

**MONITORING REPORT FORM (CDM-MR) \***  
**Version 01 - in effect as of: 28/09/2010**

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\* as contained within the document entitled "Guidelines for completing the monitoring report form (CDM-MR)" (EB 54 meeting report, annex 34).

## MONITORING REPORT

Version 02, 06/08/2012

5 MW renewable energy project for a grid system” at Rohru Tehsil, Shimla District in Himachal, India

UNFCCC Reference No.: 1363

First Monitoring Report Period : 12/06/2009 to 01/06/2011 (first and last days included)

### SECTION A. General description of the project activity

#### A.1. Brief description of the project activity: >>

>>

Gowthami Hydro Electric Company (P) Limited (GHECPL) has implemented small hydropower project with two units of 2.5 MW each totaling to 5.0 MW on run of the river scheme across Andhra Khad, a tributary of Pabbar River near Gaskuwari village of Shimla District in Himachal Pradesh state.

The project activity comprises a diversion structure, water conducting system, feeder channel, desilting tank, power channel, fore-bay tank, penstock, power house, and tail race channel. The project is constructed upstream of the existing 16.95 MW Andhra-I hydroelectric plant of Himachal Pradesh State Electricity Board (HPSEB). The generated voltage 11 kV is stepped up to 66 kV and evacuated from 16.95 MW Andhra HEP Switchyard. In this process there are no greenhouse gas emissions or burning of any fossil fuels. Thus electricity is generated through sustainable means without causing any negative effect on the environment.

Both the Units of project were commissioned on 12/06/2009, from there onwards both units of the project activity are in continuous operation to till date.

The present monitoring period is chosen from 12/06/2009 to 01/06/2011. The net electricity exported to the state grid by the project activity is 30.8043 GWh and the net emission reductions are 24,405 tCO<sub>2</sub>e for the present monitoring period.

#### A.2. Project Participants

>>

Name of the party involved(*) ((host) indicates a host party)	Private and/or public entity (ies) project participants	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (Host)	Gowthami Hydro Electric Company (P) Limited	No.

#### A.3. Location of the project activity:

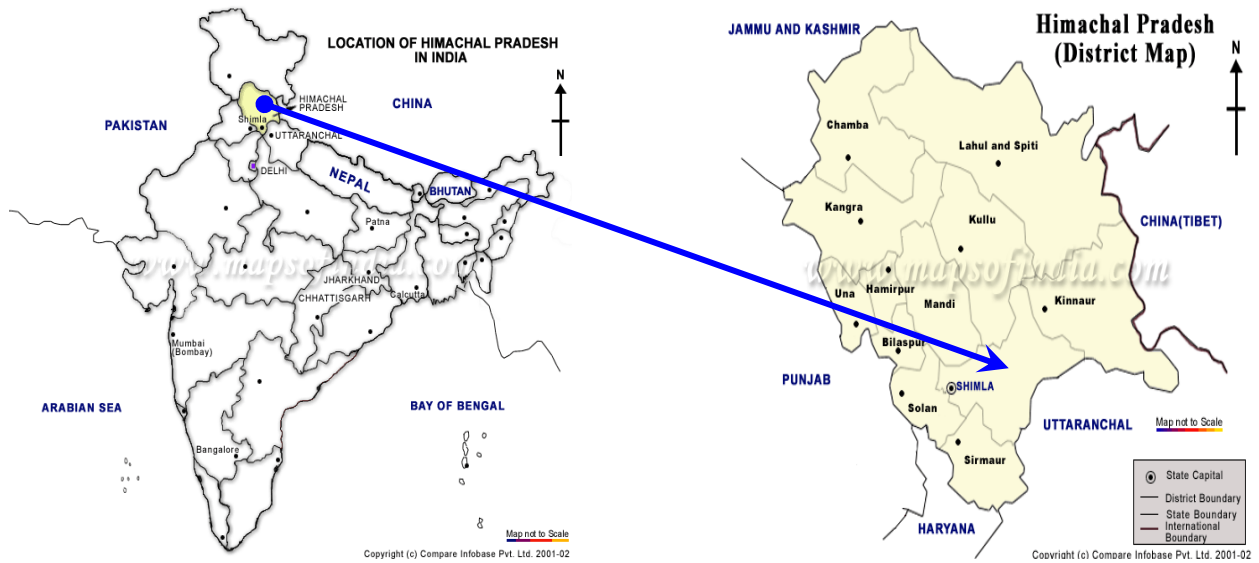
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The location of project activity is:

Village : Gaskuwari  
Taluk : Rohru  
District : Shimla  
State : Himachal Pradesh  
Country : India.

