitoring Report for the project titled "7 MW Bundled Hydro power project at Himachal Pradesh of Raajratna Energy Holdings Pvt. Ltd", version 2 dated 06/05/2016	Version 2 dated 06/05/2016	Project Participant
8	REHPL	Monitoring Report for the project titled "7 MW Bundled Hydro power project at Himachal Pradesh of Raajratna Energy Holdings Pvt. Ltd", version 3 dated 20/06/2016	Version 3 dated 20/06/2016	Project Participant
9	REHPL	Monitoring Report for the project titled "7 MW Bundled Hydro power project at Himachal Pradesh of Raajratna Energy Holdings Pvt. Ltd", version 4 dated 09/09/2016	Version 4 dated 09/09/2016	Project Participant
10	REHPL	Monitoring Report for the project titled "7 MW Bundled Hydro power project at Himachal Pradesh of	Version 5 dated 10/10/2016	Project Participant

		Raajratna Energy Holdings Pvt. Ltd", version 5 dated 10/10/2016		
11	REHPL	Emission Reduction Sheet for project titled "7 MW Bundled Hydro power project at Himachal Pradesh of Raajratna Energy Holdings Pvt. Ltd", version 1 dated 22/12/2015	Version 1 dated 28/12/2015	Project Participant
12	REHPL	Emission Reduction Sheet for project titled "7 MW Bundled Hydro power project at Himachal Pradesh of Raajratna Energy Holdings Pvt. Ltd", version 2 dated 06/05/2016	Version 2 dated 06/05/2016	Project Participant
13	REHPL	Emission Reduction Sheet for project titled "7 MW Bundled Hydro power project at Himachal Pradesh of Raajratna Energy Holdings Pvt. Ltd", version 3 dated 09/09/2016	Version 3 dated 09/09/2016	Project Participant
14	REHPL	Emission Reduction Sheet for project titled "7 MW Bundled Hydro power project at Himachal Pradesh of Raajratna Energy Holdings Pvt. Ltd", version 4 dated 10/10/2016	Version 4 dated 10/10/2016	Project Participant
15	REHPL	CDM-SSC-PDD of the Project Actiivty titled"7 MW Bundled Hydro power project at HimachalPradesh of Raajratna Energy Holdings Pvt. Ltd" version 3.1 dated 11/12/2012	Version 3.1 dated 11/12/2012	Project Participant
16	REHPL	Revised CDM-SSCC-PDD of the Project Actiivty titled"7 MW Bundled Hydro power project at HimachalPradesh of Raajratna Energy Holdings Pvt. Ltd" version 4	Version 4 dated 10/10/2016	Project Participant
17	REHPL	Validation report for the project activitytitled "7 MW Bundled Hydro power project at HimachalPradesh of Raajratna Energy Holdings Pvt. Ltd", version 1 dated 18/12/2012	Version 1 dated 18/12/2012	Project Participant
18	REHPL	Major Shut down (more than 24 hrs) details observed for the plant	Spread sheet - 2013-2015 - Major shutdowns.090516 - clean	Project Participant
19	HPSEB	JMR for the monitoring period.	JMR from 01/01/2013 to 31/10/2015	Others
20	REHPL	Invoice submitted to HPSEB	Invoices for period01/01/2013 to 31/10/2015	Project Participant
21	REHPL	Log records for Diesel consumption in Plant	Diesel consumption log	Project Participant
22	Yadav Measurement Private Limited	Calibration Records for meter located at Common Pooling Station (CPS);	Calibration records from July 2012 to July 2015 for CPS meters	Others

	(YMPL)	1. July 2012 with reference no. YMPL/214317/41172 for meter number 11068619 2. January 2013 with reference no. YMPL/547893/57864 for meter number 11068619 3. July 2013 with reference no. YMPL/134723/31234 for meter number 11068619 4. January 2014 with reference no. YMPL/434735/51233 for meter number 11068619 5. July 2014 with reference no. YMPL/134421/12654 for meter number 11068619 6. January 2015 with reference no. YMPL/534324/32652 for meter number 11068619 7. July 2015 with reference no. YMPL/234343/11265 for meter number 11068619 8. July 2015 with reference no. YMPL/234378/11345 for meter number 09142049		
23	Ranjan Kar – Chartered Enginner	Calibration records from June 2013 to June 2015 for dipstick used in project. 1. RK/BHPPL/2013/C01 dated 15/06/2013 2. RK/BHPPL/2014/C02 dated 15/06/2014 3. RK/BHPPL/2015/C03 dated 15/06/2015	Dipstick Calibration certificates	Others
24	Power Grid Corporation of India (PGCI)	Calibration records of the JMR meters carried out by a. With reference numbers. RTL/NR-II/CAL/201213-0153/2012, RTL/NR-II/CAL/201213-0154/2012, RTL/NR-II/CAL/201213-0155/2012, RTL/NR-II/CAL/201213-0156/2012 dated 22/12/2012, b. With reference no. RTL/NR-II/CAL/201314-81/2013, RTL/NR-II/CAL/201314-82/2013, RTL/NR-II/CAL/201314-83/2013, RTL/NR-II/CAL/201314-84/2013, dated 17/06/2013, c. With reference no. RTL/NR-II/CAL/201314-236/2013, RTL/NR-II/CAL/201314-237/2013, RTL/NR-II/CAL/201314-238/2013, RTL/NR-II/CAL/201314-239/2013 dated 19/12/2013, d. With reference no. RTL/NR-II/CAL/2014-	Calibration records from July 2012 to July 2015 for JMR Meters	Others

