PROJECT CONCEPT NOTE

CARBON OFFSET UNIT (CoU) PROJECT

Title: "Biomass Based Power Generation by Urjankur Shree Tatyasaheb Kore Warna Power Company Limited"

Version 1.0
Date 13/08/2025
First CoU Issuance Period: 10 years 9 months 10 days
Date: 22/03/2013 to 31/12/2023

Project Concept Note (PCN)
CARBON OFFSET UNIT (CoU) PROJECT

BASIC INFORMATION	
Title of the project activity	"Biomass Based Power Generation by Urjankur Shree Tatyasaheb Kore Warna Power Company Limited"
Scale of the project activity	Large Scale
Completion date of the PCN	13/08/2025
Project participants	**Project Proponent:** Urjankur Shree Tatyasaheb Kore Warana Power Co.Ltd. **Aggregator:** Viviid Emissions Reductions Universal Pvt Ltd
Host Party	India
Applied methodologies and standardized baselines	**ACM0006:** Electricity and heat generation from biomass (Ver. 16) & UCR Standard for Emission Factor
Sectoral scopes	01 Energy industries (Renewable/Non-Renewable Sources)
Estimated amount of total GHG emission reductions	92,235 CoUs (92,235 tCO_{2eq})

SECTION A. Description of project activity

A.1. Purpose and general description of Carbon offset Unit (CoU) project activity >>

The project "Biomass Based Power Generation by Urjankur Shree Tatyasaheb Kore Warna Power Company Limited" is located in Warnanagar Village, District Kolhapur, State Maharshtra, Country India.

Purpose of the project activity:

Urjankur Shree Tatyasaheb Kore Warna Power Company Limited (Project Proponent) operates an integrated sugar and distillery unit and has installed a 44 MW bagasse-based cogeneration plant to meet its energy needs and supply renewable electricity to the grid. Commissioned on 22/03/2013, the project activity utilizes bagasse—a byproduct of its sugar manufacturing—as a biomass fuel, promoting circular economy principles and efficient resource use.

The cogeneration facility is equipped with high-pressure boilers and steam turbines. Bagasse-fired boilers generate steam, which is used both for electricity generation and for process heating within the sugar and distillery operations. This configuration ensures optimal energy utilization across the integrated complex.

Out of the total installed capacity, 27.98 MW is exported to the Maharashtra State Electricity Distribution Company Limited (MSEDCL) during the sugarcane crushing season, and 39.89 MW during the off-season, under a Power Purchase Agreement (PPA). The remaining capacity is used for captive consumption, supporting the internal energy requirements of the plant.

In the absence of the project activity, electricity would have been delivered to the grid by the operation of fossil fuel-based grid-connected power plants and by the addition of new fossil fuel-based generation sources in the grid. As it's a project (renewable energy project), no fossil fuel is involved for power generation in the project activity. The electricity produced by the project is directly contributing to climate change mitigation by reducing the anthropogenic emissions of greenhouse gases (GHGs, i.e. CO2) into the atmosphere by displacing an equivalent amount of power at grid.

By replacing grid-based electricity with clean, biomass-generated power, the project significantly reduces dependence on fossil fuels and supports climate change mitigation efforts. The estimated annual electricity exported to the grid is 1,024,833 MWh, resulting in an estimated reduction of approximately 92,235 tCO_2e in greenhouse gas (GHG) emissions.

The project activity generates renewable electricity using bagasse, reducing reliance on fossil fuels and cutting GHG emissions. It promotes efficient waste-to-energy conversion, supporting circular economy practices.

A.2 Do no harm or Impact test of the project activity>>

There are social, environmental, economic and technological benefits which contribute to sustainable development.

- **Social benefits:**

- The project activity contributes to employment generation in the local area for both skilled & unskilled people for operation and maintenance of the equipment. The project creates several permanent jobs.
- It has created steady higher value jobs and skilled workers at the facility. The project activity is contributing to the national energy security by reducing consumption of fossil fuels.
- The technology being used in the project is proven and safe for power generation. An increase in such kind of projects shall enable all the technology suppliers to continuously innovate and modernize on the technology front. The local people will know the technological advancement and will help in capacity building.