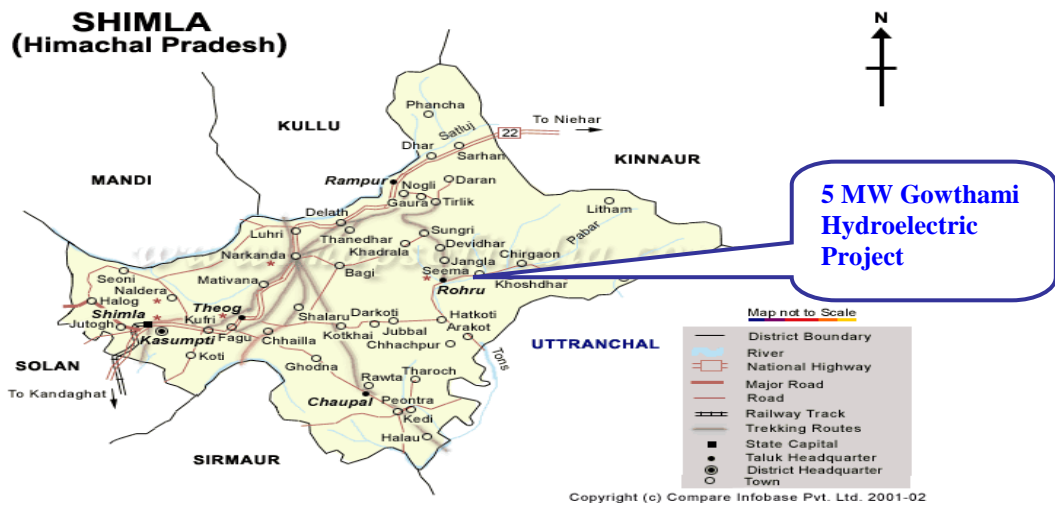
The project activity is located between 77° 0' to 78°19' East (Longitude) and 30° 45' to 31° 44' North (latitude)

Physical location of the project is marked in the maps below:



Location of Himachal Pradesh state in India

Location of Shimla District in Himachal Pradesh



Location of 5 MW Gowthami SHP in Shimla District.

#### A.4. Technical description of the project

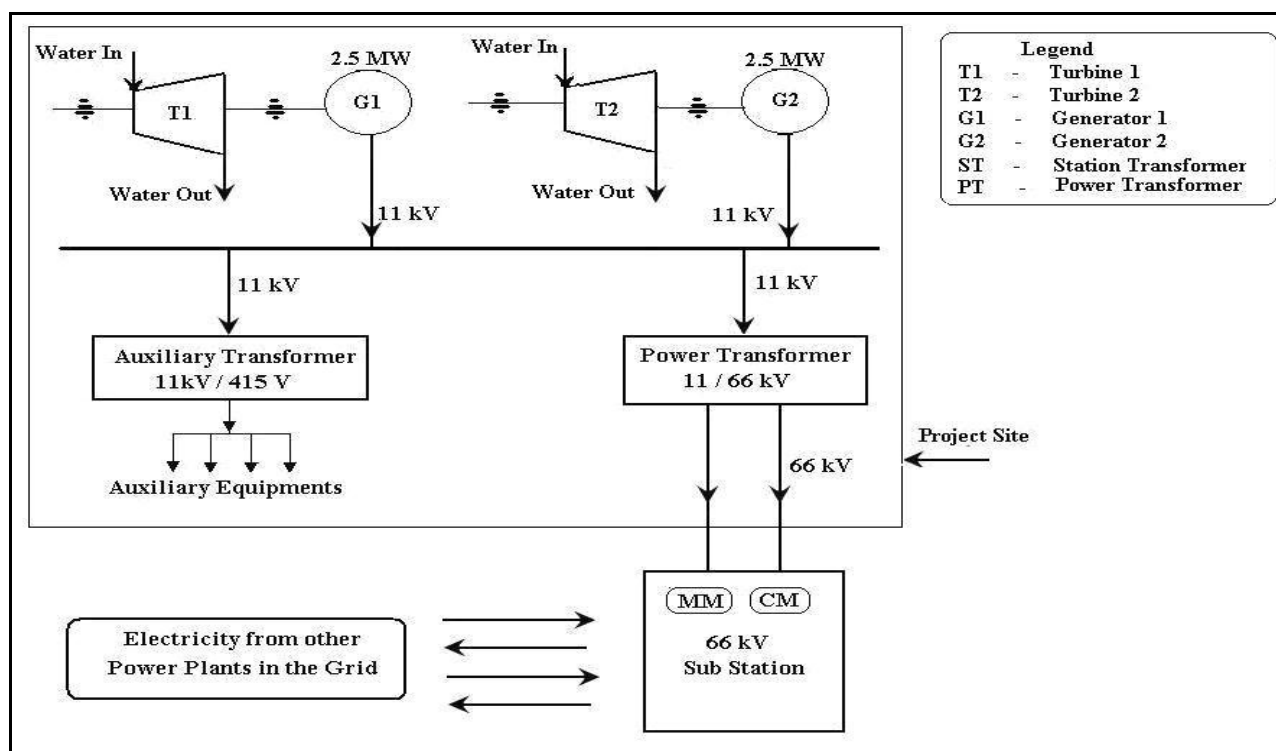
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The technology or power generation process using hydro resources is converting the potential energy available in the water flows into mechanical energy using hydro turbines and then to electrical energy using alternators. The generated power will be transformed to match the nearest grid sub-station for proper interconnection and smooth evacuation of power.