		15/047/2014, RTL/NR-II/CAL/2014-15/048/2014, RTL/NR-II/CAL/2014-15/049/2014, RTL/NR-II/CAL/2014-15/050/2014 dated 10/06/2014, e. With reference no. RTL/CAL/20141209/91, RTL/CAL/201412010/192, RTL/CAL/201412011/193, RTL/CAL/201412012/194 dated 15/12/2014 f. With reference no. RTL/CAL201505005/22, RTL/CAL201505006/23, RTL/CAL201505007/24, RTL/CAL201505008/25 dated 12/05/2015		
25	REHPL	Minutes of Meeting (MOM) between representatives of PP and HPSEBL for installation and replacement of Tri-vector Meters 1. June 2012 MOM dated 15/06/2012 2. December 2012 MOM dated 21/12/2012 3. June 2013 MOM dated 20/06/2013 4. December 2013 MOM dated 20/12/2013 5. June 2014 MOM dated 11/06/2014 6. December 2014 MOM dated 18/12/2014 7. June 2015 MOM dated 16/06/2015	MOM for meter replacements	Project Participant
26	MOU agreement	MOU signed by project participants along with other project promoters dated May 2009	MOU dated May 2009	Others
27	HPSEB	Consent for operation of plant. 1. HPSEB(66)Belij HEP-Chamba /14-22120-24 dated 19/12/2014 valid up to 31/03/2015 2. AWH-36039 dated 16/09/2015 valid up to 31/03/2020	Consent for operation from PCB	Others
28	REHPL	Log record scan documents for period of shutdown covering: 30-04-2013 to 07-05-2013 28-07-2014 to 01-08-2014 20-12-2013 to 17-01-2014 05-02-2014 to 18-02-2014 04-01-2015 to 09-01-2015 29-01-2013 to 31-01-2013	Log records for plant shutdown	Project Participant
29	REHPL	Diesel log records of diesel	Log records of diesel	Project

		generator set: For the complete monitoring period	consumption	Participant
30	CEA	CEA CO_2 baseline data base version 11	Version 11 dated April 2016 www.cea.nic.in	Project Participant & publicly available

Appendix 3. Clarification requests, corrective action requests and forward action requests

Table 1. Remaining FAR from validation and/or previous verification

No FAR was observed in validation report of the project activity

FAR ID	xx	**Section no.**	E.2	**Date:** DD/MM/YYYY
Description of FAR				
Project participant response				**Date:** DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				**Date:** DD/MM/YYYY

Table 2. CL from this verification

Date:	12/02/2016	**Raised by:**		Vijay Kumar Machcha Ashok Kumar	
Type of Finding	CL	**S. No. of Finding**	5	**Reference**	Section D.2 of MR
Details of the Finding:		12/02/2016			
1. PP is requested to provide the calibration certificates for the meter installed at common pooling station (CPS). 2. PP is requested to clarify whether the meters installed at CPS replaced during the current monitoring period.					
Project Participant Response		06/05/2016			
1. Calibration certificates of the meter installed at common pooling station are provided for verification 2. There is a change in the meter installed at CPS during the current monitoring period. The initial meter that has been in use during the monitoring period from January 2013 to July 2015 was with a serial number 11068619, L&T make and there was a new meter with Serial number 09142049, L&T make has been installed, replacing the previous meter in August 2015. Both the meters are of same specifications. The same can be checked in the Aug 2015 and previous JMRs.					
Documents/ information provided by the Project Participant:					
1. Joint meter readings (JMRs) of the project – January 2013 to October 2015 (for 34 months)					
Reasoning for ~~acceptance or~~ non-acceptance:		25/05/2016			
1. Calibration certificates of common polling station meters are not provided for verification. CL is open.					

2. The meter change has been evidenced by reviewing the JMRs of the project activity. There is only one incident of meter change noted during the monitoring period, in August 2015. It is also observed that the old and new meters are of same make, accuracy class and specifications. The clarification provided is satisfactory. Hence, CL is closed.

Project Participant Response	18/06/2016
1. Calibration records for meter 11068619 for period covering January 2013 to July 2015 and records for meter 09142049 for period covering from August 2015 are provided for verification.	
Documents/ information provided by the Project Participant:	
Calibration records: 1. July 2012 with reference no. YMPL/214317/41172 for meter number 11068619 2. January 2013 with reference no. YMPL/547893/57864 for meter number 11068619 3. July 2013 with reference no. YMPL/134723/31234 for meter number 11068619 4. January 2014 with reference no. YMPL/434735/51233 for meter number 11068619 5. July 2014 with reference no. YMPL/134421/12654 for meter number 11068619 6. January 2015 with reference no. YMPL/534324/32652 for meter number 11068619 7. July 2015 with reference no. YMPL/234343/11265 for meter number 11068619 8. July 2015 with reference no. YMPL/234378/11345 for meter number 09142049 MR Version 03	
Reasoning for acceptance ~~or non-acceptance~~:	30/06/2016
1. Calibration records provided by PP for common pooling station have been checked and found all the records are in line with the calibration requirements. Hence, CL 5 is closed.	
Close out by Lead Assessor	30/06/2016

Date:	12/02/2016	**Raised by:**		Vijay Kumar Machcha Ashok Kumar	
Type of Finding	CL	**S. No. of Finding**	6	**Reference**	Section D.2 of MR
Details of the Finding:		12/02/2016			
PP is requested to submit the calibration certificates for the dipstick used for measurement of diesel consumption by DG set.					
Project Participant Response		06/05/2016			
There is another dipstick used at the project site used for standby. The calibration records of the dipsticks are submitted for verification.					
Documents/ information provided by the Project Participant:					
Monitoring Report, Version 02, dated 06/05/2016					
Reasoning for ~~acceptance or~~ non-acceptance:		25/05/2016			
There are no evidences submitted with reference to the standard dipstick or the calibration records maintained as stated. CL is open.					
Project Participant Response		18/06/2016			
The dipstick purchase bills for both the dipsticks and calibration records maintained at the project site are submitted for verification.					
Documents/ information provided by the Project Participant:					
MR Version 03 Dipstick 1 purchase bill, with invoice no.566 dated 15/06/2012 Dipstick 2 purchase bill, with invoice no.578 dated 25/12/2012					
Reasoning for ~~acceptance or~~ non-acceptance:		05/08/2016			
Dipstick purchase bills have been submitted by the PP. However, calibration records of the dipstick as per the monitoring requirements are yet to be submitted.					

