



**Monitoring report form  
(Version 05.1)**

**MONITORING REPORT**

<b>Title of the project activity</b>	Biomass based power plant in Mahendargarh, Haryana	
<b>UNFCCC reference number of the project activity</b>	9973	
<b>Version number of the monitoring report</b>	01.2	
<b>Completion date of the monitoring report</b>	02/12/2016	
<b>Monitoring period number and duration of this monitoring period</b>	Monitoring Period No.: 01 Duration: 10/07/2014 to 31/03/2016	
<b>Project participant(s)</b>	Star Wire (India) Vidyut Pvt. Ltd. (SWIVPL)	
<b>Host Party</b>	India	
<b>Sectoral scope(s)</b>	Sectoral Scope: 1 Energy Industries (renewable-/non-renewable sources)	
<b>Selected methodology(ies)</b>	AMS-I.D. "Grid connected renewable electricity generation" ver. 17	
<b>Selected standardized baseline(s)</b>	Not Applicable	
<b>Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD</b>	90,481 <sup>1</sup> tCO <sub>2</sub> e	
<b>Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period</b>	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	0	90,081 tCO <sub>2</sub> e

<sup>1</sup> The current claim period is from 10/07/2014 to 31/03/2016 which gives a year fraction of 1.725. This year fraction has been multiplied by the expected annual emission reductions as per estimates of registered CDM PDD i.e.52,453 tCO<sub>2</sub>e which gives the value 90,481.

## SECTION A. Description of project activity

### A.1. Purpose and general description of project activity

The project activity was initially envisaged for the installation of 10 MW biomass based power plant for which the consent to establish was awarded by State Pollution Control Board, however Haryana Renewable Energy Development Authority (HAREDA) has sanctioned the approval of 9.9 MW based on the assessment of biomass available in the region around the project activity. Hence the project activity involves the installation of 9.9 MW biomass based electricity generation by M/s Star Wire (India) Vidyut Pvt. Ltd. (SWIVPL). The final project capacity is also validated by DOE at the time of project registration. The project is situated in village Khurawata of Mahendargarh District in the Haryana State. The 9.9 MW turbine is being fed by a 47.5 TPH high pressure boiler operating the outlet steam parameter at 67 kg/cm<sup>2</sup> and 465<sup>0</sup> C. As the project activity involves the use of biomass for the electricity generation which is a carbon neutral fuel thus the resulting electricity is a clean electricity which is being fed to NEWNE grid and thereby displacing an equivalent amount of electricity which otherwise would have been supplied by fossil fuel dominant NEWNE Grid. The main purpose of the project activity is electricity generation by the mean of clean fuel available in the nearby area like mustard crop residue, Julia Flora and paddy waste. The electricity thus produced is being exported to fossil fuel dominant NEWNE grid which helps in bridging the GHG emissions reduction of Grid mix.

#### Technical Description of the equipments:

The project activity involves the installation of 47.5 TPH biomass fired travelling grate type boiler with outlet steam parameter at 67 kg/cm<sup>2</sup> and 465<sup>0</sup> C and 9.9 MW extraction cum condensing steam turbine. The brief technical specification is provided below for major equipments.

Equipment	Capacity	Make
TG Set	9.9 MW	Siemens
Alternator	12500 KVA	TDPS
Boiler	47.5 TPH at 66 kg ,465±5 deg C.	ISGEC
ID Fan	42.50 m3/sec H 230MM	TLT engineering
FD Fan	14.70 m3/sec H 170 MM	TLT engineering
SA Fan	7.5 m3/sec H 760MM	TLT engineering
Boiler Feed Pumps	64.56 m3/hrs	KSB
ESP	Two fields operational	Thermax Ltd.
RO Plant	6 M3 in Signal Stage	Thermax Ltd.
D M Plant.	10 m3 / hr (20 hr at day)	Wipro
Fuel Storage	328 MT (35*25*7 MTRS)	Interach Ltd.

<b>Fuel Handling</b>	18 TPH Roller Belt conveyor	OSM Engineering Pneumatic Conveying Pvt. Ltd.
<b>Ash Handling</b>	1.5 TPH	OSM Engineering
<b>Chimney</b>	46 m high	ISGEC
<b>Fire Fighting System</b>	120 m <sup>3</sup> /hr	KSB
<b>D.C.S.</b>	Allen Bradley	ABB
<b>Cooling Tower</b>	3000 m <sup>3</sup> /hr	North street
<b>Air Compressors</b>	127 CFM	IR & Chicago compressor

**Boiler:**

Installed boiler is of 47.5 TPH capacity, capable of generating steam with 67 kgf/cm<sup>2</sup> pressure at 465°C temperature. The boiler is travelling grate/Moving Grate type semi outdoor unit with bi-drum, natural circulation, balanced draft, membrane wall radiant furnace designed with two stage super heaters and inter-stage de-super heater.

**Steam Turbine:**

The steam generated in the boiler is being fed to 9.9 MW, extraction cum condensing steam turbine operating at inlet steam temperature of around 460°C at a pressure of around 64 kgf/cm<sup>2</sup>

**Power Evacuation Infrastructure:**

The generation voltage is being stepped up from 11 kV to 132 kV. The transmission line has been erected for the smoother supply of electricity from plant to 132 kV Mahendranagar sub-station, Mahendergarh through solid tap arrangement with 132 KV Mahendergarh - Satnali S/C transmission line.