- **Environmental benefits:**

- The project activity is a renewable energy project, which utilizes bagasse as a fuel for power generation and heat, a move that is voluntary and not mandated under current environmental laws of India. Since this project activity generates green energy in the form of power and heat, it has positively contributed towards the reduction in (demand) use of finite natural resources like coal, gas and oil, minimizing depletion and in turn increasing its availability to other important purposes. Therefore, this project activity helps to environment sustainability by reducing GHG emission in the atmosphere.
- Avoids global and local environmental pollution, leading to reduction of GHG emissions.
- Bagasse generated in the region's sugar mills is often produced in excess and is commonly disposed of in unplanned ways, such as dumping on nearby land or into rivers. This practice will be significantly reduced.

- **Economic benefits:**

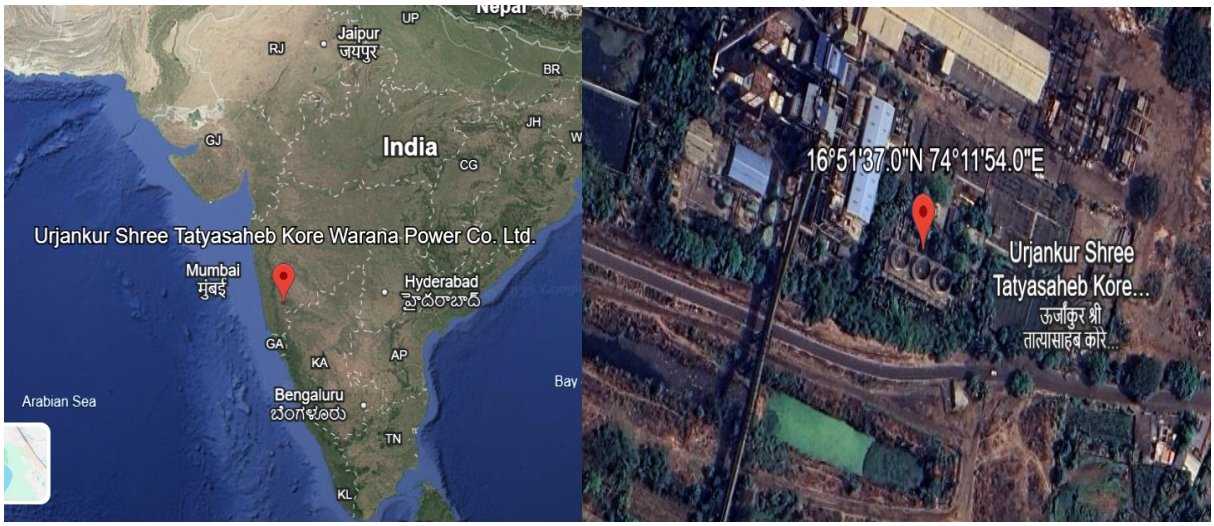
- The project activity creates employment opportunities during the project stage and operation and maintenance of the Cogen power plant.
- The project activity results in saving the coal and allowing it to be diverted to other needy section of the economy.
- The various other benefits due to the project activity ensure that the project is contributing to the sustainable development of the region by bringing in green technologies and processes to a backward region. The technology is indigenous and by implementing such projects the country is showcasing its GHG mitigation actions in its efforts to combat climate change.

Development Goals	Targeted SDG	Target Indicator (SDG Indicator)
SDG 13: Climate Action 	13.2: Integrate climate change measures into national policies, strategies and planning Target	13.2.2: Total greenhouse gas emissions per year- By displacing fossil fuel-based energy generation by producing clean energy. This project is expected to reduce 92,235 tCO2 emissions per year.
SDG 7: Affordable and Clean Energy 	7.2: By 2030, increase substantially the share of renewable energy in the global energy mix Target	7.2.1: Renewable energy share in the total final energy consumption.
SDG 8: Decent Work and Economic Growth. 	8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value Target: Training, O&M staff.	8.5.1: Average hourly earnings of female and male employees, by occupation, age and persons with disabilities. No. of Employees – 12