The details of major equipment of the project activity are furnished below:

Equipment Specifications			
<b><u>Turbine:</u></b>		<b><u>Generator:</u></b>	
Make	: Boving Fouress Ltd.	Make	: Kirloskar Electrical Co. Ltd.,
Type	: Horizontal Francis	Capacity	: 2500 kW
Rate Power	: 2500 kW	Voltage	: 11 kV
Quantity	: 2 Nos.	Frequency	: 50 Hz
		Quantity	: 2 Nos.

Detailed technical process diagram of the project activity is furnished below:



#### A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:

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Title : **Type I**, Renewable Energy Projects  
Reference : **AMS-I.D.** Renewable Electricity Generation for Grid  
Version : **Version 10**, AMS-I.D, Scope : 01

<http://cdm.unfccc.int/Projects/DB/DNV-CUK1190974747.31/view>

#### A.6. Registration date of the project activity:

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15/04/2008

**A.7. Crediting period of the project activity and related information (start date and choice of crediting period):**

&gt;&gt;

12/06/2009 to 11/06/2019(Fixed)

Crediting period of the project activity has been changed from 15/04/2008 to 14/04/2018 (Fixed) to 12/06/2009 to 11/06/2019(Fixed)

For Reference: <http://cdm.unfccc.int/Projects/DB/DNV-CUK1190974747.31/view>

**A.8. Name of responsible person(s)/entity(ies):**

&gt;&gt;

Name/Entity	Project Participant (Yes/No)
Mr. M.Ravi Kanth (Managing Director) Gowthami Hydro Electric Company (P) Limited Telephone: +91-9949554466 +91-40- 6648 1144 / 6644 E-Mail : <a href="mailto:ravikanth@gowthami.com">ravikanth@gowthami.com</a> <a href="mailto:gowthamihyd@gowthami.com">gowthamihyd@gowthami.com</a>	Yes

**SECTION B. Implementation of the project activity****B.1. Implementation status of the project activity**

&gt;&gt;

The project activity has been commissioned on 12/06/2009 and registered with CDM EB on 15/04/2008. The project promoter has installed all monitoring equipments to monitor the parameters, which were described in the registered CDM-PDD.

The details of the project operations during this monitoring period are presented below:

Period	(Hr:MM)			
	12/06/2009 to 31/05/2010		01/06/2010 to 01/06/2011	
	Unit-1	Unit-2	Unit-1	Unit-2
Total no. of hours	8496:00	8496:00	8784:00	8784:00
Non-running hours	5790:42	3245:32	3002:34	5231:51
Running hours <sup>a</sup>	2705:42	5250:28	5781:26	3552:09

<sup>a</sup> The plant has been operated effectively by interchanging between the two units during less water flows in the river.

No significant events occurred during this monitoring period, which may impact the applicability of the methodology.

**B.2. Revision of the monitoring plan**

&gt;&gt;

N.A.

**B.3. Request for deviation applied to this monitoring period**

&gt;&gt;

N.A.

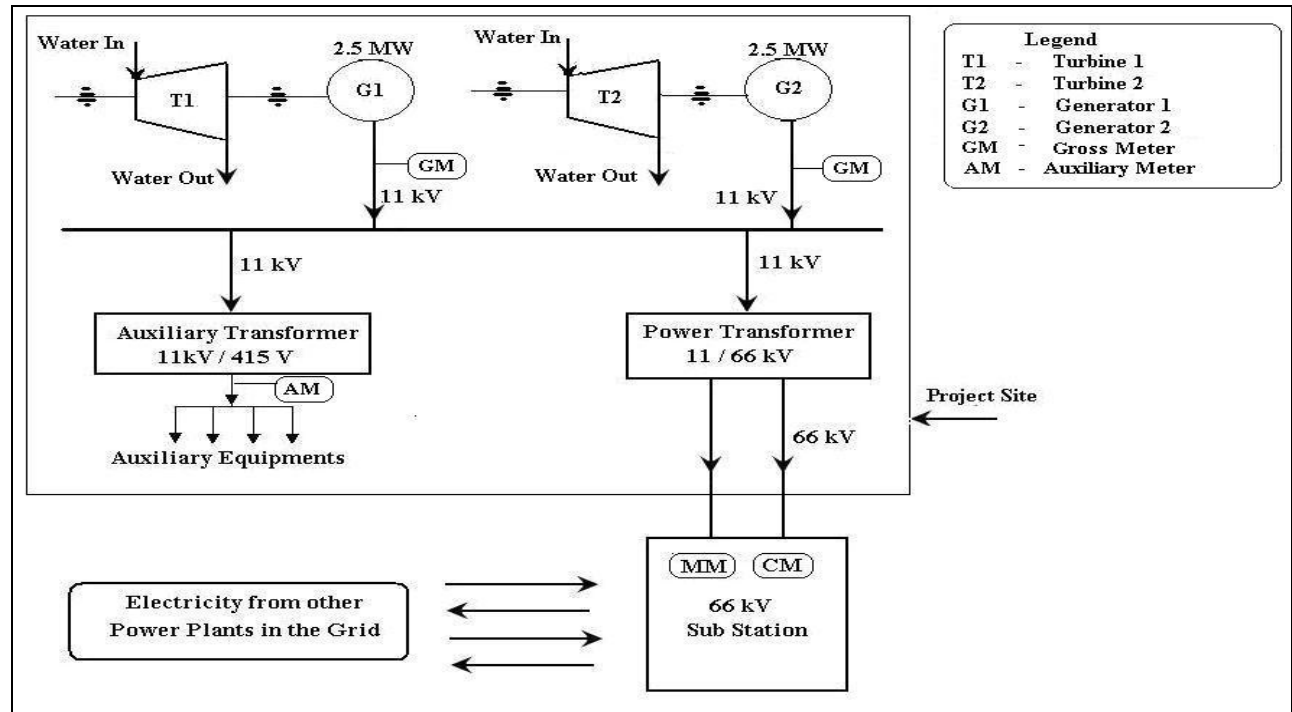
**B.4. Notification or request of approval of changes**