Project Participant Response	09/09/2016
The dipstick calibration reports for complete monitoring period are now submitted for verification.	
Documents/ information provided by the Project Participant:	
1. RK/BHPPL/2013/C01 dated 15/06/2013 2. RK/BHPPL/2014/C02 dated 15/06/2014 3. RK/BHPPL/2015/C03 dated 15/06/2015	
Reasoning for acceptance ~~or non-acceptance~~:	22/09/2016
PP has now submitted the calibrator reports for the dip stick used, under taken by a registered charted engineer. The calibration records have been checked and found to be meeting the calibration and monitoring requirements. Hence, the same is accepted and CL 6 is closed.	
Close out by Lead Assessor	22/09/2016

Date:	12/02/2016	**Raised by:**		Vijay Kumar Machcha Ashok Kumar	
Type of Finding	CL	**S. No. of Finding**	8	**Reference**	Section D.2 of MR
Details of the Finding:		12/02/2016			
There is a mention of an agreement signed by 3 project developers for maintenance of common transmission line. PP is requested to provide the same for verification.					
Project Participant Response		06/05/2016			
The common transmission line agreement signed by the 3 project developers has been submitted for verification					
Documents/ information provided by the Project Participant:					
-					
Reasoning for ~~acceptance or~~ non-acceptance:		25/05/2016			
The mentioned agreement is not submitted for verification. CL is open.					
Project Participant Response		18/06/2016			
MOU signed among the project participant is now submitted for verification.					
Documents/ information provided by the Project Participant:					
MOU signed by project participants along with other project promoters dated May 2009 MR Version 03					
Reasoning for acceptance ~~or non-acceptance~~:		30/06/2016			
MOU signed by the PP in May 2009 for common transmission line construction and maintenance has now been provided for verification. The same is checked and found to be in line with the details mentioned in the PDD. Hence, CL 8 is closed.					
Close out by Lead Assessor		30/06/2016			

Date:	12/02/2016	**Raised by:**		Vijay Kumar Machcha Ashok Kumar	
Type of Finding	CL	**S. No. of Finding**	9	**Reference**	Section D.2 of MR
Details of the Finding:		12/02/2016			
1. JMRs submitted for the following months are incomplete. PP is requested to provide the full JMRs for the verification: - June 2013 - July 2013 - October 2013 - November 2014 2. PP is requested to submit the Consent for Operation (CFO) issued by pollution control board for the project activity					
Project Participant Response		06/05/2016			
1. Full JMRs for the mentioned months June 2013, July 2013, October 2013 and November 2014 have					

been submitted for verification. 2. Consent for operation (CFO) has been submitted for verification.
Documents/ information provided by the Project Participant:
1. JMR June 2013 dated 04/07/2013, with reference no. 253768/12-13:3399-3405, issued by Himachal Pradesh State Electricity Board Ltd (HPSEBL) 2. JMR July 2013 dated 03/08/2013, with reference no. 253768/2013-469197, issued by Himachal Pradesh State Electricity Board Ltd (HPSEBL) 3. JMR October 2013 dated 07/11/2013, with reference no. 253768/13-14-7606-12, issued by Himachal Pradesh State Electricity Board Ltd (HPSEBL)

Reasoning for ~~acceptance or~~ non-acceptance:	25/05/2016
1. JMR reports for June 2013, July 2013 and October 2013 have been submitted and found to be complete. However, full JMR report for November 2014 is yet to be provided. CL is open. 2. Consent for operation has not been submitted for verification. CL is open.	
Project Participant Response	18/06/2016
1. Full JMR report for November 2014 is now submitted for verification. 2. Project consent for operations from pollution control board and respective payment receipts made by Project participants since project commissioning have been submitted for verification.	
Documents/ information provided by the Project Participant:	
1. JMR November 2014 dated 10/11/2014, with reference no. 253768/14-15-10100-10106, issued by Himachal Pradesh State Electricity Board Ltd (HPSEBL) 2. Consent for operation with reference no. HPSEB(66)Belij HEP-Chamba /14-22120-24 dated 19/12/2014 valid up to 31/03/2015 3. Consent for operation with reference no. AWH-36039 dated 16/09/2015 valid up to 31/03/2020 4. Renewal payment receipt dated 14/02/2013 5. Renewal payment receipt dated 21/05/2015 6. MR Version 03	
Reasoning for acceptance ~~or non-acceptance~~:	30/06/2016
1. JMR report submitted for November 2014 is checked and found the same is complete. Hence, CL is closed. 2. PP has now submitted all the records with respect to HPPCB consent and application receipts. All the records have been verified and found to be OK. The project is operational with valid Consent for Operation from HPSEB. CL is closed. CL 9 is closed.	
Close out by Lead Assessor	30/06/2016

Date:	12/02/2016	**Raised by:**		Vijay Kumar Machcha Ashok Kumar	
Type of Finding	CL	**S. No. of Finding**	10	**Reference**	Section E.6 of MR

Details of the Finding:	12/02/2016
It is observed that there was an excess in CERs generation to the extent of 15.65% noted by project activity during the verification period. PP is requested to provide the justification on the same.	
Project Participant Response	06/05/2016
There was an excess in CERs generation due to excess power generation from the project activity during the monitoring period, as a result of availability of excess water from catchment and upstream areas. This occurred due to various reasons such as, heavy rain fall, snow, floods inflow into river, which are purely natural phenomenon and are not under the control of PP. However, as per the sensitivity analysis in the registered PDD, the project is still well below the reach of breaching the benchmark WACC, which is about 22.9% for parameter PLF.	
Documents/ information provided by the Project Participant:	
Monitoring Report, Version 02, dated 06/05/2016	