A.3. Location of project activity >>

Total Capacity	Date of Commissioning	Site	State	longitude	latitude
44 MW	22-03-2013	Kolhapur	Maharashtra	16°51'37"N	74°11'54"E

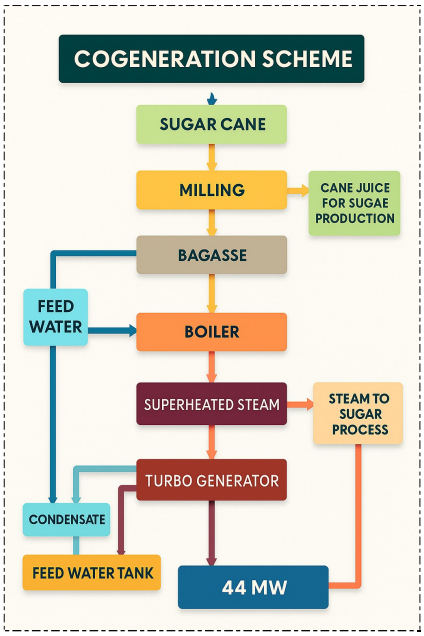
Country: India
District: Kolhapur
Village: Warnanagar
State: Maharashtra
Latitude: 16°51'37"N
Longitude: 74°11'54"E



PROJECT ACTIVITY AREA

A.4. Technologies/measures >>

The project activity comprises two high-pressure, high-temperature boilers of 155 TPH each, along with a turbine system, having a total power generation capacity of 44 MW. The process flow of the project activity can be represented as follows:



Technical Specification: -

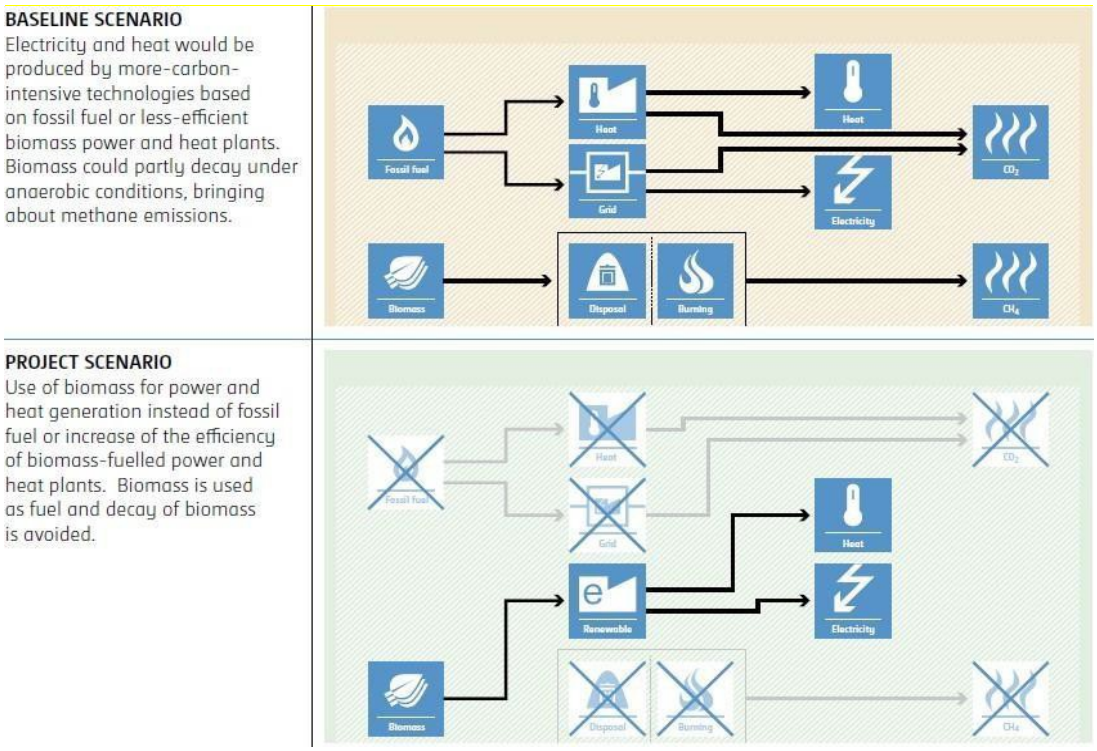
Equipment	Boiler-1	Boiler-1	Turbine
Tag No.	MR-15220	MR-15622	-
Make	Walchandnagar Industries Ltd	Walchandnagar Industries Ltd	SNM
Capacity	115 TPH	115 TPH	44 MW
Pressure	110 Kg/cm²	110 Kg/cm²	103 Kg/cm²
Heating S/F Area	7494 m²	7494 m²	-
Inlet Temp	-	-	535°C
Speed (RPM)	-	-	3909 RP

