PROJECT CONCEPT NOTE

CARBON OFFSET UNIT (CoU) PROJECT

Title: Chargeup Solution

Version 1.1

Date 06/02/2026

First CoU Issuance Period: 03 years, 00 months

Date: 01/11/2025 to 31/10/2028

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

BASIC INFORMATION	
Title of the project activity	Chargeup Solution
Scale of the project activity	Small
Completion date of the PCN	06/02/2025
Project participants	E-Chargeup Solutions Pvt Ltd
Host Party	INDIA
Applied methodologies and standardized baselines	AMS-III.C.: Emission reductions by electric and hybrid vehicles, Version 16.0
Sectoral scopes	SELECT SCOPE EXAMPLE 07 - Transport
Estimated amount of total GHG emission reductions	21,531 CoUs (21,531 tCO_{2eq})

SECTION A. Description of project activity

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

The project, titled "Chargeup Solution", is a multi-site GHG mitigation project activity. It is not located in a single village or tehsil but operates across a wide geographical area in Northern India, including the following states and cities including Delhi (NCR), Uttar Pradesh (Ghaziabad, Noida, Agra, Mathura, Aligarh, Lucknow), Haryana (Faridabad, Gurgaon, Panipat, Sonipat, Karnal), Rajasthan (Jaipur), Madhya Pradesh (Gwalior) and Punjab (Ludhiana)

Purpose of the project activity:

The project is implemented by E-Chargeup Solutions Pvt Ltd. The core activity involves the current deployment and operation of 4,245 new L5-category electric three-wheelers (e-rickshaws) for last-mile passenger transport. This fleet is supported by the company's comprehensive "Battery as a Service" (BaaS) model, which includes a network of battery Financing and asset management, vehicle financing, and asset management.

The project directly reduces greenhouse gas (GHG) emissions by replacing the baseline technology: conventional 3-wheeled auto-rickshaws. Based on the project's verified calculation sheet, the baseline vehicles, run on petrol. The project avoids the tailpipe emissions from the combustion of this petrol, which would have occurred in the absence of the project.

The project is positive for the environment and contributes to sustainable development by:

- **Reducing GHG Emissions:** Directly mitigating climate change by replacing fossil-fuel-burning vehicles with zero-tailpipe-emission electric vehicles.
- **Improving Air Quality:** Eliminating localized air pollution (PM2.5, NOx, SOx) in dense urban environments across multiple states.
- **Empowering Drivers:** The project's BaaS model increases driver uptime and daily net earnings by reducing operational and refuelling costs.
- **Supporting SDGs:** The project is in strong alignment with the UN Sustainable Development Goals, including SDG 7 (Affordable and Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 11 (Sustainable Cities), and SDG 13 (Climate Action).

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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:

- Provides a better livelihood and crucial financial inclusion for last-mile drivers, a group largely operating in the unorganized sector. By providing access to formal vehicle financing and a "Battery as a Service" model that lowers daily operational costs, the project directly enables a 15-20% increase in driver income.
- Contributes to women empowerment by actively creating safe, accessible, and viable employment opportunities in the green economy. This opens a new, non-traditional career path for women, fostering greater economic independence.
- Improves public health in urban centers. By replacing 4,245 noisy, polluting petrol engines, the project creates an immediate and direct reduction in localized air pollution (PM2.5, NOx, SOx) and ambient noise, leading to healthier living conditions for the entire community

Environmental benefits:

- Directly mitigates climate change. The project's core purpose is replacing a fleet of 4,245 fossil-fuel (petrol) vehicles with zero-tailpipe-emission EVs. This results in a direct, permanent, and measurable reduction of greenhouse gases, calculated at 7,177 tCO_2e annually.
- Helps build more sustainable cities. By simultaneously cutting both localized air and noise pollution, the project significantly reduces the adverse environmental impact of urban transport, making these 15 cities cleaner, quieter, and more livable.
- Promotes the transition to clean energy for transport. This project actively accelerates the shift away from petrol by building out the essential Battery financing and asset management network needed for e-mobility at scale, proving its commercial and logistical viability.

Economic benefits:

- Provides a 15-20% higher income for drivers. This is a direct result of the "EaaS" model, which eliminates high and volatile fossil fuel costs and maximizes earning hours by replacing long charging times with rapid battery swapping.
- Creates stable, higher-income "green economy" jobs. The project supports a new ecosystem of employment, including skilled technicians for EV technology and maintenance, and operational staff for the Battery financing and asset management network.
- Enhances national energy security. By switching 4,245 vehicles from petrol to domestically-produced electricity, the project helps reduce India's significant economic dependency on imported fossil fuels for its transport sector.

