



Verification Report for

Project : Simbhaoli Biomass Grid Supply Power Project, Ghaziabad,
Uttar Pradesh

UCR Project ID : 256

Name of Verifier	SQAC Certification Pvt. Ltd.
Date of Issue	March 08, 2023
Project Proponent	M/s Simbhaoli Sugars Limited (SSL)
UCR Project Aggregator	M/s Gram Vikas Trust
Work carried by	Mr. Santosh Nair
Work reviewed by	Mr. Praful Shinganapurkar

Summary:

SQAC Certification Pvt. Ltd. has performed verification of the “Simbhaoli Biomass Grid Supply Power Project, Ghaziabad, Uttar Pradesh, India”. The purpose of the project activity is to generate electricity using renewable biomass and thereby reducing GHG emissions by displacing fossil fuel dominated grid based electricity with biomass based renewable electricity.

Verification for the period: **01/04/2014 to 31/05/2022**

The GHG emission reductions were calculated on the basis of UCR Protocols which draws reference from, UCR Standard for Baseline Grid Emission Factor, CDM UNFCCC Methodology, ACM0006: Grid connected renewable electricity generation (Ver.16.0). Owing to the Covid pandemic, the verification was done remotely by way of video calls / verification, phone calls and submission of documents for verification through emails.

SQAC is able to certify that the emission reductions from Simbhaoli Biomass Grid Supply Power Project, Ghaziabad, Uttar Pradesh, India, (UCR ID – 256) for the period **01/04/2014 to 31/05/2022** amounts to **7,84,121 tCO₂ (7,84,121 CoUs)**



Detailed Verification Report:

Purpose:

The project activity involves the renewable biomass (bagasse) based electricity generation within the Simbhaoli Sugar Mills Limited (SSML) plant located at Block: Simbhaoli, State: Uttar Pradesh. This UCR project activity involves the installation of a 22 MW backpressure type turbo generator along with high pressure (87 kg/cm²) 110 TPH capacity boiler commissioned in 29/11/2007 (date of synchronization of the turbine with the UP State grid) and a high pressure boiler of 125 TPH (115 kg/cm² pressure) along with a 28 MW condensing extraction and bleed-type steam turbine-driven generator set that was commissioned in 13/02/2016. The 28 MW turbine is housed in a substation that continuously exports renewable power to the grid. Hence, the project activity is a grid-connected biomass (bagasse based) cogeneration power plant with a high pressure steam-turbine configuration. The power generated from the turbines is utilised for captive consumption and the surplus power is exported to the grid. Power is generated both in the sugar season and off-season at 11 kV and stepped-up on-site to 132 kV before being transmitted to the nearby UPPCL sub-station located at Simbhaoli.

Phone No. :- 05731-221109 Fax No. :- 05731-221109		Office Of The Executive Engineer Paschimanchal Vidut Vitran Nigam Ltd. Electricity Distribution Division Garhmukteshwar
No. 075/EDDG/		DATED 9-6-2016
<u>CERTIFICATE OF CONNECTED LOAD</u>		
To Whomsoever it may be concern, this is to certify that M/s Simbhaoli Power Private Ltd unit- Simbhaoli Distt-Hapur having installed capacity of 62MW biomass based cogeneration plant.		
Simbhaoli Power Private Ltd. Unit- Simbhaoli is interconnected to 220 KV Substation Simbhaoli and importing/exporting power through 132KV line .		
SPPL exporting upto 45MW power to Grid as per PPA on dated 4 th June 2014.		
and Captive Consumption of plant is 17MW.		
The unit wise commissioning dates of plant are as below:-		
Unit	Capacity	Commissioning Dates
Unit-1	12 MW	03-04-97
Unit-2	22 MW	01-12-07
Unit-3	28 MW	13-02-16
 Executive Engineer Electricity Distribution Division Garhmukteshwar		





Location of project activity:

Country: India
Block: Simbhaoli,
District: Ghaziabad,
State: Uttar Pradesh,
Latitude: 28° 48'N
Longitude: 78° 0'E



**Scope:**

The scope covers verification of emission reductions from the project - Simbhaoli Biomass Grid Supply Power Project, Ghaziabad, Uttar Pradesh, India, (UCR ID – 256).

Criteria:

Verification criteria is as per the requirements of UCR Standard.

Description of project:

The UCR project activity is a grid-connected bagasse-based cogeneration power plant with a high pressure steam-turbine configuration. The UCR project activity is the electricity generation capacity and the installation of facilities for allowing the export of electricity to the regional grid.