**Relevant dates for the project activity:**

Date of Purchase Order: 18/03/2011

Date of Civil Work Order: 17/03/2011

Start date of construction: 02/05/2011

Date of Commercial Operation: 03/05/2013

Project activity is in operation since its commissioning and operating satisfactorily during the reported monitoring period.

During the reported monitoring period 10 July 2014 to 31 March 2016 (First and last date included) the project activity has contributed to the GHG reductions of quantum 91,706 tCO<sub>2</sub>e

**A.2. Location of project activity**

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**A. Host Party**

India

**B. Region/State/Province etc.**

Haryana

**C. City/Town/Community etc.**

District: Mahendargarh

Taluka: Mahendargarh

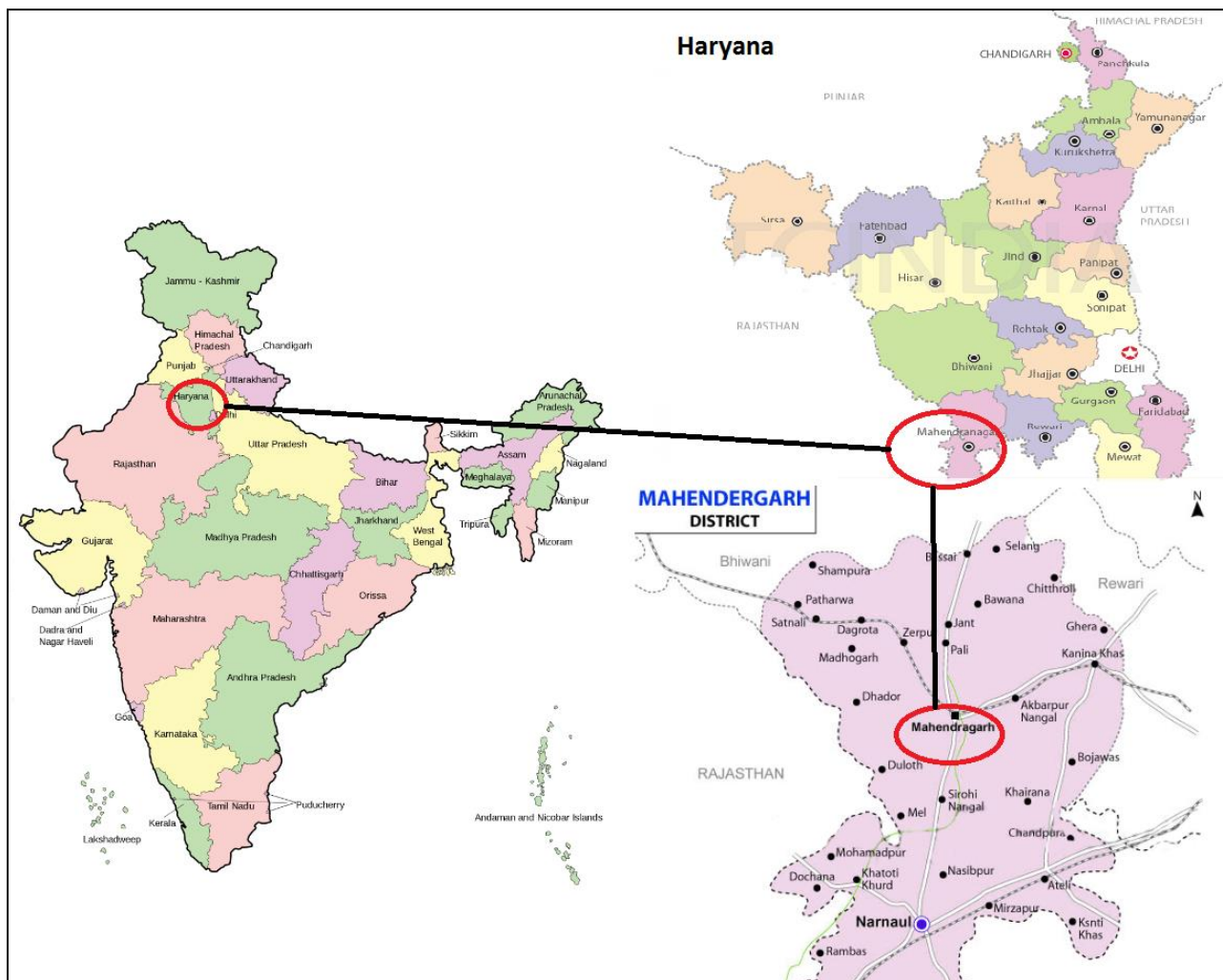
Village: Khurawata

The proposed project activity is located at village Khurawata in Block-Mahendargarh on Mahendargarh - Zerpur road in the Mahendargarh district of the state of Haryana in India. The nearest railway station and airport to the project activity is Mahendragarh and New Delhi respectively.

The geographical co-ordinates of the project activity are as given below

Latitude: 28°18'39" N

Longitude: 76°05'23" E.



### A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate whether the Party involved wishes to be considered as project participant (yes/no)
India (host)	Star Wire (India) Vidyut Pvt. Ltd. (Private entity)	No

### A.4. Reference of applied methodology and standardized baseline

As per the indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories, methodology AMS I. D. (Version 17) has been used.