>>  
N.A

### SECTION C. Description of the monitoring system

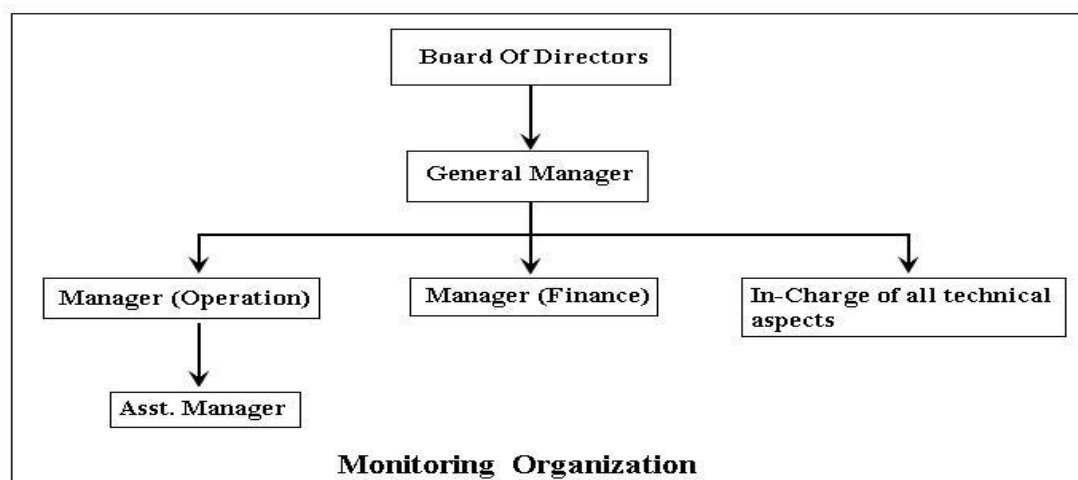
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The project had been provided the monitoring equipments which were described in the registered CDM-PDD and the line diagram for the monitoring parameters are furnished below:



### CDM Monitoring Organisation

A CDM monitoring team has been formed in Gowthami Hydro Electric Company (P) Limited (GHECPL) for monitoring and verification of all the monitoring parameters as per the guidelines formulated by the management of GHECPL. Qualified and trained people monitor the parameters and emission reduction calculations. GHECPL is the sole agency responsible for implementation and monitoring of the project activity. The monitoring organisation structure is shown below:



### Roles and Responsibilities

## **Board of Directors**

The authority and responsibility for monitoring, measuring, reporting and reviewing of the data rests with the Board of Directors. The Board has delegated the same to General Manager.

## **General Manager**

The General Manager is the person who is responsible for GHG monitoring activities in the project activity. He has appointed Manager (Operation), In-Charge of Technical Aspects and Manager (Finance) to assist him. He is responsible for review the monthly reports submitted by Plant Manager (Operations) and prepare report on operational conditions of plant also compiling the data on electricity export to the grid system for submission to the Board of Directors.

The responsibility of storage and archiving of information in good condition also lies with the General Manager.

## **Manager (Operation)**

Manager (Operation) is responsible for the electricity generations at project site. He will review the monitored parameters for correctness and take corrective measures in case of minor errors in the monitored data. He also verifies the report prepared by Asst. Manager on daily summary of project operation & electricity generations and report to General Manager if any abnormality. The calibration of the meters installed are taken care by him as per the monitoring plan.

## **Asst. Manager**

Asst. Manager will record electricity meter readings on daily basis & also take note of gross power generation, auxiliary power consumption and electricity exported to grid., plant shut down times, if any etc. Daily report will be sent to the Manager (operation) for verification.

## **In-Charge of Technical Aspects**

In-Charge of Technical Aspects looks after the technical operation of plant. He daily observes the plant equipments, monitor the functioning of these equipments and inform General Manager for any maintenance work to be done.

## **Manager (Finance)**

Manager (Finance) is responsible for the revenues of the project. He will review the electricity export and import details and raise invoices to the electricity board regarding payments and report to General Manager. He is also responsible for the financial issues regarding operation of the project activity.