The UCR project activity involves the installation of a 22 MW backpressure type turbo generator along with high pressure (87 kg/cm²) 110 TPH capacity boiler commissioned in 29/11/2007 (date of synchronization of the turbine with the UP-State grid) and a high pressure boiler of 125 TPH (115 kg/cm² pressure) along with a 28 MW condensing extraction and bleed-type steam turbine-driven generator set that was commissioned in 13/02/2016. The 22 MW backpressure turbine is used for captive power consumption and power from this turbine is also exported to the grid. The 28 MW turbine is housed in a substation that continuously exports renewable power to the grid. The high pressure boilers are fired by bagasse, a by-product from the sugar manufacturing process to generate steam, which in turn powers the steam turbine to generate power.

The technology of biomass residue based high steam pressure power generation allows for increased efficiency levels for electricity generation.

Power is generated and supplied in the sugar season and off-season at 11 kV and stepped-up on-site to 132 kV before being transmitted to the nearby UPPCL sub-station located at Simbhaoli. The designed voltage level of the substation is 400/220/132kV and the operating voltage level is 400/220/132kV. The step-in voltage of the sub-station is 400kV and the step-out voltage is 132kV.



Installed Capacity	Turbine 1: 22MW	Turbine 2: 28MW
Boiler Capacity	110	125
Pressure (Output-kg/cm²)	87	110
Temp Feed Water (° C)	110	220
Feed Water Pressure (kg/cm²)	115	165
Capacity Utilization %	100%	100%
Plant Load Factor (PLF)	0.39%	0.43%
Temp Output Steam (° C)	510	540

Level of Assurance:

The verification report is based on the information collected through interviews conducted over video calls / phone calls, supporting documents provided during the verification, Project Concept Note (PCN) / Monitoring Report (MR), submitted to SQAC. The verification opinion is assured provided the credibility of all the above.

Verification Methodology:

Review of the following documentation was done by SQAC Verifier, Mr. Santosh Nair, who is experienced in such projects.

Documentation Verified:

- Project Concept Note (PCN)
- Monitoring Report (MR)
- JMR's
- Month wise Quantity of biomass residue combusted in the project plant.
- Commissioning Certificates
- Calibration Certificates
- Data provided upon request of all the documents of the related project

Sampling:

Not applicable

**Person interviewed:**

1. Mr. A K Chaurasia : M/s. Simbhaoli Sugar Mills Limited
2. Mr. J N P Yadav : M/s. Simbhaoli Sugar Mills Limited
3. Mr. Robin : M/s. Simbhaoli Sugar Mills Limited

Applied methodologies and standardized baselines:

UCR Protocol Standard Baseline

SECTORAL SCOPE - 01 Energy industries (Renewable/Non-renewable sources)

TYPE I - Renewable Energy Projects (Large Scale)

UCR Positive List Environmental Additionality

SCALE – Large Scale

CATEGORY- ***ACM0006 Large-scale Consolidated Methodology
Electricity and heat generation from biomass, Version 16.0***

This methodology is applicable to project activities that operate biomass (co-) fired. power and-heat plants. The project activity includes the installation of new plants at a site where currently power or heat generation occurs. The new plant replaces or is operated next to existing plants (capacity expansion projects). Project types included under this methodology are co-generation of power and heat using biomass. Typical activities include capacity expansions, as is the the current UCR project activity.

UCR CoU Standard is used to determine the baseline grid emission factor for the 2014-2022 period.

Application of methodologies and standardized baselines

- The project activity is a power generation project using a biomass (bagasse) and displaces CO₂ emissions from electricity generation in power plants that are displaced due to the project activity. Since the project activity utilises biomass (bagasse) for the generation of power and supplies it to the local grid, it displaces fossil fuel (coal), and hence it meets the primary applicability criteria of the methodology.
- The project activity is a power-and-heat plant that encompasses cogeneration plants, i.e., power-and-heat plant in which at least one heat engine simultaneously generates both process heat and power. The total installed capacity of project activity is 50MW which is acceptable as per the applied large scale methodology.