Type: Renewable Energy Projects

Category: I.D.

Title: Grid connected renewable electricity generation

#### Reference:

The approved methodology uses the “Tool to calculate the emission factor for an electricity system” Version 02.2.1 for the determination of the baseline scenario and also draws upon Appendix B of the simplified modalities and procedures for small-scale CDM project activities “Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories”.

### A.5. Crediting period of project activity

The PP has opted for a fixed crediting period of 10 years i.e. a period of ten years from 10/07/2014 to 09/07/2024 has been chosen.

### A.6. Contact information of responsible persons/entities

Harish Sharma  
EnvironmentFirst Energy Services (P) Ltd.  
405 A, Prakrati Corporate, Y N Road  
Indore, Madhya Pradesh – India 452001  
Branches- Mumbai, Delhi, Jaipur, Panchkula, Chennai  
Phone- +91-731-6007860  
E-mail- [harishsharma@environmentfirst.in](mailto:harishsharma@environmentfirst.in)  
Web- [www.environmentfirst.in](http://www.environmentfirst.in)

The given entity is not project participant. Details are provide in Appendix 1

## SECTION B. Implementation of project activity

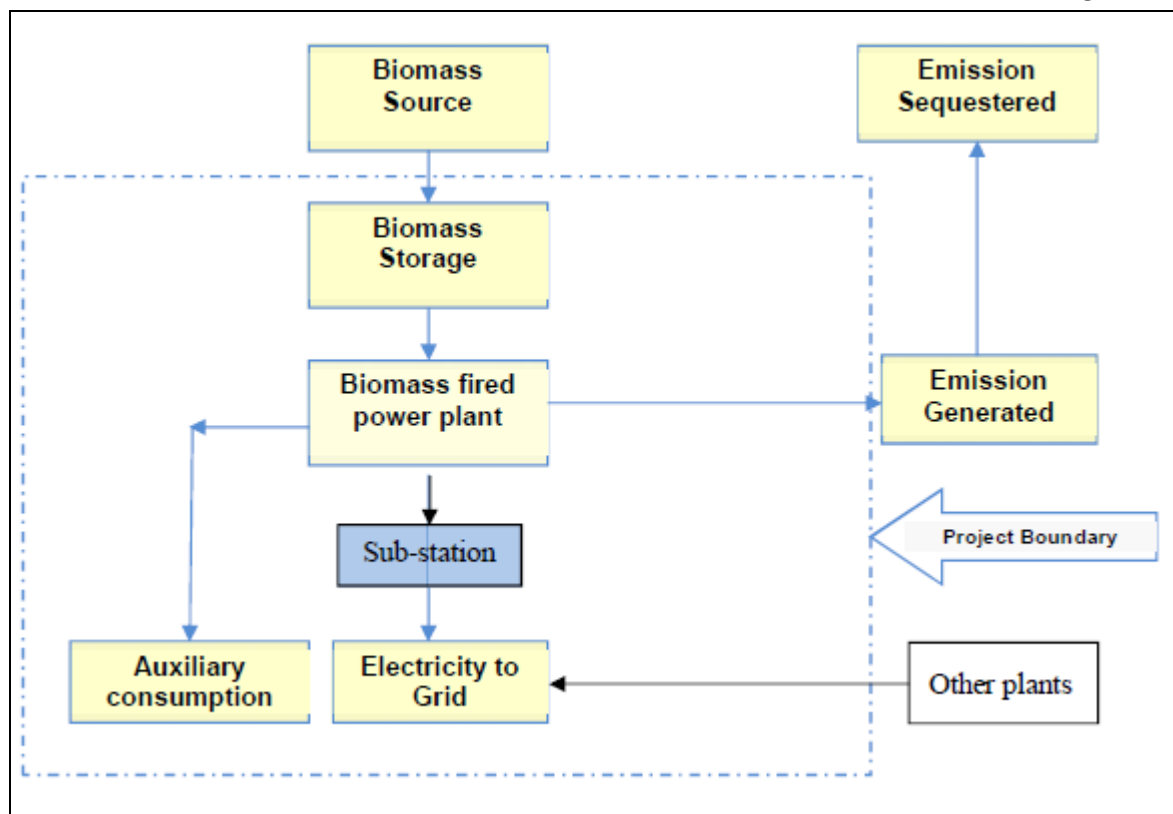
### B.1. Description of implemented registered project activity

The project activity is the installation of a 10 MW biomass based greenfield power plant in village Khurawata of Mahendargarh District Haryana. The consent to establish was also awarded for 10 MW by the State Pollution Control Board (SPCB), however Haryana Renewable Energy Development Authority (HAREDA) has given consent for the establishment of 9.9 MW only therefore a turbine of capacity 9.9 MW is installed in the project activity. The generated electricity is being exported to grid for sale. The project activity involves the generation of steam from the firing of renewable biomass in a 47.5 TPH boiler, with outlet steam parameters at 67 kg/cm<sup>2</sup> and 465 °C which in turn will drive the turbo-generator set with a capacity of 9.9 MW to produce electricity. The list of major equipments installed at site is given below.