Reasoning for ~~acceptance~~ ~~or~~ non-acceptance:	25/05/2016
The reason provided by the PP is assessed, keeping in the view of additionality analysis presented in the registered PDD. As per the registered PDD, the project activity is expected to export a total of 23,445 MWh of electricity during each year. Accordingly, for this monitoring period from 01/01/2013 to 31/10/2015 (both days inclusive - 1034 days), project activity was to export a total of 66416.79 MWh of electricity to the NEWNE grid. However, the total export from the project activity was 76,814 MWh, which is 15.65% excess. Though the additional inflow of water is not under the control of PP, the impact of such additional generation is assessed. It is found that even with an additional power generation of 15.65%, the project activity still does not cross the benchmark WACC for this parameter, as provided under sensitivity analysis of registered PDD. The excess power generation is not affecting the information provided during the registration and DOE ascertained the validity of project additionality. Though the additional inflow of water is not under the control of PP, the reason for excess power generation is not clearly substantiated by PP. However, it is noted that the 'Values estimated in ex ante calculation of registered PDD' provided in the table under section E.2 of MR is 55,734 (19693 per annum), which is incorrect.	
Project Participant Response	10/10/2016
It was a typo error. The same has been corrected in line with the calculations provided in the ER sheet, version 04. The 'Values estimated in ex ante calculation of registered PDD' is now corrected to 55,788 under section E.2 of the revised MR.	
Documents/ information provided by the Project Participant:	
1. Monitoring Report, Version 05, dated 10/10/2016 2. ER sheet, Version 4 dated 10/10/2016	
Reasoning for ~~acceptance~~ ~~or~~ non-acceptance:	11/10/2016
The revised Monitoring report Version 05 has been checked and found the error has been rectified by PP and the same is now consistent with the ER Sheet. However, the reason for excess power generation is still not clearly substantiated by PP.	
Project Participant Response	19/10/2016
The overall project generation is in excess of 15.63% (post correction factor application) for the monitoring period. However, during the year 2013, the excess was noted mainly during monsoon season from months June to October 2013. The annual mean rainfall in Himachal Pradesh over a period of 1901 to 2001 is 840.65 mm[1], whereas, during this year, the annual rainfall was noted at 1310.5 mm[2], causing flash floods and heavy runoff. This resulted in high availability of river inflow and hence, the generation. The rest of the months the generation was either very less or marginal to that of average generation of the project. The evidence of flash floods hit the Himalayan region during the excess generation period published in news papers/articles are submitted for verification[3], which was not envisaged or under control of the PP. For the year 2014, the excess generation was impacted by two factor, heavy rains/floods and rapid glacier melting. The same factors impacted the generation in the year 2015 as well. From March to June, the region experiences summer season. Year 2014 & 2015 being the hottest recorded in the history[4], naturally resulted	

[1] Seasonal, monthly and annual rainfall trends in Himachal Pradesh during 1901-2001, State centre on Climate change, Himachal Pradesh (HPSCCC)
http://www.hpccc.gov.in/documents/Final%20Rainfall%20Document%20-%20Copy.pdf

[2] https://knoema.com/icrqbyg/monthly-rainfall-data-district-wise-for-2004-2013?state=1000130-himachal-pradesh (rainfall data 2004-2013)

[3] http://www.ndtv.com/cheat-sheet/uttarakhand-himachal-pradesh-battered-by-rain-death-toll-rises-to-130-more-than-70-000-stranded-525881
https://planet-risk.org/index.php/pr/article/view/183/400
http://www.iol.co.za/news/world/5-748-feared-dead-after-india-floods-1546813#.UePfZdIVNlc
http://www.cbsnews.com/news/india-raises-flood-death-toll-reaches-5700-as-all-missing-persons-now-presumed-dead/
http://www.foxnews.com/world/2013/07/15/india-says-5748-missing-in-floods-now-presumed-dead.html
http://www.independent.co.uk/news/world/asia/stranded-in-uttarakhand-50000-trapped-by-flooding-and-landslides-after-himalayan-tsunami-hits-india-8667854.html

[4] http://www.livemint.com/Politics/M6nZqUOY7CHbFxBlsakjYL/2015-was-Indias-third-hottest-year-on-record-IMD.html
https://www.theguardian.com/world/2016/may/20/india-records-its-hottest-day-ever-as-temperature-hits-51c-thats-1238f
https://www.theguardian.com/environment/climate-consensus-97-per-cent/2016/jul/11/we-just-broke-the-record-for-hottest-year-9-straight-times
http://chimalaya.org/2014/12/26/ipcc-climate-experts-say-2015-will-be-hotter-than-2104/
http://indianexpress.com/article/cities/chandigarh/2015-was-the-warmest-year-on-record-in-recent-history/