- The installation of a new biomass residue fired power generation unit, which replaces or is operated next to existing power generation capacity fired with either fossil fuels or the same type of biomass residue as in the project plant (power capacity expansion projects) is also included in this methodology.
- For the purposes of this methodology, heat does not include waste heat, i.e., heat that is transferred to the environment without utilization, for example, heat in flue gas, heat transferred to cooling towers or any other heat losses.
- The biomass used by the project plant is not stored for more than one year. The biomass used by the project plant is not processed chemically or biologically (e.g., through esterification, fermentation, hydrolysis, pyrolysis, bio- or chemical degradation, etc.) prior to combustion.
- The Project Activity uses biomass residues from a production process (e.g., production of sugar), and the implementation of the project does not result in an increase of the processing capacity of (the industrial facility generating the residues) raw input (e.g. sugar) or in other substantial changes (e.g. product change) in this process.
- The project activity unit does not co-fire fossil fuel and/or does not exceed the limit of 25% co-firing fossil fuel criteria as per the UCR Protocol for such projects.
- Biomass generated power is used for direct grid supply and for meeting the captive needs at the facility. The project activity involves the grid-connected bagasse-based electricity generation capacity involving the installation of facilities for allowing the export of electricity to the regional grid.
- Biomass is not sourced from dedicated plantations. The existing installed turbogenerators are fired by bagasse, a by-product of the sugarcane processing and a biomass residue.
- Bagasse is burnt in boilers as generated from the sugar mill and does not require any specific technology for its preparation before combustion. No fuel preparation equipment has been installed at site for preparation of bagasse. Hence no significant energy quantities are required to prepare the biomass residues for fuel combustion.
- The project activity also does not include any GHG emissions related to the decomposition or burning of biomass. The baseline heat emissions for the project activity are not included in the project boundary nor does it claim for emission reductions from heat.



Applicability of double counting emission reductions

The biomass boiler and condensing turbo-generator unit have unique IDs, which are visible on the unit. The calibration of Meters & Metering for electricity exported to the grid is implemented according to national standards and rules (details provided in Section B.8.). All the records are documented and maintained by the project proponent. The details of the same are provided to the UCR verifier during the verification process.

The biomass boilers and turbines are constructed by the project proponent within the project boundary. The biomass boilers, turbines and meters have unique IDs, which is visible on the units.

The UCR project activity has been registered as a CDM project activity under the title: SSML – Simbhaoli Biomass Power Project (Project ID 1112).

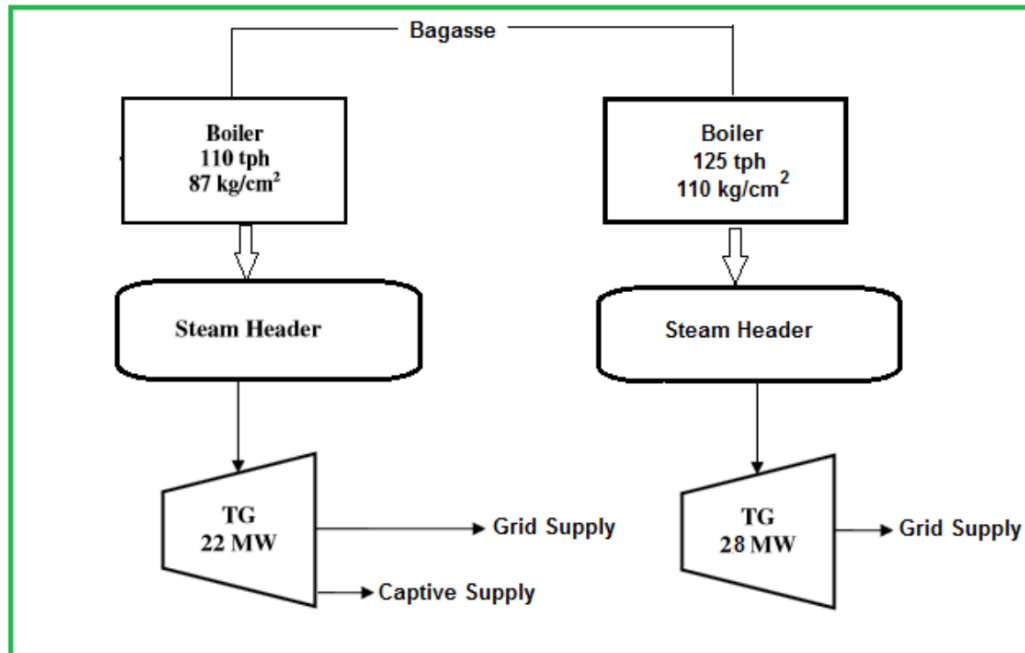
CDM Registration Date	14/09/2007
Crediting Period	14/09/2007 – 13/09/2017 (Fixed)
CERs Issued (Period)	30861 CERs (Period 14/09/2007-25/05/2008)
CERs Issued (Period)	104141 CERs (Period 26/05/2008-25/05/2011)

Hence the UCR project activity has never been issued voluntary carbon credits for the current 2014-2022 vintage years and there is no double counting of the credits. Additionally, the same has been stated in the undertaking provided in the Double Counting Avoidance Assurance Document (DAA) by SSML.