Equipment	Capacity	Make
TG Set	9.9 MW	Siemens
Alternator	12500 KVA	TDPS

<b>Boiler</b>	47.5 TPH at 66 kg ,465±5 deg C.	ISGEC
<b>ID Fan</b>	42.50 m3/sec H 230MM	TLT engineering
<b>FD Fan</b>	14.70 m3/sec H 170 MM	TLT engineering
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<b>ESP</b>	Two fields operational	Thermax Ltd.
<b>RO Plant</b>	6 M3 in Signal Stage	Thermax Ltd.
<b>D M Plant.</b>	10 m3 / hr (20 hr at day)	Wipro
<b>Fuel Storage</b>	328 MT (35*25*7 MTRS)	Interach Ltd.
<b>Fuel Handling</b>	18 TPH Roller Belt conveyor	OSM Engineering Pneumatic Conveying Pvt. Ltd.
<b>Ash Handling</b>	1.5 TPH	OSM Engineering
<b>Chimney</b>	46 m high	ISGEC
<b>Fire Fighting System</b>	120 m3/hr	KSB
<b>D.C.S.</b>	Allen Bradley	ABB
<b>Cooling Tower</b>	3000 m3/hr	North street
<b>Air Compressors</b>	127 CFM	IR & Chicago compressor

The plant is running successfully during the reported monitoring period. All the physical and technical features as stated in the registered PDD are in place and project has been operated as described in the registered PDD. No special events occurred during reported monitoring period. No events or situations happened during the reported monitoring period which can alter the applicability of the applied methodology.



## B.2. Post-registration changes

### B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

As there are no post registration temporary changes in the project activity therefore there are no deviations in baseline as well as in monitoring plan.

### B.2.2. Corrections

NA

### B.2.3. Changes to start date of crediting period

NA

### B.2.4. Inclusion of a monitoring plan to the registered PDD that was not included at registration

NA

### B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

NA

**B.2.6. Changes to project design of registered project activity**

NA

**B.2.7. Types of changes specific to afforestation or reforestation project activity**

NA

**SECTION C. Description of monitoring system**

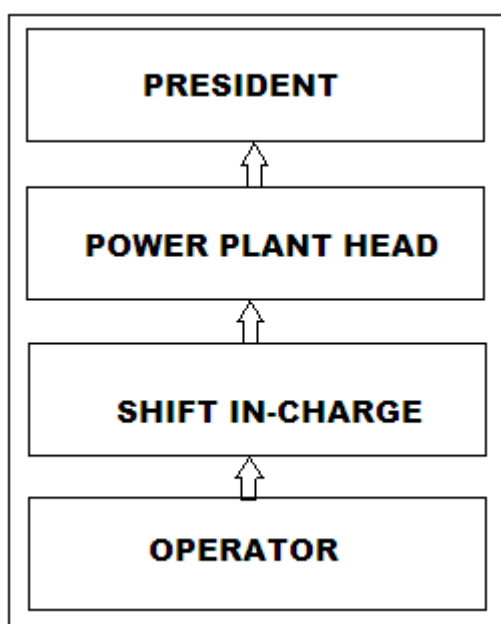
The electricity Generation and the auxiliary consumption is being monitored using energy meters and for cross check a spare meter is also provided for insuring the quality of the data being monitored. The Energy exported can be cross checked with the difference of gross electricity generated and the auxiliary consumption. Further there are two energy meters (Main and Check) installed at the interconnection point to record the energy exported to and imported from the grid by project activity. The difference of electricity export and import from the grid serves the basis of net electricity exported by the project activity and would be used to calculate the emission reductions by the project activity. The energy meters are being calibrated annually as a quality control measure.

The quantity of biomass being fed into the boiler is being monitored on real time basis using conveyer system/Load cells.

To ascertain the Quality Control and Quality Assurance of the monitoring parameters, the following operational and management structure has been adopted and is in place during this monitoring period and till date.

The electricity generation and auxiliary consumption of the plant is being recorded by shift – in – charges on a daily basis after taking reading from the energy meters. The quantity of biomass consumed is also being monitored on continuous basis. Monthly joint meter reading (JMR) for the import and export units is carried out by the grid officials and the representative of PP, based on JMR the invoice is raised by PP. This is the responsibility of power plant head to ensure that the data is properly collected and maintained electronically/on paper. Shift Engineer prepares the monthly report by aggregating the daily readings and the same is verified by the power plant head. The power plant personnel are qualified technical professionals. All the shift in-charges are trained and experienced diploma holders. The operational and management hierarchy is as given below.