in high melting of ice/snow in the upper mountain regions of Himalaya, where the project is located very close to. This resulted in unexpected heavy inflow of water to the project, along with rainfall, resulted in excess generation. About half of the excess generation in the year 2014 is due to inflows of water in the summer season and the rest is due to floods[5]. From the electricity export records it is clearly visible that the highest power generation noted in the year 2014 & 2015 were during summer months May-2014, June-014, March-2015 & April-2015, which was not an usual phenomenon; compared to otherwise an average to low inflow during these months. The assessment of seasonal snow cover variation published by Himachal Pradesh state centre on climate change clearly indicates significant difference in area under snow in the year 2015-16 compared to the period 2010-2014[6] for Ravi river basin indicates high amount of snow melting down and flowing into the river. The source of water for project is from belij nala, which is a tributary to river ravi. Additionally, Indian Meteorological Department (IMD) data clearly proves that there was an excess unseasonal rain fall during summer to an extent of 29%[7] recorded in Himachal Pradesh state during the period 01/03/2015 to 31/05/2015, contributing to unexpected heavy water inflow into the rivers. Also, the year 2015 is considered from the month of January to October in the current monitoring period, which has mostly covered the peak generation months. November and December being the low electricity generation months of the year, which were not part of the monitoring period, the generation naturally reflecting on the higher side. In spite of situations not under direct control of the project participants resulting in excess power generation, the project is still well below the breaching level of benchmark IRR referred in the registered PDD. In all the above listed instances of power generation, project never exceeded the limit of a small scale project as per AMS I.D methodology. The links to respective seasonal extremes such as, floods, heavy rainfall and high temperatures are provided as evidence.
Documents/ information provided by the Project Participant:
1. Monitoring Report, Version 05, dated 10/10/2016 2. ER sheet, Version 4 dated 10/10/2016

Reasoning for acceptance ~~or non-acceptance~~:	19/10/2016
The year wise data of the project generation was cross checked against the evidences provided by the PP. For the year 2013, the flash floods resulted in excess availability of water to the project, as evidence by the articles and links provided. For the year 2014 & 2015, the summer inflows have been evidenced by the inflow of water and report published by Himachal Pradesh state centre on climate change on 'The assessment of seasonal snow cover variation. As per the report page no 12 & 13, it was observed that the ravi river basin noted reduction in the area under snow cover ranging from -21% to -48% during various months, as compared to the average of years 2010-2014. This clearly substantiates the unseasonal higher inflow of water to the project activity. Data of IMD has also been checked against unseasonable excess summer rainfall during the year 2015 from March to May by 29%. Similarly, during monsoon season, the excess rainfall and floods resulted in excess generation, as evidenced by the news publications. As all the evidences cross checked are publicly available sources and indicates unexpected natural phenomenon resulted in excess generation from the project during the monitoring, hence, ascertained the same was not under the direct control of PP. As assessed, It is found that even with an additional power generation of 15.63%, the project activity still does not cross the benchmark WACC for PLF, as provided under sensitivity analysis of registered PDD. In conclusion, the excess power generation is not affecting the information provided during the registration of project activity and URS ascertained the validity of project additionality. Hence, the response is accepted and CL is closed.	
Close out by Lead Assessor	19/10/2016

Table 3. CAR from this verification

Date:	12/02/2016	**Raised by:**	Vijay Kumar Machcha

http://indianexpress.com/article/india/india-news-india/hottest-summer-2016-el-nino-temperature-india-meteorological-department2764309/

[5] http://floodlist.com/asia/floods-across-northern-india-6-states-affected
http://www.bloomberg.com/news/videos/2015-03-30/heavy-rain-floods-india-s-himalayan-region
http://chimalaya.org/2014/05/28/threat-of-uttarakhand-like-disaster-in-himachal-pradesh-scientists-worried/

[6] Pg.no12 & 13, Assessment of seasonal snow cover variation during the year 2015-16 in Himachal Pradesh using space data, Himachal Pradesh state centre on climate change (HPSCCC)
http://www.hpccc.gov.in/documents/SNover%202015-Final.pdf

[7] http://hydro.imd.gov.in/hydrometweb/(S(lskumtuqpuatbyjqic5zwxue))/Rainfallmaps.aspx

				Ashok Kumar	
Type of Finding	CAR	**S. No. of Finding**	1	**Reference**	MR, dated 22/12/2015

Details of the Finding:	12/02/2016

1. The description of project activity provided under section A.1, A.2 and A.4 of MR is not in line with Instructions for filling out the monitoring report form.

2. The number of days of current monitoring period considered in section A.5 is not matching with no. of days considered for current monitoring period in ER sheet.

3. It is not indicated in section A.6 of MR whether the person(s)/entity(ies) is(are) responsible for completing the CDM MR FORM , is also a project participant(s) in Appendix 1

4. The complete information on Description of the installed technology not provided in section B.1 of MR.

5. The detail of net energy exported from project activity and calibration detail has been provided in Appendix 1 which is not correct.

Project Participant Response	06/05/2016

1. Sections A.1, A.2 and A.4 of MR have been modified in line with the latest instructions for filling out the monitoring report form. Each section has been added with subsections as per the instructions form.

2. The total number of days in the current monitoring is 1034. The same has been corrected in the MR and is now matching with the ER sheet.

3. The section A.6 of the MR has been revised indicating the information on project participant(s).

4. Section B.1 has been revised with complete details of description of the installed technology as per the project activity and registered PDD.

5. The detail of net energy exported from project activity and calibration detail have now been correctly provided under Annex 1 of the MR.

Documents/ information provided by the Project Participant:

Monitoring Report, Version 02, dated 06/05/2016

Reasoning for acceptance ~~or non-acceptance~~:	25/05/2016

1. The Revised MR, Version 02 has been checked and found that section A.1, A.2 and A.4 are revised as per the Instructions for filling out the monitoring report form. The referred sections have been revised by addition of subsections and numbering as per the requirements. Further, PP has also provided the web reference of methodology applied for project activity in section A.4 of revised MR. The same is found to be appropriate, hence, accepted.

2. The section A.5 of the Revised MR, Verson 02) has been corrected in line with the total days of monitoring period considered in ER sheet. The total numbers of days are now mentioned as 1034 under section A.5 of revised MR, which is the same as mentioned in ER sheet. hence, accepted.

3. The PP has provided the detail of person(s)/entity(ies) are responsible for completing the CDM-MR-Form in section A.6 of revised MR. The MR has been completed by Jimmy Sah (Infinite Solution) which is not a project participant. The detail has also been included in Appendix 1 of the MR.. Hence, same is accepted.