Project boundary, sources and greenhouse gases (GHGs)

The project boundary includes the physical, geographical site(s) of:

(a) the project power plant and all power plants connected physically to the electricity system that the project activity is connected to.



Leakage Emissions (LE_y)

Leakage emissions is not applicable as the project activity does not use technology or equipment transferred from another activity.

Hence $LE_y = 0$



	Source	GHG	Included?	Justification/Explanation
Baseline	GHG Emissions from fossil fuel in Grid Baseline Power Generation	CO ₂	Included	Major source of GHG emissions
		CH ₄	Excluded	Excluded for simplification. This is conservative.
		N ₂ O	Excluded	Excluded for simplification. This is conservative.
	Uncontrolled burning or decay of surplus biomass residue	CO ₂	Excluded	Excluded for simplification. This is conservative.
		CH ₄	Excluded	Excluded for simplification. This is conservative.
		N ₂ O	Excluded	Excluded for simplification. This is conservative.
Project Activity	Emissions from Biomass Project Activity	CO ₂	Excluded	No fossil fuel / electricity is consumed at the project site due to the project activity. No biomass residue from off-site will be used for the project activity. Excluded for simplification. This is conservative
	On-site fossil fuel and electricity consumption due to the project activity (stationary or mobile)			
	Off-site transportation of biomass residue	CH ₄	Excluded	No fossil fuel / electricity is consumed at the project site due to the project activity. No biomass residue from off-site will be used for the project activity. Excluded for simplification. This is conservative.
	Combustion of biomass residue for electricity and / or heat generation			
	Storage of biomass residue	N ₂ O	Excluded	Excluded for simplification. This is conservative.



Project Emissions (PE_y)

The project emissions (PE_y) under the methodology may include:

CO₂ emissions from transportation of biomass residue to the project site,

CO₂ emissions from on-site consumption of fossil fuels due to project activity,

CO₂ emissions from electricity consumption at the project site that is attributable to the project activity and

CH₄ emissions from combustion of biomass.

where

PET_y = are the CO₂ emissions during the year y due to transport of the biomass to the project plant in tons of CO₂,

$PEFF_{CO_2, y}$ = are the CO₂ emissions during the year y due to fossil fuels co-fired by the generation facility in tons of CO₂,

$PE_{EC, y}$ = are the CO₂ emissions during the year y due to electricity consumption at the project site that is attributable to the project activity in tons of CO₂,

GWP_{CH_4} = is the Global Warming Potential for methane valid for the relevant commitment period and,

$PE_{Biomass, CH_4, y}$ = are the CH₄ emissions from the combustion of biomass during the year y .

The proposed project activity does not have any CO₂ emissions due to off-site transportation of biomass, or from fossil fuel co-firing and from electricity consumption at site. The project activity also doesn't include the CH₄ emissions from the combustion of biomass.

Hence,

$PET_y = 0$,

$PEFF_{CO_2, y} = 0$,

$PE_{EC, y} = 0$ and,

$PE_{Biomass, CH_4, y} = 0$.

Therefore, $PE_y = 0$.

Establishment and description of baseline scenario (UCR Protocol)

The baseline scenario identified is:

Renewable energy technologies that displace technologies using fossil fuels, wherein the simplified baseline is the fuel consumption of the technologies that would have been used in the absence of the project activity, times an emission factor for the fossil fuel displaced.



The baseline emissions due to displacement of electricity are determined by net quantity of electricity generation as a result of the project activity (incremental to baseline generation) during the year y in MWh times the CO₂ emission factor for the electricity displaced due to the project activity during the year y in tons CO₂/MWh

Given that steam and electric power generation for internal consumption is part of the present project activity, emission reductions are only claimed from on-site incremental power generation that is injected to the grid. Therefore, the baseline scenario is the emission of GHG from the present electricity generation mix of the UPPCL grid in the northern region.