## SECTION D. Data and parameters

### D.1. Data and parameters fixed ex ante or at renewal of crediting period

<b>Data/parameter:</b>	<b>EF<sub>CO<sub>2</sub>,y</sub></b>								
Unit	tCO <sub>2</sub> /MWh								
Description	Ex-ante CO <sub>2</sub> emission factor for the NEWNE regional grid								
Source of data	CO <sub>2</sub> Baseline Database for the Indian Power Sector version 5.0 Published by Central Electricity Authority (CEA)								
Value(s) applied)	0.8401								
Choice of data or measurement methods and procedures	<p>CEA is a statutory organization under the Ministry of Power which collects and records the data concerning the generation, transmission, trading, distribution and utilization of electricity. Combined margin has been calculated giving equal weightage (<math>W_{OM} = 0.5</math> &amp; <math>W_{BM} = 0.5</math>) to operating and build margin in accordance with the "Tool to calculate Emission Factor for an Electricity System", Version 2.2.1 by UNFCCC</p> <table border="1"> <thead> <tr> <th colspan="2">Combined Margin Estimation for NEWNE Grid</th></tr> </thead> <tbody> <tr> <td><b>Average OM (EF<sub>grid,OM,y</sub>)</b></td><td>1.0049 tCO<sub>2</sub>/MWh</td></tr> <tr> <td><b>Build Margin, 2008-09 (EF<sub>grid,BM,y</sub>)</b></td><td>0.6752 tCO<sub>2</sub>/MWh</td></tr> <tr> <td><b>Combined Margin (EF<sub>grid,CM,y</sub>)</b></td><td>0.8401 tCO<sub>2</sub>/MWh</td></tr> </tbody> </table>	Combined Margin Estimation for NEWNE Grid		<b>Average OM (EF<sub>grid,OM,y</sub>)</b>	1.0049 tCO <sub>2</sub> /MWh	<b>Build Margin, 2008-09 (EF<sub>grid,BM,y</sub>)</b>	0.6752 tCO <sub>2</sub> /MWh	<b>Combined Margin (EF<sub>grid,CM,y</sub>)</b>	0.8401 tCO <sub>2</sub> /MWh
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<b>Combined Margin (EF<sub>grid,CM,y</sub>)</b>	0.8401 tCO <sub>2</sub> /MWh								
Purpose of data	Calculation of baseline emissions or baseline net GHG removals by sinks								
Additional comments	This value is determined ex-ante and will be fixed for the crediting period								

<b>Data/parameter:</b>	<b>SFC<sub>biomass,i</sub></b>
Unit	ton/MWh
Description	Biomass consumption per unit of electricity generated by the Power Plant
Source of data	DPR, page 63
Value(s) applied)	1.36

Choice of data or measurement methods and procedures	This is specific fuel consumption of biomass considered by the Haryana Electricity Regulatory Commission (HERC) in its order for the determination of tariff for the biomass based power plants.
Purpose of data	Calculation of project emissions or actual net GHG removals by sinks
Additional comments	This value is determined ex-ante and will be fixed for the crediting period

<b>Data/parameter:</b>	<b>Demonstration of Surplus Biomass</b>
Unit	MT
Description	Surplus biomass in District Mahendergarh Block Ateli Nangal, Kanina, Mahendragarh, Nangal, Nangal Chaudhary of Haryana State
Source of data	Biomass Assessment study
Value(s) applied)	207,109
Choice of data or measurement methods and procedures	Biomass surplus has been determined based on the analysis carried out by third party competent entity. The report demonstrates more than 25% surplus availability of biomass even considering the biomass utilization of the project activity also. Therefore the leakage emission considered to be zero for the project activity.
Purpose of data	Calculation of leakage
Additional comments	Data will be kept for two years after the end of crediting period or the last issuance of CERs, whichever occurs later.

<b>Data/parameter:</b>	<b>M<sub>biomass</sub></b>
Unit	%
Description	Moisture content of biomass
Source of data	Internal records of the monitoring
Value(s) applied)	11.91
Choice of data or measurement methods and procedures	The value has been provided by a third party (NABL accredited laboratory) that carried out an independent assessment of the available biomass.
Purpose of data	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	This value is determined ex-ante and will be fixed for the crediting period. Data will be kept for two years after the end of crediting period or the last issuance of CERs, whichever occurs later.

## D.2. Data and parameters monitored

<b>Data/parameter:</b>	<b>EG<sub>gross,y</sub></b>								
Unit	MWh/Year								
Description	Gross electricity generated by project activity in year y								
Measured/calculated/default	Measured								
Source of data	Electronic Log Sheets								
Value(s) of monitored parameter	<table border="1"> <thead> <tr> <th>Year</th><th>EG<sub>gross,y</sub></th></tr> </thead> <tbody> <tr> <td>10 Jul 2014 to 31st Dec 2014</td><td>33610</td></tr> <tr> <td>1st Jan 2015 to 31st Dec 2015</td><td>68107</td></tr> <tr> <td>1st Jan 2016 to 31st Mar 2016</td><td>17319</td></tr> </tbody> </table>	Year	EG <sub>gross,y</sub>	10 Jul 2014 to 31st Dec 2014	33610	1st Jan 2015 to 31st Dec 2015	68107	1st Jan 2016 to 31st Mar 2016	17319
Year	EG <sub>gross,y</sub>								
10 Jul 2014 to 31st Dec 2014	33610								
1st Jan 2015 to 31st Dec 2015	68107								
1st Jan 2016 to 31st Mar 2016	17319								

Monitoring equipment	<p>Two Energy Meters i.e. One Main and one check meter has been installed to monitor the parameter. The details of the both meters are as given below.</p> <p><b>Main Meter</b>  Type: Sentron PAC3200  Make: Siemens  Accuracy Class: 0.5 %  Serial Number: OAE321100079  Latest Calibration Dates: 03/05/2013,29/03/2014 , 28/03/2015,27/03/2016</p> <p><b>Check Meter</b>  Type: 7UM6221-5EB99-3CE0-0D2K  Make: Siemens  Accuracy Class: 0.5 %  Serial Number: 1111157544  Latest Calibration Dates: 03/05/2013, 29/03/2014, 28/03/2015,27/03/2016</p>
Measuring/reading/recording frequency:	Continuous monitoring and hourly recording is being carried out.
Calculation method (if applicable):	Data is Monitored and recorded from Energy Meter Directly which involves no calculation methods.
QA/QC procedures:	For emergency preparedness a Check meter is installed along with main meter. Also the energy meters are being calibrated by NABL accredited lab once in a year.
Purpose of data:	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments:	Data will be kept for two years after the end of crediting period or the last issuance of CERs, whichever occurs later