A.5. Parties and project participants >>

Party (Host)	Participants
INDIA	**Project Proponent:** Urjankur Shree tatyasaheb kore Warana power Co.Ltd. **Aggregator:** Viviid Emissions Reductions Universal Pvt. Ltd.

	Address: 10th Floor, 1001B, Sri Krishna Complex, New Link Road, Opp. Laxmi Industrial Estate, Andheri (West) Mumbai - 400053, India

A.6. Baseline Emissions>>



The proposed project activity uses bagasse as fuel for cogeneration unit. The bagasse being a renewable bio-mass fuel does not add any net carbon-dioxide to the atmosphere because of the carbon recycling during growth of sugar cane. Therefore, the project activity will lead to zero CO2 on-site emissions associated with bagasse combustion.

The operation during crushing season is of 140 days during season days. Actual number of mill operation days will be mentioned in the monitoring period. Without the project activity, total energy supplied from the boiler would have been taken up by coal fired boiler, and energy transferred to the grid would have been imported from grid mix and emission of CO2 would have occurred due to combustion of conventional fossil fuels.
By exporting clean electricity to the fossil fuel–dominated grid, the project activity will achieve continuous GHG reductions by avoiding an equivalent number of emissions that would have been generated from conventional power sources.

A.7. Debundling>>

This project is not a debundled component of a larger registered carbon offset project activity. There is no registered large-scale UCR project activity or a request for registration by another small-scale project activity:

• By the same project participants.
• In the same project category and technology/measure; and
• Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity- at the closest point.

SECTION B. Application of methodologies and standardized baselines

B.1. References to methodologies and standardized baselines >>

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

TYPE 1 - Renewable Energy Projects

CATEGORY- ACM0006: "Electricity and heat generation from biomass" Version 16.0.

B.2. Applicability of methodologies and standardized baselines >>

This methodology is applicable to project activities that operate biomass (co-)fired power-and-heat plants. The Cogen plant can be considered as per the below applicability:

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 utilizes 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 44 MW which is acceptable as per the applied large-scale methodology.
The installation of a new biomass residue fired power generation unit, which are places existing power generation capacity fired with fossil fuel 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, heating 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.
Bio-mass generated power is used for direct grid supply and for meeting the captive need facility. The project activity involves the grid-connected bagasse-based electricity generation capacity involving the installation of facilities for all owing the export of electricity to the regional grid.
Biomass is not sourced from dedicated plantations. The existing installed turbo-generators 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.

B.3. Applicability of double counting emission reductions >>

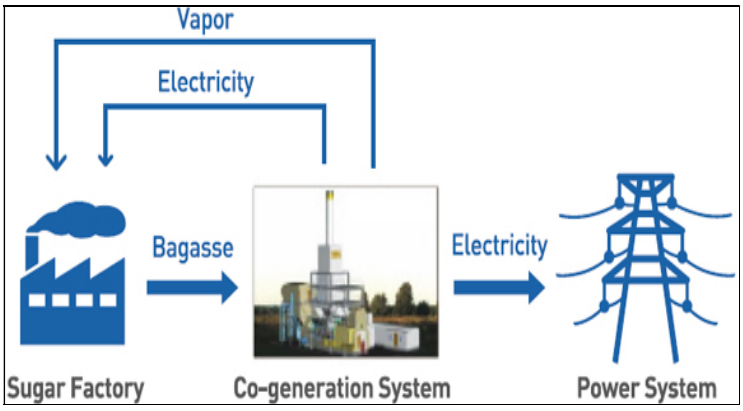
There is no double counting of emission reductions in the project activity due to the following reasons:

- Project is uniquely identifiable based on its location coordinates,
- Project has a dedicated commissioning certificate and connection point,
- Project is associated with energy meters which are dedicated to the consumption point for project developer

B.4. Project boundary, sources and greenhouse gases (GHGs)>>

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

- The spatial extent of the project boundary encompasses:
- All plants generating power and/or heat located at the project site, whether fired with biomass, fossil fuels or a combination of both.
- All power plants connected physically to the electricity system (grid) that the projects plant is connected to.
- The means of transportation of biomass to the project site if the feedstock is biomass residues, the site where the biomass residues would have been left for or dumped.



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

	Source	GHG	Included?	Justification/Explanation
Baseline	Co2 Emissions from fossil fuel in baseline grid power generation	CO2	Included	Major source of emission
		CH4	Excluded	Excluded for simplification. This is conservative
		N2O	Excluded	Excluded for simplification. This is conservative
Project Activity	Emissions from Coal co fired in Project Activity	CO2	Included	Major source of GHG emissions
		CH4	Excluded	Excluded for simplification. This is conservative
		N2O	Excluded	Excluded for simplification. This is conservative

B.5. Establishment and description of baseline scenario (UCR Standard or Methodology) **>>**

Emission reductions are calculated as follows:

The baseline scenario identified at the PCN stage of the project activity is:
Renewable energy technology that displaces technology using fossil fuels, wherein the simplified baseline is the fuel consumption of the technology 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 tCO2/MWh.

Given that 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 into the grid. Therefore, following the UCR COU Standard version 7, the baseline scenario is the emission of GHG from the present electricity generation mix of the electricity grid.

Emission Reductions (ERy): The emission reductions due to the project activity are calculated as the difference between the baseline emissions and the sum of the project emissions and the leakage:

ERy = BEy- (PEy+ LEy)

BEy = Baseline emissions in year y (t CO2e)

As mentioned in the methodology the baseline emissions are calculated as follows:

BEy = EGPJ,y * EFgrid,y

Where:

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

EFgrid,y = The CO2 emission factor for grid connected power generation in year y calculated using

UCR Standard emission factor (0.9 tCO2/MWh). PEy = Project activity emissions = 0 tCO2

LEy = Leakage emissions = 0 tCO2

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.

The plant operates at 27.98 MW in the crushing season and 39.89 MW in the off-season. For the ease of calculation, an average capacity of 33.89 MW is used for estimation.

Total baseline emission reductions (BEy) = 92,235 CoUs **(**92,235 tCO**2eq)**

Year	Net Generation	Baseline Emissions	Project Emissions	Leakage	Emission Reductions	EF
	MWh	(tCO_2e)	(tCO_2e)	(tCO_2e)	(tCO_2e)	(tCO2/MWh)
Year 1	102483	92235	0.00	0.00	92235	0.9
Year 2	102483	92235	0.00	0.00	92235	0.9
Year 3	102483	92235	0.00	0.00	92235	0.9
Year 4	102483	92235	0.00	0.00	92235	0.900
Year 5	102483	92235	0.00	0.00	92235	0.900
Year 6	102483	92235	0.00	0.00	92235	0.900
Year 7	102483	92235	0.00	0.00	92235	0.900
Year 8	102483	92235	0.00	0.00	92235	0.900
Year 9	102483	92235	0.00	0.00	92235	0.900
Year 10	102483	92235	0.00	0.00	92235	0.900
Total Emission reduction	**1024833**	**922350**	**0**	**0**	**922350**	
Average Emission Reduction	102483	92235	0	0	92,235	

B.6. Prior History>>

The project has never applied for the GHG mechanism in the past.

B.7. Changes to start date of crediting period >>

The start date of the crediting period is 22/03/2013

B.8. Permanent changes from PCN monitoring plan, applied methodology or applied standardized baseline >>

There are no permanent changes from registered PCN monitoring plan and applied methodology.