Emission Reductions (ER_y)

$$ER_y = BE_y - (PE_y + LE_y)$$

BE_y = Baseline emissions in year y (t CO_{2e})

$$BE_y = EG_{pj,y} * EF_{grid,y}$$

Where:

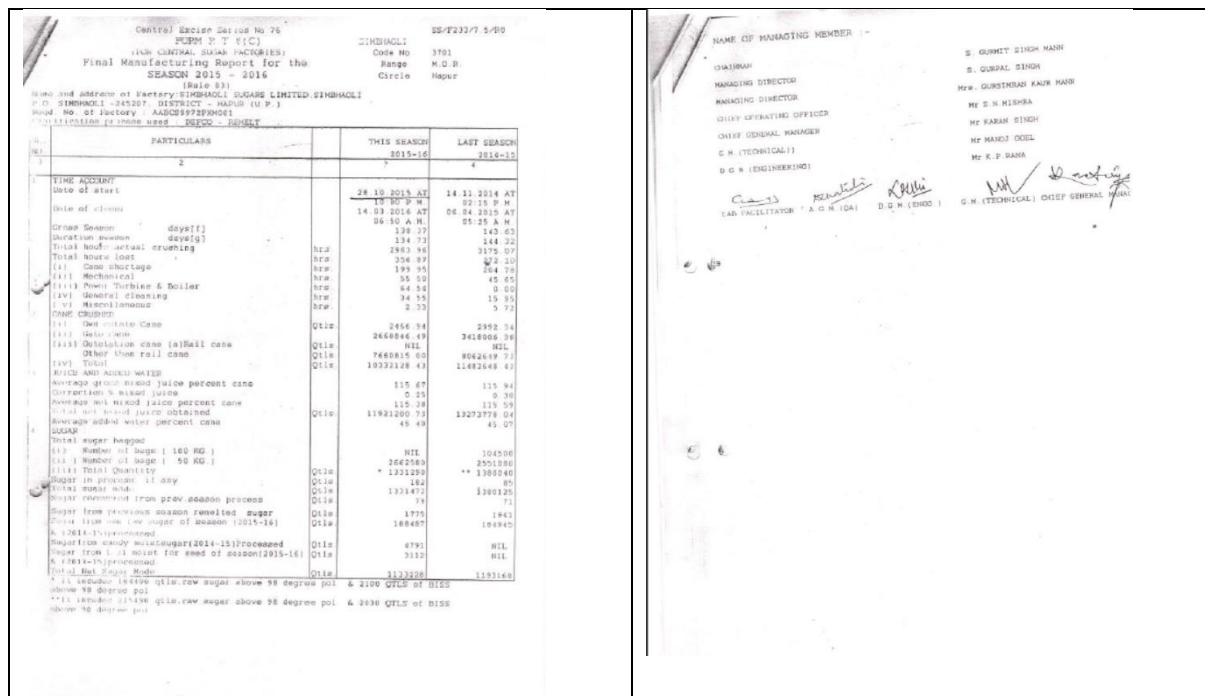
EG_{grid,y} = Quantity of net electricity generation that is fed into the local grid as a result of the implementation of the project activity in year y (MWh)

EF_{grid,y} = The CO₂ emission factor for grid connected power generation in year y calculated using UCR Standard emission factor (0.9 tCO₂/MWh).

PE_y = Project activity emissions = 0

LE_y = Leakage emissions = 0

For this methodology, it is assumed that transmission and distribution losses in the electricity grid are not influenced significantly by the project activity and are therefore not accounted for.



Year	Biomass Quantity Consumed (Tonnes)	Total Power Exported Mwh	Emission Reductions TCO ₂ eq
2013	26273	0	0
2014	323653	24929.736	22436
2015	184815	50476.98	45429
2016	429133	89439.36	80495
2017	379826	156675.24	141007
2018	304947	172863	155576
2019	219362	109579.032	98621
2020	224917	108667.848	97801
2021	177330	92415.792	83174
May-22	140903	66202.488	59582
			784121

Total emission reductions (ER_y) = 7,84,121 tCO₂ (7,84,121 CoUs)



Conclusions:

Based on the audit conducted on the basis of UCR Protocol, which draws reference from UCR Standard for Baseline Grid Emission Factor, CDM UNFCCC Methodology ACM0006: Grid connected renewable electricity generation (Ver.16.0), the documents submitted during the verification including the Data, Project Concept Note (PCN) / Monitoring Report (MR), SQAC is able to certify that the emission reductions from the project - Simbhaoli Biomass Grid Supply Power Project, Ghaziabad, Uttar Pradesh, India (UCR ID – 256) for the period **01/04/2014 to 31/05/2022** amounts to **7,84,121 tCO₂** (**7,84,121 CoUs**)

Santosh Nair
Lead Verifier (Signature)



Praful Shinganapurkar
Senior Internal Reviewer (Signature)

Date: 08/03/2023