Data/parameter:	EG <sub>gross,export,y</sub>	
Unit	MWh/Year	
Description	Gross electricity exported by project activity in year y	
Measured/calculated/default	Measured	
Source of data	Joint Meter Reading (JMR)	
Value(s) of monitored parameter	Year	EG <sub>gross,export,y</sub>
	10th Jul 2014 to 31st Dec 2014	30352
	1st Jan 2015 to 31st Dec 2015	61580
	1st Jan 2016 to 31st Mar 2016	15812

Monitoring equipment	<p>Two Energy Meters i.e. One Main and one check meter has been installed to monitor the parameter. The details of the both meters are as given below.</p> <p><b>Main Meter</b>  Type: E3M021 (3Ph 4 Wire)  Make: Secure Meters Limited  Accuracy Class: 0.2s  Serial Number: HRT55955  Calibration Dates: 03/05/2013, 12/05/2014, 08/05/2015, 25/05/2016</p> <p><b>Check Meter</b>  Type: E3M021 (3Ph 4 Wire)  Make: Secure Meters Limited  Accuracy Class: Class: 0.2s  Serial Number:HVPN2344  Calibration Dates: 03/05/2013, 12/05/2014,08/05/2015, 25/05/2016</p>
Measuring/reading/recording frequency:	Continuous monitoring and hourly recording is being carried out.
Calculation method (if applicable):	Data is Monitored and recorded from Energy Meter Directly which involves no calculation methods however for cross check measure the parameter can be compared with the difference of Gross Electricity Generated and Auxiliary Consumption.
QA/QC procedures:	For emergency preparedness a Check meter is installed along with main meter. Also the energy meters are being calibrated by NABL accredited lab once in a year. For cross check measure the parameter can be compared with the difference of Gross Electricity Generated and Auxiliary Consumption.
Purpose of data:	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments:	Data will be kept for two years after the end of crediting period or the last issuance of CERs, whichever occurs later

Data/parameter:	EG <sub>gross,import,y</sub>		
Unit	MWh/Year		
Description	Gross electricity imported by project activity in year y		
Measured/calculated/default	Measured		
Source of data	Joint Meter Reading (JMR)		
Value(s) of monitored parameter	Year		EG <sub>gross,import,y</sub>
	10th Jul 2014 to 31st Dec 2014		142
	1st Jan 2015 to 31st Dec 2015		304
	1st Jan 2016 to 31st Mar 2016		72

Monitoring equipment	<p>Two Energy Meters i.e. One Main and one check meter has been installed to monitor the parameter. The details of the both meters are as given below.</p> <p><b>Main Meter</b>  Type: E3M021 (3Ph 4 Wire)  Make: Secure Meters Limited  Accuracy Class: 0.2s  Serial Number: HRT55955  Calibration Dates: 03/05/2013, 12/05/2014 , 08/05/2015, 25/05/2016</p> <p><b>Check Meter</b>  Type: E3M021 (3Ph 4 Wire)  Make: Secure Meters Limited  Accuracy Class: Class: 0.2s  Serial Number:HVPN2344  Calibration Dates: 03/05/2013, 12/05/2014 ,08/05/2015, 25/05/2016</p>
Measuring/reading/recording frequency:	Continuous monitoring and hourly recording is being carried out.
Calculation method (if applicable):	Data is Monitored and recorded from Energy Meter Directly which involves no calculation methods.
QA/QC procedures:	For emergency preparedness a Check meter is installed along with main meter. Also the energy meters are being calibrated by NABL accredited lab once in a year. The value of gross electricity imported by the project activity can be cross checked with the values obtained by electricity invoice.
Purpose of data:	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments:	Data will be kept for two years after the end of crediting period or the last issuance of CERs, whichever occurs later

Data/parameter:	EG <sub>facility,y</sub>									
Unit	MWh/Year									
Description	Net Electricity exported by project activity in year y									
Measured/calculated/default	Calculated									
Source of data	Joint Meter Reading (JMR)									
Value(s) of monitored parameter	<table><tr><th>Year</th><th>EG<sub>facility,y</sub></th></tr><tr><td>10th Jul 2014 to 31st Dec 2014</td><td>30209</td></tr><tr><td>1st Jan 2015 to 31st Dec 2015</td><td>61275</td></tr><tr><td>1st Jan 2016 to 31st Mar 2016</td><td>15740</td></tr></table>		Year	EG <sub>facility,y</sub>	10th Jul 2014 to 31st Dec 2014	30209	1st Jan 2015 to 31st Dec 2015	61275	1st Jan 2016 to 31st Mar 2016	15740
Year	EG <sub>facility,y</sub>									
10th Jul 2014 to 31st Dec 2014	30209									
1st Jan 2015 to 31st Dec 2015	61275									
1st Jan 2016 to 31st Mar 2016	15740									
Monitoring equipment	Parameter is Calculated by measured values taken from Energy Meters									
Measuring/reading/recording frequency:	Continuous monitoring and hourly recording is being carried out.									
Calculation method (if applicable):	The Gross electricity imported from the grid is subtracted from the gross electricity exported to the grid to obtain the net electricity exported. Gross Electricity Exported and imported is being monitored by Energy Meter (bi directional tri-vector) of 0.2s accuracy class installed at the interconnection point.									
QA/QC procedures:	For emergency preparedness a Check meter is installed along with main meter. Also the energy meters are being calibrated by NABL accredited lab once in a year. The value of net electricity exported by the project activity can be cross checked with the values obtained by electricity invoices.									
Purpose of data:	Calculation of baseline emissions or baseline net GHG removals by sinks									
Additional comments:	Data will be kept for two years after the end of crediting period or the last issuance of CERs, whichever occurs later									