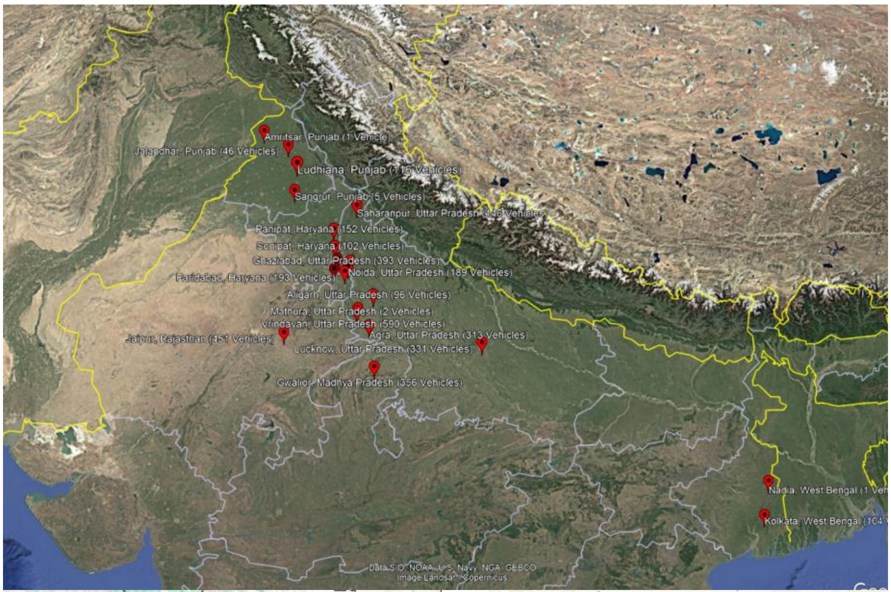
Technological Benefits:

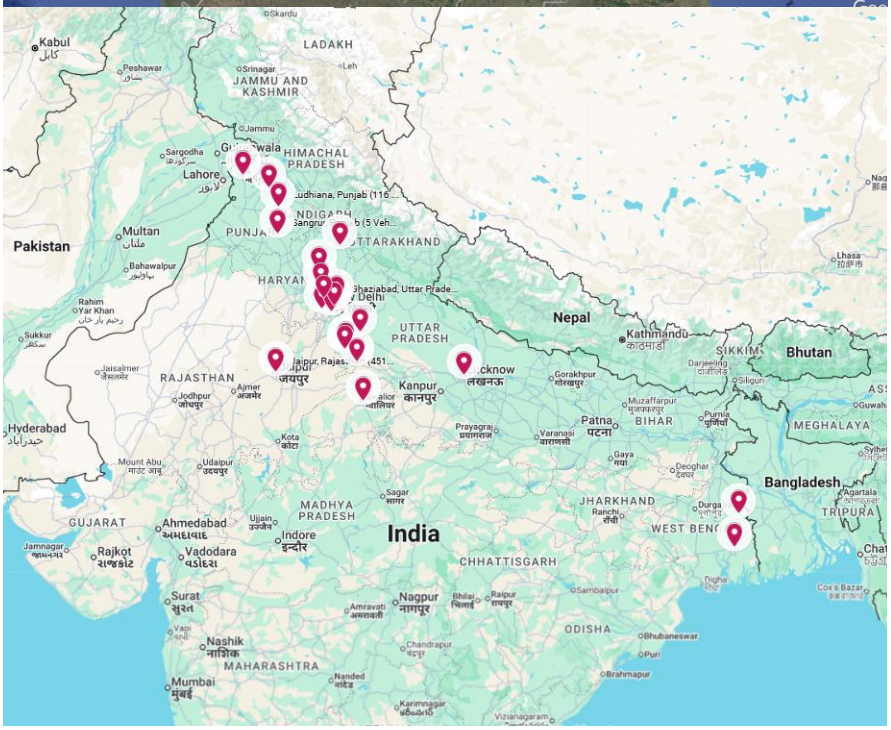
- The project introduces advanced technologies for sustainable transport, such as IoT-enabled lithium-ion battery systems, predictive maintenance analytics, and digital tracking platforms for performance monitoring. These systems enhance efficiency, safety, and traceability across the value chain. The integration of data analytics and asset-management technology improves operational transparency and supports emission reduction quantification in real time. Moreover, the use of certified Greenfuel Energy LFP battery packs ensures adherence to high safety and environmental standards (IP67 rating and >2000 cycles life), minimizing the risk of hazardous waste and improving lifecycle sustainability.