B.9. Monitoring period number and duration>>

First Issuance Period: 10 years 9 months 10 days
Crediting Period: 22/03/2013 to 31-12-2023
Monitoring Period: 22/03/2013 to 31-12-2023

B.8. Monitoring plan>>

Data and Parameters available ex-ante:

Data/Parameter	*EFGridy*
Data unit	tCO2 /MWh
Value applied	92,235 tCO2
Description	A "grid emission factor" refers to a CO2 emission factor (tCO2/MWh) which will be associated with each unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO2/MWh for the 2013 – 2020 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Hence, the same emission factor has been considered to calculate the emission reduction under conservative approach.
Source of data Value(s) applied	UCR CoU Standard Update: 2024 Vintage UCR Indian Grid Emission Factor Announced | by Universal Carbon Registry | Jan, 2025 | Medium
Measurement methods and procedures	-
Monitoring frequency	Ex-ante fixed parameter
Purpose of data	For the calculation of Emission Factor of the grid

Data and Parameters to be monitored ex-post:

Data / Parameter:	***EGy***
Data unit:	MWh/year
Value applied	10,24,833 Mwh
Description:	Quantity of net electricity supplied to the grid as a result of the implementation of the project activity in year y (MWh)
Source of data:	Energy Bills/invoices

Measurement procedures (if any):	Data Type: Measured Monitoring equipment: Energy Meters are used for monitoring Recording Frequency: Continuous monitoring and Monthly recording from Energy Meters, Summarized Annually Archiving Policy: Paper & Electronic Calibration frequency: 5 years (as per CEA provision) Generally, the calculation is done by the Authority/ Discom,and the project proponent has no control over the authority for the calculation. Therefore, based on the joint meter reading certificates/credit notes, the project shall raise the invoice for monthly payments. EL = E(export)- E(import)
Monitoring frequency:	Monthly
QA/QC procedures:	Calibration of the Main meters will be carried out once in five (5) years as per National Standards (as per the provision of CEA, India) and faulty meters will be duly replaced immediately as per the provision of power purchase agreement. Cross Checking: Quantity of net electricity supplied to the grid will be cross checked from the invoices raised by the project participant to the grid.
Purpose of data:	The Data/Parameter is required to calculate the baseline emission.
Any comment:	All the data will be archived till a period of two years from the end of the crediting period.

METER DETAILS: -

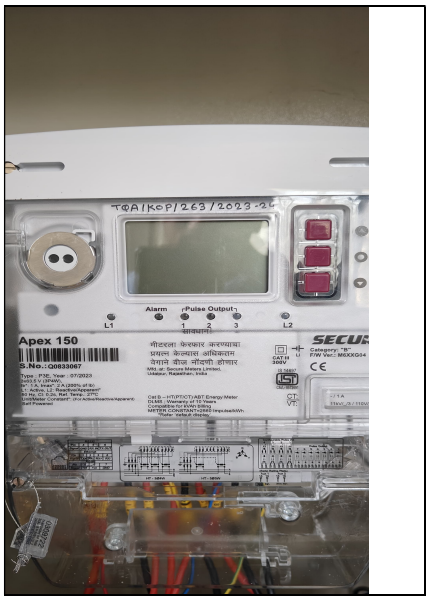


Figure 1

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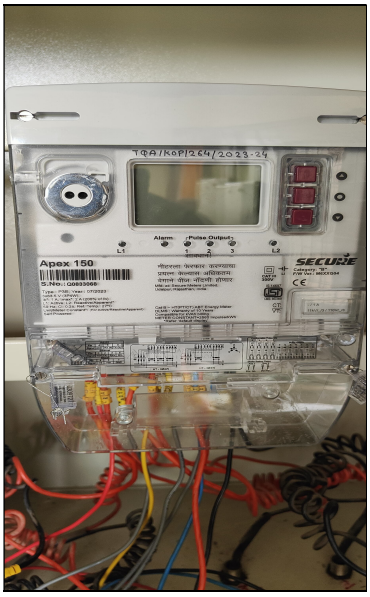

Figure 2

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