Data/parameter:	FC <sub>biomass,PJ,y</sub>									
Unit	MT/Year									
Description	The quantity of biomass consumed in the project activity during the year y.									
Measured/calculated/default	Measured									
Source of data	Plant Records									
Value(s) of monitored parameter	<table><tr><th>Year</th><th>FC<sub>biomass,PJ,y</sub></th></tr><tr><td>10th Jul 2014 to 31st Dec 2014</td><td>62617</td></tr><tr><td>1st Jan 2015 to 31st Dec 2015</td><td>120296</td></tr><tr><td>1st Jan 2016 to 31st Mar 2016</td><td>28047</td></tr></table>		Year	FC <sub>biomass,PJ,y</sub>	10th Jul 2014 to 31st Dec 2014	62617	1st Jan 2015 to 31st Dec 2015	120296	1st Jan 2016 to 31st Mar 2016	28047
Year	FC <sub>biomass,PJ,y</sub>									
10th Jul 2014 to 31st Dec 2014	62617									
1st Jan 2015 to 31st Dec 2015	120296									
1st Jan 2016 to 31st Mar 2016	28047									
Monitoring equipment	The quantity of Biomass fed into the boiler is measured using a conveyer belt equipped with load cells. Conveyer Belt System for weighing Biomass Fired Type: BCW51L2 Make: IPA Pvt. Ltd. Accuracy Class: 0.5 % Serial Number: 1712/13 Calibration Dates: 23/04/2013, 18/02/2014, 11/02/2015,03/02/2016									
Measuring/reading/recording frequency:	Continuous Monitoring (Electronic data of load cell is available for the record purpose) and Hourly recording is being carried out									
Calculation method (if applicable):	Not applicable as the parameter is being measured directly without any calculation									
QA/QC procedures:	The conveyer belt system is being calibrated by NABL accredited lab once in a year. The amount of biomass consumed will be cross checked with an annual energy balance that is based on purchased quantities (sales/receipts) and stock inventory changes.									
Purpose of data:	Calculation of baseline emissions or baseline net GHG removals by sinks									
Additional comments:	Data will be kept for two years after the end of crediting period or the last issuance of CERs, whichever occurs later									

<b>Data/parameter:</b>	<b>FC<sub>FF,y</sub></b>	
Unit	MT/Year	
Description	The quantity of fossil fuel consumed in year y.	
Measured/calculated/default	Measured	
Source of data	Plant Records	
Value(s) of monitored parameter	0	
Monitoring equipment	<p>The quantity of fossil fuel fed into the boiler can be measured using a weighbridge and recorded accordingly.  Conveyer Belt System for weighing Fuel Fired  Type: BCW51L2  Make: IPA Pvt. Ltd.  Accuracy Class: 0.5 %  Serial Number: 1712/13  Calibration Dates: 23/04/2013, 18/02/2014, 11/02/2015,03/02/2016</p>	
Measuring/reading/recording frequency:	Provision of Continuous Monitoring and Hourly recording is in place	
Calculation method (if applicable):	Not applicable as the parameter can be measured directly without any calculation	

QA/QC procedures:	The weighing system is being calibrated by NABL accredited lab once in a year. The amount of Fossil fuel consumed will be cross checked with an annual energy balance that is based on purchased quantities (sales/receipts) and stock inventory changes.
Purpose of data:	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments:	Data will be kept for two years after the end of crediting period or the last issuance of CERs, whichever occurs later

<b>Data/parameter:</b>	<b>NCV<sub>biomass,y</sub></b>
Unit	Kcal/kg
Description	Net Calorific Value of biomass type k combusted during year y
Measured/calculated/default	Measured
Source of data	Lab test reports
Value(s) of monitored parameter	2558
Monitoring equipment	NCV of the biomass used in project activity would be tested by a NABL accredited lab on dry basis. NCV would be tested once in quarter, by taking three samples, for the first year. The average value from the quarterly assessment of first year shall be used for the entire crediting period.
Measuring/reading/recording frequency:	Determined once in the first year for the entire crediting period
Calculation method (if applicable):	The measurement and calculation procedure will be performed by third party NABL accredited laboratory as per best industry practices.
QA/QC procedures:	The measurement will be carried out by NABL accredited lab quarterly, by taking three samples, for the first year. The average value from the quarterly assessment of first year shall be used for the entire crediting period.
Purpose of data:	To cross check the biomass quantity fired during year Y
Additional comments:	Data will be kept for two years after the end of crediting period or the last issuance of CERs, whichever occurs later

### D.3. Implementation of sampling plan

No sampling of data is required as all the parameters are being monitored individually.