A.3. Location of project activity >>

The project operates across several locations throughout India. The specific site details are as follows:

Sr.no.	**Cities**	**State**	**Number of vehicles**
1	New Delhi	Delhi (NCT)	89
2	South	Delhi (NCT)	67
3	East	Delhi (NCT)	56
4	West & central	Delhi (NCT)	50
5	North West	Delhi (NCT)	38
6	Delhi	Delhi (NCT)	24
7	Delhi NCR	Delhi (NCT)	19
8	North East	Delhi (NCT)	8
9	Gurgaon	Haryana	200
10	Faridabad	Haryana	193
11	Panipat	Haryana	152
12	Karnal	Haryana	107
13	Sonipat	Haryana	102
14	Gwalior	Madhya Pradesh	356
15	Ludhiana	Punjab	116
16	Jalandhar	Punjab	46
17	Sangrur	Punjab	5
18	Amritsar	Punjab	1
19	Jaipur	Rajasthan	451
20	Vrindavan	Uttar Pradesh	590
21	Ghaziabad	Uttar Pradesh	393
22	Lucknow	Uttar Pradesh	331
23	Agra	Uttar Pradesh	313
24	Noida	Uttar Pradesh	189
25	Saharanpur	Uttar Pradesh	146
26	Aligarh	Uttar Pradesh	96
27	Mathura	Uttar Pradesh	2
28	Kolkata	West Bengal	104
29	Nadia	West Bengal	1
Total			**4,245**





A.4. Technologies/measures >>

The "Chargeup Solution" project employs advanced electric mobility technology to displace fossil fuel consumption from conventional petrol and CNG-based three-wheelers used in last-mile transportation. The project involves the large-scale deployment of Electric 3-Wheelers (E3Ws) powered by Lithium-Ion (LFP/NMC) battery packs integrated with an IoT-based monitoring system for operational efficiency, driver management, and real-time emission tracking.

1. Technology Description and System Working

Each E3W is powered by a lithium-ion battery pack that supplies energy to a high-efficiency brushless DC motor through a smart motor controller. The stored electrical energy is drawn from the state electricity grid via plug-in charging.

The Battery Management System (BMS) within each battery pack ensures optimal cell voltage, temperature control, and state-of-charge management to prevent overcharging, overheating, and short-circuiting. Real-time data from the BMS is transmitted via an IoT telematics module to Chargeup's central digital platform, which records vehicle performance, trip data, and charging cycles for monitoring and reporting purposes.

The project operates under the "Fi-Ne-Tech" (Finance–Network–Technology) model developed by E-Chargeup Solutions Pvt. Ltd., integrating financing, technology, and driver networks into a unified ecosystem. Through this model, EV ownership is made affordable, operations are monitored digitally, and uptime is maximized through predictive maintenance.

2. **Process Flow (Cradle-to-Grave Overview)**

1. **Vehicle Procurement & Financing:**
   - Drivers are onboarded through partner NBFCs or Chargeup's in-house financing scheme.
   - Vehicles and battery packs are procured from approved OEMs and certified manufacturers.
2. **Deployment & Operation:**
   - Electric 3-wheelers are deployed in multiple cities across Northern India for passenger and goods transport.
   - Daily operations involve battery charging/Distribution network and trip logging through the IoT platform.
3. **Energy Source:**
   - Electricity sourced from the **state grid** (renewable and non-renewable mix).
   - The system design allows future integration with renewable (solar) charging infrastructure.
4. **Monitoring & Maintenance:**
   - IoT-connected systems record energy usage, distance travelled, charging frequency, and downtime.
   - Predictive maintenance alerts ensure high uptime and safety.
5. **End of Life Management:**
   - Batteries reaching end-of-life are recovered through authorized recyclers under India's **Battery Waste Management Rules (2022)** to ensure safe material recovery and environmental compliance.