4. The PP has provided the complete detail of the technology such as turbine, generator and power house for project activity in section B.1 of revised MR. and the detail provided in section B.1 is in line with the registered PDD. Hence the same is accepted.

5. The detail of net energy exported from project activity and calibration detail has been provided in

Annex I of the revised MR. Hence, same is accepted. All the corrective actions raised under this CAR1 have been appropriately addressed in version 02 of the MR dated 06/05/2016 and the same are accepted. Hence, CAR1 is closed.
Close out by Lead Assessor 25/05/2016

Date:	12/02/2016	**Raised by:**		Vijay Kumar Machcha Ashok Kumar	
Type of Finding	CAR	**S. No. of Finding**	2	**Reference**	Section A.2 of MR

Details of the Finding:	12/02/2016
The geographical coordinates provided for Power House and Trench Weir in MR are not correct.	
Project Participant Response	06/05/2016
The geographical co-ordinates provided for power house and trench weir have been corrected as per the actual details on site. The same has been updated in section A.2 of the MR.	
Documents/ information provided by the Project Participant:	
1. Monitoring Report, Version 02, dated 06/05/2016	
Reasoning for ~~acceptance or~~ non-acceptance:	25/05/2016
The geographical co-ordinates provided in the version 02 of MR are found to be appropriate and are clearly tracing the project power house and weir locations with accuracy. However, it is noted that the geographical co-ordinates provided registered PDD are different from the details provided in MR, version. 02. Pls clarify. CAR 2 is open.	
Project Participant Response	18/06/2016
The geographical co-ordinates provided in the PDD during registration has a minor error in noting the exact geo co-ordinates. However, the details taken for the project now in the MR are clearly identified, accurate and correct. This is a minor error in terms of project location and there is no impact on the project design, operation or any other details provided in the registered PDD. Hence, request you to consider the same.	
Documents/ information provided by the Project Participant:	
1. Monitoring Report, Version 03, dated 20/06/2016	
Reasoning for ~~acceptance~~ or non-acceptance:	05/08/2016
In section A.2 of the revised MR PP has mentioned the correct geographical co-ordinates of power house and diversion weir. The verification team has checked these geographical coordinates with the geographical coordinates taken during the site visit and found to be correct and hence, acceptable. As this change in the project location due to the said correction falls under Post registration changes requirement, however, the project participant has not submitted the revised PDD and MR with reference to the change in the location and PRC. CAR is open.	
Project Participant Response	09/09/16
The PDD and MR have been revised with respect to the applicable post registration for corrections made.	
Documents/ information provided by the Project Participant:	
1. Monitoring Report, Version 04, dated 09/09/2016 2. Revised PDD, Version 04, dated 14/09/2016	
Reasoning for acceptance ~~or non-acceptance~~:	22/09/2016
The revised PDD with respect to the corrections in geo-graphical coordinates change for power house and diversion weir and MR with necessary changes in section B.2 have been submitted for verification. The same have been checked by verification team and found to be acceptable. Hence, CAR 2 is closed.	
Close out by Lead Assessor	22/09/2016

Date:	12/02/2016	**Raised by:**		Vijay Kumar Machcha Ashok Kumar	
Type of Finding	CAR	**S. No. of Finding**	3	**Reference**	Section A.2 of MR

Details of the Finding:	12/02/2016

1. The organization structure for data monitoring, collection, data archiving and calibration provided in section C of MR is not as per registered PDD.

2. The monitoring requirement and procedures mentioned in section C is not complete.

3. The calibration frequency mentioned under QA/QC procedure in section C is not correct.

Project Participant Response	06/05/2016

1. The organization structure for data monitoring, collection, data archiving and calibration under section C of MR are now corrected as per the registered PDD.

2. The monitoring requirement and procedures mentioned are now revised as per the PDD and is now complete.

3. The calibration frequency mentioned under QA/QC is now corrected.

Documents/ information provided by the Project Participant:

1. Monitoring Report, Version 02, dated 06/05/2016

Reasoning for acceptance ~~or non-acceptance~~:	25/05/2016

1. The MR, version 02 has been revised and corrected by PP in line with the registered PDD. The organization structure for data monitoring, collection, data archiving and calibration are now found to be appropriate, hence, accepted.

2. The MR (V2) has been checked and found that complete monitoring requirements and procedures are covered under section C as per the registered PDD requirements. Hence, the same is accepted.

3. Under QA/QC procedures, the calibration frequency for main/check meters is found to be revised to once in every six months as per the PPA requirements, which is appropriate. Hence, the same is accepted.

All the corrective actions raised under this CAR3 have been appropriately addressed in version 02 of the MR dated 06/05/2016 and the same are accepted. Hence, CAR3 is closed.

Close out by Lead Assessor	25/05/2016

Date:	12/02/2016	**Raised by:**		Vijay Kumar Machcha Ashok Kumar	
Type of Finding	CAR	**S. No. of Finding**	4	**Reference**	Section B.1 of MR

Details of the Finding:	12/02/2016

The shut down history of the plant is not provided in the Monitoring Report.

Project Participant Response	06/05/2016

The shutdown details along with day and hours during the monitoring period are provided under Annex II of the MR. The shutdowns which are major and lasted for more than 24 hours are provided under this section.

Documents/ information provided by the Project Participant:

1. Monitoring Report, Version 02, dated 06/05/2016
2. Spread sheet - 2013-2015 - Major shutdowns.090516 - clean

Reasoning for ~~acceptance or~~ non-acceptance:	25/05/2016

Revised MR (V.2) and spread sheet have been reviewed. Annex II has been added in the latest version of the MR and details provided in the spread sheet are mentioned under the section. However, there are no clear evidences provided to substantiate that shutdown details are appropriate.

CAR 4 is open.