## SECTION E. Calculation of emission reductions or GHG removals by sinks

### E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

The procedures and formulas used for estimation of the baseline emission factor and the assumptions made have been detailed below. The emission reduction of the small scale project activity is the net electricity exported to the grid ( $EG_{\text{facility},y}$ ) in MWh multiplied by the baseline emission factor ( $EF_{\text{grid,CM},y}$ ) in tCO<sub>2</sub>/MWh.

$$BE_y = EG_{\text{facility},y} \times EF_{\text{grid,CM},y} \text{ ----- } 1$$

#### Baseline emission factor ( $EF_{\text{grid,CM},y}$ )

The Baseline emission factor ( $EF_{\text{grid,CM},y}$ ) is 0.8401 tCO<sub>2</sub> /MWh has been estimated and validated for NEWNE grid of India, the applicable grid for the project activity. This is fixed ex-ante for the crediting period as per the registered PDD. The Baseline Emission is calculated as below.

Year	Net power supplied (EG <sub>BL,y</sub> ) (MWh)	Grid emission factor (EF <sub>CO<sub>2</sub>,grid,y</sub> ) (tCO <sub>2</sub> e/ MWh)	BE <sub>y</sub> (tCO <sub>2</sub> e)
10 <sup>th</sup> Jul 2014 to 31 <sup>st</sup> Dec 2014	30,210	0.8401	25,379
01 <sup>st</sup> Jan 2015 to 31 <sup>st</sup> Dec 2015	61,276		51,478
01 <sup>st</sup> Jan 2016 to 31 <sup>st</sup> Mar 2016	15,741		13,224
Total			90,081

## E.2. Calculation of project emissions or actual net GHG removals by sinks

In accordance with para B.6.1 of the registered PDD the project emissions have been considered zero.

## E.3. Calculation of leakage

In accordance with para B.6.1 of the registered PDD the Leakage emissions have been considered zero.

## E.4. Summary of calculation of emission reductions or net GHG removals by sinks

Item	Baseline emissions or baseline net GHG removals by sinks (t CO <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	GHG emission reductions or net GHG removals by sinks (t CO <sub>2</sub> e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
<b>Total</b>	90,081	0	0	0	90,081	90,081

## E.5. Comparison of actual emission reductions or net GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO <sub>2</sub> e)	90,481 tCO <sub>2</sub> e	90,081 tCO <sub>2</sub> e

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

There is no considerable difference in the emission reductions during the current monitoring period relative to the estimation in the registered CDM-PDD. There is a decrease of around 0.44% emission reduction relative to estimation in the registered CDM- PDD for the equivalent duration of the monitoring period which is an acceptable difference for such kind of project.



## Appendix 1. Contact information of project participants and responsible persons/entities

<b>Project participant and/or responsible person/ entity</b>	<input checked="" type="checkbox"/> Project participant <input type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
<b>Organization name</b>	STAR WIRE (INDIA) VIDYUT PVT. LTD.
<b>Street/P.O. Box</b>	ABDUL AZIZ ROAD, KAROL BAGH
<b>Building</b>	3 <sup>rd</sup> FLOOR, 8C/6 WEA
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<b>Telephone</b>	011-28752585
<b>Fax</b>	-
<b>E-mail</b>	<a href="mailto:vt@swivpl.com">vt@swivpl.com</a>
<b>Website</b>	-
<b>Contact person</b>	-
<b>Title</b>	-
<b>Salutation</b>	MR.
<b>Last name</b>	TODI
<b>Middle name</b>	-
<b>First name</b>	VARUN
<b>Department</b>	-
<b>Mobile</b>	09958303337, 9871174174
<b>Direct fax</b>	-
<b>Direct tel.</b>	011-28752585
<b>Personal e-mail</b>	<a href="mailto:varuntodi@gmail.com">varuntodi@gmail.com</a>

<b>Project participant and/or responsible person/ entity</b>	<input type="checkbox"/> Project participant <input checked="" type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
<b>Organization name</b>	ENVIRONMENTFIRST ENERGY SERVICES PVT. LTD.
<b>Street/P.O. Box</b>	Y N ROAD
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<b>City</b>	INDORE
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<b>Postcode</b>	452001
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<b>Fax</b>	NA
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<b>Website</b>	<a href="http://www.environmentfirst.in">www.environmentfirst.in</a>
<b>Contact person</b>	
<b>Title</b>	DIRECTOR
<b>Salutation</b>	MR.
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<b>Middle name</b>	
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**Document information**

<i>Version</i>	<i>Date</i>	<i>Description</i>
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> <li>• Include provisions related to delayed submission of a monitoring plan;</li> <li>• Provisions related to the Host Party;</li> <li>• Remove reference to programme of activities;</li> <li>• Overall editorial improvement.</li> </ul>
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> <li>• Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0));</li> <li>• Include provisions related to standardized baselines;</li> <li>• Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1;</li> <li>• Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>;</li> <li>• Editorial improvement.</li> </ul>
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	28 May 2010	EB 54, Annex 34. Initial adoption.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report		