## **Calibration**

Main and Check meters are being tested and certified at least once in every six months against an accepted laboratory standard meter in accordance with electricity standards. The calibration of the meters is carried out by Power Grid Corporation of India Ltd. (A Govt. of India Enterprise). The meters are deemed to be working satisfactorily if the errors are within the meter specifications of 0.2 accuracy class.

## **Methods of data transfer and archiving policy**

The data will be recorded by plant personnel at the project site and also the monthly export & import readings will be recoded & certified by HPSEB officials. The electricity generation and distribution structure will be measured using calibrated meters. Records of measurements will be used for verification of emissions reductions. Sales bills / receipts may be compared as an alternative proof of the electricity exported to the grid.

**SECTION D. Data and parameters****D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors**

<b>Data / Parameter:</b>	<b>EF<sub>y</sub></b>
Data unit:	tCO <sub>2</sub> /GWh
Description:	Combined margin emission factor of Northern Grid
Source of data used:	CEA Published grid emission factor
Value(s) :	793
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculations
Additional comment:	The value is considered as ex-ante for the entire crediting period. The value from Registered PDD is taken for calculations during the present monitoring period.

<b>Data / Parameter:</b>	<b>COEF<sub>i</sub></b>
Data unit:	Kg CO <sub>2</sub> /Tj
Description:	CO <sub>2</sub> emission coefficient of fuel type i
Source of data used:	<a href="#">IPCC 2006 default values</a>
Value(s) :	74000
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emission calculations
Additional comment:	--

**D.2. Data and parameters monitored**

<b>Data / Parameter:</b>	<b>EG<sub>Gross, y</sub></b>
Data unit:	GWh
Description:	Gross power generation
Measured /Calculated /Default:	On-site measurement
Source of data:	Daily Log books maintained at project site.
Value(s) of monitored parameter:	31.3935 (The month wise generation details are provided in Annex – 1)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	This value is used for cross check the electricity exported to grid by the project activity.
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Serial No. : 13109TM1207 (Unit-I) & 13100TM1207 (Unit-II) Model No. : EM - 05 Accuracy class : 1.0 Calibration Frequency : Industrial Standards but once in every year. Date of Calibrations : 06/06/2009 & 06/06/2010.
Measuring/ Reading/ Recording frequency:	Measured continuously, recorded daily and aggregated monthly.
Calculation method (if applicable):	---
QA/QC procedures applied:	The meters are calibrated as per industry standards of host country

	(India).
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<b>Data / Parameter:</b>	<b>EG<sub>Auxiliary</sub></b>
Data unit:	GWh
Description:	Auxiliary electricity consumption of the project
Measured /Calculated /Default:	On-site measurement
Source of data:	Daily Log books maintained at project site.
Value(s) of monitored parameter:	0.28281 (The month wise Auxiliary consumption details are provided in Annex – 1)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	This value is used for cross check the electricity exported to grid by the project activity.
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Serial No. : 12/06/150626/16 Model No. : EM - 05 Accuracy class : 1.0 Calibration Frequency : Industrial Standards but once in every year. Date of Calibrations : 06/06/2009 & 06/06/2010.
Measuring/ Reading/ Recording frequency:	Measured continuously, recorded daily and aggregated monthly.
Calculation method (if applicable):	---
QA/QC procedures applied:	The meters are calibrated as per industry standards of host country (India).

Data / Parameter:	EG <sub>y</sub>			
Data unit:	kWh			
Description:	Net power exported to grid			
Measured /Calculated /Default:	Measured at Grid interconnection point			
Source of data:	Monthly Joint Meter Readings Reports certified by HPSEB officials			
Value(s) of monitored parameter:	30.845825 (The month wise electricity Export details are provided in Annex – 1)			
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation			
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Meter Serial No.	03130513	09141986	03130512
	Type	ER 300P		
	Make	L & T		
	Accuracy Class	0.2s		
	Period of usage	12/06/2009 to 25/06/2010	25/06/2010 to 24/03/2011	24/03/2011 to 01/06/2011
	Calibration Frequency	Once in every Six month (as per PPA)		
	Date of Calibration	19/05/2009	17/06/2010	08/03/2011
Measuring/ Reading/	Measured continuously and recorded monthly.			

Recording frequency:	
Calculation method (if applicable):	---
QA/QC procedures applied:	Meters are recalibrated & inspected periodically by HPSEB. Records of measurements are used for verification of emissions reductions. Sales bills / receipts are used for cross verification.

Data / Parameter:	EG <sub>import,y</sub>			
Data unit:	GWh			
Description:	Grid electricity import to the project activity during the year y			
Measured /Calculated /Default:	Measured at Grid interconnection point			
Source of data:	Monthly Joint Meter Readings Reports certified by HPSEB officials			
Value(s) of monitored parameter:	0.041525 (The month wise electricity import details are provided in Annex – 1)			
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation			
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Meter Serial No.	03130513	09141986	03130512
	Type	ER 300P		
	Make	L & T		
	Accuracy Class	0.2s		
	Period of usage	12/06/2009 to 25/06/2010	25/06/2010 to 24/03/2011	24/03/2011 to 01/06/2011
	Calibration Frequency	Once in every Six month (as per PPA)		
	Date of Calibration	19/05/2009	17/06/2010	08/03/2011
Measuring/ Reading/ Recording frequency:	Measured continuously and recorded monthly.			
Calculation method (if applicable):	---			
QA/QC procedures applied:	Meters are recalibrated & inspected periodically by HPSEB. Records of measurements are used for verification of emissions reductions. Sales bills / receipts are used for cross verification.			