Project Participant Response	18/06/2016

The shutdown details are now supported with log records maintained at the project site. All the scan copies of the shutdown days mentioned in the Spread sheet provided for major shutdowns are now submitted for verification.
The details are now provided in the MR Version 3

Documents/ information provided by the Project Participant:

Log record scan documents for period covering:

30-04-2013 to 07-05-2013
28-07-2014 to 01-08-2014
20-12-2013 to 17-01-2014
05-02-2014 to 18-02-2014
04-01-2015 to 09-01-2015

MR Version 03

Reasoning for ~~acceptance or~~ non-acceptance:	05/08/2016

The scan copies of the log records provided by PP have been reviewed and cross checked with the plant shutdown details provided in Monitoring Report, Version 03 and Spread sheet - 2013-2015 - Major shutdowns.090516 – clean. The details provided in the spread sheet and MR are in line with the log sheets. However, the log sheets for 29-31, January 2013 are still missing.

CAR 4 is open.

Project Participant Response	09/09/2016

The log record scan copies for the period 29-31, January 2013 are now submitted for verification.

Documents/ information provided by the Project Participant:

Log record documents for period covering:

29-01-2013 to 31-01-2013

Reasoning for acceptance ~~or non-acceptance~~:	22/09/2016

PP has now submitted the shutdown log record copies for the period 29/01/2013 to 31/01/2013 log records for the verification. The log records have been cross checked with the details provided in the MR submitted and found to be consistent. Hence, the same is accepted and CAR 4 is closed.

Close out by Lead Assessor	22/09/2016

Date:	12/02/2016	**Raised by:**		Vijay Kumar Machcha Ashok Kumar	
Type of Finding	CAR	**S. No. of Finding**	7	**Reference**	Appendix 1 and D.2 of MR

Details of the Finding:	12/02/2016

The PP has provided the detail of calibration of meters installed at Jarangala sub-station during the monitoring period. However, following information is not correct and provided in the MR.

1. Date of installation of meters in December, 2012 is not mentioned.
2. Date of calibration provided in appendix 1 is not matching with the date of calibration of meters mentioned in meter testing report from December, 2012 to May 2015.
3. Records of meter installation and meter removal at Jarangala sub-station need to be submitted.
4. Calibration details of meters is not mentioned in section D.2 of MR

Project Participant Response	06/05/2016

1. Date of installation of meters was 21-12-2012. The supporting minutes of meeting dated 21/12/2012 have been submitted for verification.
2. There was an error in consideration of calibration date of meters. Now the same has been corrected as

per the meter testing reports submitted for verification. The same has been updated in the MR under Annex I (earlier named as Appendix I) accordingly.

3. All the meter installation and meter removal records are part of the JMRs submitted for verification. During the month of June and December each year
4. During the monitoring period, there has been change in the meters at Jarangala substation for 6 times and each time there were four newly calibrated meters installed. Hence, the same has been provided separately in tabular form under Annex I (previously Appendix I). However, there is clear reference under section D.2, $EG_{BL,y}$, QA/QC procedures is now included for calibration details of meters.

Documents/ information provided by the Project Participant:

1. Minutes of Meeting (MOM) between representatives of PP and HPSEBL dated 21/12/2012 for installation of Tri-vector Meters.
2. Calibration records of the JMR meters carried out by Power Grid Corporation of India
   g. With reference numbers. RTL/NR-II/CAL/201213-0153/2012, RTL/NR-II/CAL/201213-0154/2012, RTL/NR-II/CAL/201213-0155/2012, RTL/NR-II/CAL/201213-0156/2012 dated 22/12/2012,
   h. With reference no. RTL/NR-II/CAL/201314-81/2013, RTL/NR-II/CAL/201314-82/2013, RTL/NR-II/CAL/201314-83/2013, RTL/NR-II/CAL/201314-84/2013, dated 17/06/2013,
   i. With reference no. RTL/NR-II/CAL/201314-236/2013, RTL/NR-II/CAL/201314-237/2013, RTL/NR-II/CAL/201314-238/2013, RTL/NR-II/CAL/201314-239/2013 dated 19/12/2013,
   j. With reference no. RTL/NR-II/CAL/2014-15/047/2014, RTL/NR-II/CAL/2014-15/048/2014, RTL/NR-II/CAL/2014-15/049/2014, RTL/NR-II/CAL/2014-15/050/2014 dated 10/06/2014,
   k. With reference no. RTL/CAL/20141209/91, RTL/CAL/201412010/192, RTL/CAL/201412011/193, RTL/CAL/201412012/194 dated 15/12/2014 &
   f. With reference no. RTL/CAL201505005/22, RTL/CAL201505006/23, RTL/CAL201505007/24, RTL/CAL201505008/25 dated 12/05/2015

Reasoning for ~~acceptance or~~ non-acceptance:	25/05/2016

1. The MOM dated 21/12/2012 submitted by PP has been reviewed and found that the date of installation of meters is provided appropriately. The installed meter numbers and date of installation are matching with the table provided under Annex-I. The evidence and corrections made are satisfactory, hence, CAR is closed.

2. Calibration records of the JMR meters carried out by Power Grid Corporation of India dated 22/12/2012, 17/06/2013, 19/12/2013, 10/06/2014, 16/12/2014 & 12/05/2015 have been checked and found that the dates of calibration under Annex I of the MR have been corrected in line with the evidences. Hence, the revisions are accepted.

3. It is noted that there are only records for December 2012 & June 2013 have been provided for verification, however, all the other evidence documents are still missing. CAR is open.

4. Revised version of MR (V2} has been checked and found that detail of calibration of meters have been provided under section D.2, $EG_{BL,y}$, QA/QC procedures. Hence, the same is accepted.

Project Participant Response	18/06/2016

3. Minutes of meeting documents for all the meter changes during the monitoring period are now submitted for verification.