3. Critical Systems and Components

- Energy Storage: Li-ion LFP/NMC battery packs with advanced BMS
- Energy Conversion: Electric traction motor (250W–1200W)
- Control System: Motor controller and IoT telematics module
- Charging Interface: Plug-in AC chargers (48V–60V, 15A) and battery swap stations
- Digital Layer: Centralized IoT monitoring platform for trip and emission data logging

Specification	Value/ Description
Battery Type	Lithium Iron Phosphate (LFP) / Nickel Manganese Cobalt (NMC)
Manufacturer	Eastman Auto & Power Limited, Inverted energy, Greenfuel Energy Solutions Pvt. Ltd., Etc (Multiple OEMs)
Nominal Voltage	51.2 V
Rated Capacity	100 Ah

Energy Content	5.12 kWh
Cycle Life	> 2,000 cycles (at 80% DOD)
Battery Enclosure Rating	IP67 (Dust and Water Resistant)
Weight	50 ± 1 kg
Dimensions (mm)	555 × 370 × 200
Battery Management System (BMS)	Integrated with cell balancing, over/under-voltage and temperature protection
Motor Rating	250 W – 1200 W (BLDC type, depending on vehicle model)
Energy Efficiency	~0.06 kWh/km
Average Daily Travel	~80 km/day (approx. 2,200 km/month)
Charging Method	Plug-in (AC 220V) / Battery Swapping
Average Energy Consumption	4.6 kWh/day per vehicle
Expected Vehicle Life	07 years
Monitoring System	IoT-based data transmission and analytics dashboard (real-time)

A.5. Parties and project participants >>

Party (Host)	Participants
India	E-Chargeup Solutions Pvt Ltd, Address: 300/3, Mehrauli-Gurgaon Rd, Sultanpur, New Delhi, Delhi 110030

A.6. Baseline Emissions>>

In the baseline scenario, the transportation of passengers and goods in the project regions, Delhi (NCT), Uttar Pradesh, Haryana, Rajasthan, Madhya Pradesh, and Punjab is carried out primarily by Internal Combustion Engine (ICE) three-wheelers operating on petrol (motor gasoline). These conventional three-wheelers constitute the dominant mode of last-mile mobility for both passenger and small-scale goods transport in urban and semi-urban areas.

Prior to the implementation of the Chargeup Solution project, these vehicles relied completely on the combustion of petrol as their energy source. Petrol (motor gasoline) used in ICE engines emits carbon dioxide (CO_2), along with smaller quantities of methane (CH_4) and nitrous oxide (N_2O), as a direct result of fuel combustion. These emissions represent the primary greenhouse gas (GHG) sources in the baseline scenario, contributing to air pollution and climate change.

The baseline situation reflects the continuation of these fossil fuel–based mobility practices, where no interventions for electrification, clean energy transition, or emission reduction are in place. Drivers depend on petrol due to its easy availability and lower upfront costs compared to electric alternatives, resulting in sustained GHG emissions.

Baseline Schenerio:

According to the Central Pollution Control Board (CPCB, 2018) emission factors, the average GHG emission rate for petrol-fuelled three-wheelers is 0.27 kg CO_2e per kilometre. Each conventional vehicle typically travels around 80 km per day (approximately 2,200 km per month or 26,400 km per year).

As per the approved consolidated methodology AMS–III.C., Version 16.0,

A.7. Debundling>>

This project activity is not a debundled component of a larger project activity.

SECTION B. Application of methodologies and standardized baselines

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

SECTORAL SCOPE – 07 Transport

This scope includes project activities that reduce GHG emissions through improvements in vehicle energy efficiency, use of alternative fuels, or substitution of fossil-fuel-based transport with electric or renewable energy–driven modes.

TYPE III: Energy Demand / Fuel Switching Projects
(Project activities that reduce fossil fuel consumption at the point of end-use through efficiency improvement or fuel switching)

CATEGORY- AMS-III.C. Emission reductions by electric and hybrid vehicles --- Version 16.0,

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

Applicability Criterion under AMS-III.C. Version 16.0	Justification
The methodology is not applicable for project activities that involve a switch from fossil fuels to biofuels in transportation; those project activities shall consider using another Type III methodology (e.g. “AMS-III.T.: Plant oil production and use for transport applications” and “AMS-III.AK.: Biodiesel production and use for transport applications”).	The project does not introduce biofuels. It replaces petrol ICE three-wheelers with electric three-wheelers powered by lithium-ion batteries. No biofuel production or use is involved. **Hence this condition is Applicable.**
In cases where the project vehicles use a replaceable, chargeable battery there must be documented measures in place to ensure that vehicle owners have access to replacement batteries of comparable quality	The project ensures quality replacement through contractual OEM agreements. All replacement batteries are certified (IP67-rated, ≥2000 cycles, 5 kWh, LFP/NMC chemistry) and supplied under warranty. **Hence this condition is Applicable**.
The project design document (PDD) shall explain the proposed approach for	Each Vehicles are deployed through the Chargeup Fi-Ne-Tech model (finance + network