<b>Data / Parameter:</b>	F <sub>i,y</sub>
Data unit:	litres
Description:	Quantity of fossil fuel type <i>i</i> combusted in the project plant during year y
Measured /Calculated /Default:	Measured at project activity
Source of data:	On-site measurement
Value(s) of monitored parameter:	1,968 (The month wise diesel consumption details are provided in Annex – 2)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emission calculation

Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Capacity : 500 kg Serial No. : 100152399 Class : III Accuracy : 100 g Date of calibration : 17/07/2012 Calibration Frequency : Industrial Standards but once in every year
Measuring/ Reading/ Recording frequency:	Recorded monthly.
Calculation method (if applicable):	---
QA/QC procedures applied:	The weigh scale meter will undergo periodic calibration / maintenance. The data recorded can be cross checked against the fuel purchase receipts.

## SECTION E. Emission reductions calculation

### E.1. Baseline emissions calculation

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The baseline emissions are calculated as follows:

$$BE_y = EG_y \cdot EF_y$$

Where  $EG_y$  is the net electricity export to grid in a given year (GWh)

$$[EG_y = EG_{\text{Export}} - EG_{\text{Import}}]$$

$EF_y$  is the emission factor for a given year ( $\text{tCO}_2/\text{GWh}$ )

As mentioned under sec.B.6 of registered CDM-PDD, the project has taken the baseline emission factor 793  $\text{tCO}_2/\text{GWh}$  (ex-ante) for estimation of baseline emissions.

$$BE_y = 30.8043 \text{ GWh} * 793 \text{ tCO}_2\text{e/ GWh}$$

$$BE_y = 24,427 \text{ tCO}_2\text{e}$$

### E.2. Project emissions calculation

>>

The project emissions due to usage of fossil fuel (Diesel) are calculated as:

$$PE_y = F_{i,y} * COEF_i$$

Where,

$PE_y$  : Project emissions from combustion of fossil fuel (DG set) in the project activity during the year y

$F_{i,y}$  : Quantity of fossil fuel type i combusted (DG set) during the year y

$COEF_i$  : Carbon dioxide emission factor of the fuel type i

$$COEF_i = \text{Density} * \text{NCV} * EF_{\text{CO}_2} * \text{OXID} / 10^6$$

Where,

Density : The density of diesel (0.845 kg/Ltr. as per Society of Indian Automobile Mfgs. <http://www.siamindia.com/scripts/Diesel.aspx>)

NCV : The calorific value of diesel (43.3 TJ/Gg as per IPCC 2006 default value)

EF<sub>CO2</sub> : The CO<sub>2</sub> emission factor of Diesel (74.8 t CO<sub>2</sub>/TJ as per IPCC 2006)

OXID : The oxidation factor of the coal (1 as per IPCC 2006 default value)

$$PE_y = 1968 \text{ Ltrs} * ((0.845 * 43.3 * 74.8) * 1/10^6)$$

$$PE_y = 6 \text{ tCO}_2\text{e}$$

### E.3. Leakage calculation

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Leakage is not considered from the project activity.

$$L_y = 0 \text{ tCO}_2\text{e}$$

### E.4. Emission reductions calculation / table

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#### Emissions reductions for the monitored period

The following formula is adopted for calculating emission reductions generated by the project activity:

$$ER_y = BE_y - PE_y - L_y$$

Where  $ER_y$  is emission reductions in a given year  
 $BE_y$  is baseline emissions in a given year  
 $PE_y$  is project emissions in a given year  
 $L_y$  is leakage in a given year

Total baseline emissions	: 24,427 tCO <sub>2</sub> e
Total project emissions	: 6 tCO <sub>2</sub> e
Total leakage	: 0 tCO <sub>2</sub> e
Emissions due to delay in calibration	: 16 tCO <sub>2</sub> e
Total emission reductions	: 24,405 tCO <sub>2</sub> e

The month wise baseline emissions, project emissions and emission reductions are provided in Annex - 2

### E5. Comparison of actual emission reductions with estimates in the CDM-PDD

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Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions (tCO <sub>2</sub> e)	28,326*	24,405

\*Note: As per registered PDD (Version 03) annual emission reductions per year (i.e., 365 days) is 14,380 tCO<sub>2</sub>e. Whereas, the present monitoring period is considered for 719 days. So, the estimated emission reductions for the period (i.e, 12/06/2009 to 01/06/2011) are adjusted to number of days available in the monitoring period i.e, (14,380/365)\*719 = 28,326 tCO<sub>2</sub>e.

### E.6. Remarks on difference from estimated value in the PDD

>>

During the present reported period the project activity has achieved 13.8% less emission as compared with emissions indicated in Registered CDM- PDD.