Documents/ information provided by the Project Participant:

June 2012 MOM dated 15/06/2012
December 2012 MOM dated 21/12/2012
June 2013 MOM dated 20/06/2013
December 2013 MOM dated 20/12/2013
June 2014 MOM dated 11/06/2014
December 2014 MOM dated 18/12/2014
June 2015 MOM dated 16/06/2015

MR Version 03

Reasoning for ~~acceptance or~~ non-acceptance:	05/08/2016

3. MOM records provided by PP have been reviewed and found the records are appropriate and complete. However, it is noted under annex I of the MR, calibration details table, date of installation and removal for meters mentioned as 19-06-2013 is incorrect, as per the MOMs submitted.

CAR 7 is open.

Project Participant Response	09/09/2016

3. As per the MOM records conducted in June 2013, the date of installation and removal of meters has been corrected to 20-06-2013. The table with calibration details has been corrected in Annex I of the MR and ER sheet appropriately.
Documents/ information provided by the Project Participant:
1. Monitoring Report, Version 04, dated 09/09/2016 2. ER sheet, Version 3 dated 09/09/2016
Reasoning for acceptance ~~or non-acceptance~~: 22/09/2016
The annex I of the revised MR and ER sheet submitted by PP for verification have been checked and found the same have been appropriately corrected . However, as per the information provided under Annex I, there were gaps observed in the calibration interval, which is not in line with the calibration requirements.
Project Participant Response 10/10/2016
PP has identified gaps in the calibration requirements of the JMR meters installed at Jarangala sub-station, this was due to the non-availability of HPSEB officials or calibration agency appointment for replacing the meters. The calibration gaps have been noted for the months of June 2013, December 2013, December 2014 and June 2015. As the meters are of 0.2S class, a correction factor has been applied for the energy export and import values. The calibration gap was varying from 2-14 days for the mentioned months. However, the export has been reduced by 0.2% and import has been increased by 0.2% for the entire month conservatively, in line with the 'Appendix. Calibration of VVS version 09'. In addition, the transmission losses have been applied on the corrected net energy export, in line with the JMR requirements. The revised emission reductions sheet with application of correction factor and monitoring report has been submitted for verification.
Documents/ information provided by the Project Participant:
1. Monitoring Report, Version 05, dated 10/10/2016 2. ER sheet, Version 4 dated 10/10/2016
Reasoning for acceptance or non-acceptance: 11/10/2016
The revised MR, ER sheet and PP response have been reviewed. The delay in the calibration requirement have been identified for the months of June 2013, December 2013, December 2014 and June 2015, when the replacement of meters had taken place. There were a total of 5 times meter replacement had taken place during this monitoring period. Out of which, there was no calibration delay for June 2014, rest of the 4 times, as listed above were found to be with calibration delays. PP has appropriately identified the calibration delays and applied 0.02% of correction factor, as the energy meters are of 0.2 class. The calculations of correction factor application have been reviewed and found to be conservatively calculated, by applying the factor for the entire month in which delay was found. Transmission loss calculations have also been reviewed and found to be applied in line with the JMRs of the respective months. As a result of applying correction factor of 0.02% for four months, namely, June 2013, December 2013, December 2014 and June 2015, the total emission reductions of the project have been reduced from 64,520 tCO_2e to 64,508 tCO_2e. The identification, calculations and application of correction factor are found to be in line with 'Appendix. Calibration of VVS version 09'. Hence, the same is accepted and CAR 7 is closed.
Close out by Lead Assessor 11/10/2016

Date:	06/10/2016	**Raised by:**		Vijay Kumar Machcha Ashok Kumar	
Type of Finding	CAR	**S. No. of Finding**	11	**Reference**	Section D.2 of MR
Details of the Finding:			06/10/2016		
The Parameter $NCV_{i,y}$ is required to be monitored as per the monitoring plan under section B.7.1 of the registered PDD. However, section D.2 provided under the monitoring report excluded this parameter, which is not acceptable. Also, the 'calculation method' provided for each data/parameter under section D2 is not appropriately described in the MR.					
Project Participant Response			10/10/2016		
The parameter $NCV_{i,y}$ is now included in the monitoring parameters under section D.2, in line with requirements of the registered PDD. However, there is no change in the project emissions or emission reduction calculations due to the parameter, as the value of parameter remains same from project registration (CEA data base version05) to the CEA CO_2 data base version 11 latest available now. Appropriate changes have been made under section D.2 of the revised MR.					

Calculation method for data/parameters under section D2 is now corrected appropriately.
Documents/ information provided by the Project Participant:
1. Monitoring Report, Version 05, dated 10/10/2016 2. ER sheet, Version 4 dated 10/10/2016

Reasoning for acceptance or non-acceptance:	11/10/2016
As per the revised MR version 05, it is observed that PP has now included the monitoring parameter $NCV_{i,y}$ in line with the registered PDD and monitoring plan. Though it is a monitoring parameter, the same is a default value to be updated as per the latest version of CEA CO_2 baseline data base. The latest published version 11 of CEA CO_2 baseline data base has been checked and found the value derived during the registration of the project based on version 05 remains unchanged. As the PP already considered the same value in ER sheet, while estimating the emissions from diesel consumption, there is no change observed in the project emissions from diesel; holds still at 4 tCO_2e as previously calculated. However, the monitoring report is now in compliance with the registered PDD and monitoring plan through inclusion of parameter $NCV_{i,y.}$ Hence, the same is accepted and CAR 11 is closed.	
Close out by Lead Assessor	11/10/2016

Table 4. FAR from this verification

FAR ID	XX	**Section No.**		**Date:** DD/MM/YYYY
Description of FAR				
Project participant response				**Date:** DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				**Date:** DD/MM/YYYY

Document information

Version	*Date*	*Description*
01.0	23 March 2015	Initial publication.

Decision Class: Regulatory
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Business Function: Issuance
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