The main reason for less emission is due to low availability of water resources in the river due to deficient rainfall in the project region. The actual rainfall in the project region (Himachal Pradesh state) in the reported period is less than compared with Normal rainfall. The annual rainfalls occurred during the reported period are:

	<b>Normal Rainfall (mm)</b>	<b>Actual Rainfall (mm)</b>	<b>Variation</b>
Year 2009 <sup>1</sup>	1323.8	805.6	- 39.1%
Year 2010 <sup>2</sup>	1323.8	1220.2	- 7.8%
Winter 2011 <sup>3</sup>	195.5	133.5	-31.7 %
Pre-Monsoon 2011 <sup>4</sup>	244.9	167.6	-31.6 %
<b>Total</b>	<b>3088.0</b>	<b>2326.9</b>	-24.6 %

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<sup>1</sup> <http://www.imd.gov.in/section/hydro/dynamic/rfmaps/seasonal/annual2009.jpg>

<sup>2</sup> <http://www.imd.gov.in/section/hydro/dynamic/rfmaps/seasonal/annual2010.jpg>

<sup>3</sup> <http://www.imd.gov.in/section/hydro/dynamic/rfmaps/seasonal/winter2011.jpg>

<sup>4</sup> <http://www.imd.gov.in/section/hydro/dynamic/rfmaps/seasonal/premon2011.jpg>

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#### History of the document

Version	Date	Nature of revision
01	EB 54, Annex 34 28 May 2010	Initial adoption.
<b>Decision Class:</b> Regulatory <b>Document Type:</b> Guideline, Form <b>Business Function:</b> Issuance		

**Annex -1****Consolidated Report for Monitored Parameters during the Monitored Period**

<b>Monitoring Period</b>	<b>Gross Electricity Generation, kWh</b>			<b>Auxiliary consumption</b>	<b>Electricity Exported to Grid</b>	<b>Electricity Imported from Grid</b>
	<b>UNIT- 1</b>	<b>UNIT- 2</b>	<b>Total</b>	<b>kWh</b>	<b>kWh</b>	<b>kWh</b>
12.06.2009 to 31.07.2009	1,080,180	1,062,950	2,143,130	15,850	2,104,125	3,125
01.08.2009 to 01.09.2009	864,560	843,040	1,707,600	10,400	1,682,900	2,350
01.09.2009 to 01.10.2009	185,570	1,150,740	1,336,310	8,980	1,320,250	3,850
01.10.2009 to 01.11.2009	1,427,450	416,750	1,844,200	11,790	1,816,150	50
01.11.2009 to 01.12.2009	39,580	961,210	1,000,790	12,970	982,200	150
01.12.2009 to 01.01.2010	4,920	640,760	645,680	14,000	626,450	150
01.01.2010 to 01.02.2010	14,970	425,630	440,600	14,610	420,350	350
01.02.2010 to 01.03.2010	4,430	314,910	319,340	10,910	305,650	2,350
01.03.2010 to 01.04.2010	121,930	942,100	1,064,030	11,920	1,044,300	100
01.04.2010 to 01.05.2010	894,220	413,810	1,308,030	10,870	1,285,800	150
01.05.2010 to 01.06.2010	957,010	606,690	1,563,700	10,090	1,540,400	250
01.06.2010 to 01.07.2010	630,910	1,287,660	1,918,570	10,080	1,891,350	200
01.07.2010 to 01.08.2010	583,620	1,227,450	1,811,070	11,180	1,790,100	3,600
01.08.2010 to 01.09.2010	785,400	996,100	1,781,500	11,840	1,758,200	4,000
01.09.2010 to 01.10.2010	1,575,450	1,227,200	2,802,650	11,810	2,769,200	1,900
01.10.2010 to 01.11.2010	1,258,100	1,095,300	2,353,400	12,910	2,324,200	700
01.11.2010 to 01.12.2010	1,151,600	0	1,151,600	12,580	1,126,700	600
01.12.2010 to 01.01.2011	660,600	0	660,600	14,300	639,300	100
01.01.2011 to 01.02.2011	377,500	0	377,500	13,300	359,300	300
01.02.2011 to 01.03.2011	117,500	0	117,500	12,070	111,800	10,600
01.03.2011 to 01.04.2011	790,200	0	790,200	13,700	747,850	5,550
01.04.2011 to 01.05.2011	501,100	1,185,800	1,686,900	15,140	1,659,400	0
01.05.2011 to 01.06.2011	607,500	1,961,100	2,568,600	11,510	2,539,850	1,100
<b>Grand Total</b>	<b>14,634,300</b>	<b>16,759,200</b>	<b>31,393,500</b>	<b>282,810</b>	<b>30,845,825</b>	<b>41,525</b>

**Consolidated Report for Emission reductions during the Monitored Period**

Monitoring Period	Electricity Supplied to the Grid		Diesel Consumption	Baseline Emission Factor	Baseline Emissions	Project Emissions	Leakage	Net Emission Reductions
	kWh	GWh	Ltrs	tCO <sub>2</sub> e/ GWh	tCO <sub>2</sub> e	tCO <sub>2</sub> e	tCO <sub>2</sub> e	tCO <sub>2</sub> e
12.06.2009 to 31.07.2009	2,101,000	2.10100	36	793	1,666.1	0.1	0.0	1,666.0
01.08.2009 to 01.09.2009	1,680,550	1.68055	108	793	1,332.7	0.3	0.0	1,332.4
01.09.2009 to 01.10.2009	1,316,400	1.31640	0	793	1,043.9	0.0	0.0	1,043.9
01.10.2009 to 01.11.2009	1,816,100	1.81610	12	793	1,440.2	0.0	0.0	1,440.1
01.11.2009 to 01.12.2009	982,050	0.98205	0	793	778.8	0.0	0.0	778.8
01.12.2009 to 01.01.2010	626,300	0.62630	0	793	496.7	0.0	0.0	496.7
01.01.2010 to 01.02.2010	420,000	0.42000	180	793	333.1	0.5	0.0	332.6
01.02.2010 to 01.03.2010	303,300	0.30330	468	793	240.5	1.3	0.0	239.2
01.03.2010 to 01.04.2010	1,044,200	1.04420	0	793	828.1	0.0	0.0	828.1
01.04.2010 to 01.05.2010	1,285,650	1.28565	12	793	1,019.5	0.0	0.0	1,019.5
01.05.2010 to 01.06.2010	1,540,150	1.54015	12	793	1,221.3	0.0	0.0	1,221.3
01.06.2010 to 01.07.2010	1,891,150	1.89115	0	793	1,499.7	0.0	0.0	1,499.7
01.07.2010 to 01.08.2010	1,786,500	1.78650	60	793	1,416.7	0.2	0.0	1,416.5
01.08.2010 to 01.09.2010	1,754,200	1.75420	96	793	1,391.1	0.3	0.0	1,390.8
01.09.2010 to 01.10.2010	2,767,300	2.76730	144	793	2,194.5	0.4	0.0	2,194.1
01.10.2010 to 01.11.2010	2,323,500	2.32350	156	793	1,842.5	0.4	0.0	1,842.1
01.11.2010 to 01.12.2010	1,126,100	1.12610	0	793	893.0	0.0	0.0	893.0

01.12.2010 to 01.01.2011	639,200	0.63920	156	793	506.9	0.4	0.0	506.5
01.01.2011 to 01.02.2011	359,000	0.35900	408	793	284.7	1.1	0.0	283.6
01.02.2011 to 01.03.2011	101,200	0.10120	72	793	80.3	0.2	0.0	80.1
01.03.2011 to 01.04.2011	742,300	0.74230	12	793	588.6	0.0	0.0	588.6
01.04.2011 to 01.05.2011	1,659,400	1.65940	0	793	1,315.9	0.0	0.0	1,315.9
01.05.2011 to 01.06.2011	2,538,750	2.53875	36	793	2,013.2	0.1	0.0	2,013.1
<b>Grand Total</b>	<b>30,804,300</b>	<b>30.80430</b>	<b>1,968</b>		<b>24,427.8</b>	<b>5.4</b>	<b>0.0</b>	<b>24,422.4</b>
<b>Actual Emissions Considered</b>					<b>24,427</b>	<b>6</b>	<b>0</b>	<b>24,421</b>

### Annex -3

#### Emissions due to Delayed Calibration during the Monitored Period

		Main meter		Main meter	
Installed meter S.Nos. during this period		03130513		09141986	
Date of Calibration test		19/05/2009		17/06/2010	
Date of Recalibration test		08/03/2011		14/09/2011	
Period for which Meters used		12/06/2009 to 25/06/2010		25/06/2010 to 11/03/2011	
Meters calibration valid till (as per PPA)		18/11/2009		16/12/2010	
Delayed calibration period		19/11/2009 to 25/06/2010		17/12/2010 to 11/03/2011	
Adjusted the Monthly Joint Energy Meter Readings for the period [Electricity adjusted due to delayed calibration test]		01/11/2009 to 01/07/2010		01/12/2010 to 01/04/2011	
		Export	Import	Export	Import
% of error indicated in the Recalibration test report		0.18%	0.16%	0.18%	0.16%
Permissible error as per meter specifications		0.20%	0.20%	0.20%	0.20%
Electricity <sub>Measured</sub>	kWh	8,096,500	3700	1,858,250	16550
Adjusted on account of delayed calibration	kWh	8,080,307	3707	1,854,534	16583
Net electricity displaced <sub>Measured</sub>	kWh	8,092,800		1,841,700	
Net electricity displaced <sub>Adjusted</sub>	kWh	8,076,600		1,837,950	
Difference in Net electricity displaced	kWh	16,200		3,750	
Baseline emission factor	tCO <sub>2</sub> /GWh	793.00		793.00	
Emissions - Calculated	tCO <sub>2</sub> e	12.85		2.97	
Considered	tCO <sub>2</sub> e	13.0		3.0	
Total emissions to be adjusted on account of delay in recalibration test	tCO <sub>2</sub> e	16			