introducing/distributing the electric/hybrid vehicles, which shall allow for tracking of the project vehicles. It shall also explain how the proposed project activity will: (a) Demonstrate that the baseline vehicles being displaced are those consuming fossil fuels.* This can be done, for example, through documentation of the market share per fuel type per vehicle category in the project region (e.g. based on representative sample surveys or official data or peer reviewed literature); (b) Ensure compliance with prevailing regulations pertaining to battery use and disposal	+ technology). Each EV is assigned a unique ID linked to VIN, battery ID and IoT device ID, enabling complete traceability in the Chargeup digital fleet registry. a) The project replaces petrol-fuelled ICE three-wheelers, which account for the dominant share of registered 3-wheelers in the project states. As per MoRTH Transport Statistics (Govt. of India), NITI Aayog – India EV Report 2022[1], and SMEV 3-Wheeler Fuel Mix Study (2023)[2] showing >90% petrol share in the segment. b) The project complies with the Battery Waste Management Rules, 2022[3] (MoEFCC, Govt. of India) which mandate EoL collection, recycling, and producer responsibility. All lithium-ion batteries are barcoded and returned via an OEM-managed reverse logistics channel to CPCB-authorized lithium battery recyclers. No open dumping, burning, resale or informal dismantling is permitted, and compliance is auditable under Rule 7(1) & Rule 13 of BWM Rules, 2022. **Hence this condition is Applicable..**
The PDD shall include minimum performance specifications for the batteries to be used such as: depth of discharge, battery cycles, distance travelled per charge, lifetime.	The project uses AIS-156 certified lithium-ion (LFP) batteries rated 51.2V, 100Ah (5.12 kWh), with a design life of ≥2,000 cycles and a driving range of 70–90 km per charge. These specifications meet the minimum performance requirements of AMS-III.C, and the full technical details are provided in Section A.4 of this report. **Hence this condition is Applicable..**
The project proponent shall demonstrate that double counting of emission reductions will not occur e.g. via a contractual agreement with the end-user(s), maintenance of comprehensive inventory of project vehicles or unique identification of the vehicles owned by end-user(s). The steps undertaken to avoid double counting shall be documented in the PDD	The project prevents double counting through a unique asset identification system in which every electric three-wheeler, battery pack, and IoT device is linked to a single project registry record, All drivers and financing partners sign contractual agreements stating that the vehicle cannot be registered under any other carbon programme. A centralized digital database maintained by Chargeup tracks active vehicles, odometer data, GPS Location, Distance covered star and end time, average speed and ownership status, ensuring that no emission reductions are claimed more than once.

[1] https://niti.gov.in/sites/default/files/2025-08/Electric-Vehicles-WEB-LOW-Report.pdf?

[2] https://morth.nic.in/sites/default/files/RTYB_Publication_2019_20%20%281%29.pdf?

[3] https://cpcb.nic.in/uploads/hwmd/Battery-WasteManagementRules-2022.pdf?

	The project is not registered under any other carbon programme, ensuring exclusive attribution of emission reductions. **Hence this condition is Applicable..**
In cases where renewable energy source is used for charging the electric vehicles through a dedicated transmission/distribution line, the methodology should be combined with "AMS-I.F.: Renewable electricity generation for captive use and mini-grid" to claim emission reductions for the amount of electricity supplied from renewable electricity source to the charging station.	all electric three-wheelers are charged using grid electricity and no dedicated renewable energy supply or captive RE charging system is installed. The project does not include solar, wind, or any other renewable electricity generation component and therefore does not require combination with AMS-I.F. No emission reductions are claimed from renewable power supply, only from displacement of petrol combustion. **Thus, Not Applicable.**
In cases where this methodology is combined with "AMS-I.F.: Renewable electricity generation for captive use and mini-grid", the project proponent shall separately demonstrate the additionality of each of the component (i.e. supply of renewable energy to charging station (Type I) and use of electric vehicles (Type III)). Furthermore, while combining the two components applicable requirements on start date and prior clean development mechanism (CDM) consideration shall be met in accordance with the CDM project standard and CDM project cycle procedures.	As the project is not integrated with the AMS I.F methodology. **Thus, Not Applicable.**
Types of hybrid/electric vehicles to be introduced include but are not limited to cars, buses, trucks, jeepneys, commuter vans, taxis, motorcycles and tricycles.	All the electric vehicle introduced in this project activity are Three- Wheeler (3W). **Thus, Applicable.**
Project participants shall demonstrate that the project and baseline vehicles are comparable, using the following means: (a) Project and baseline vehicles belong to the same vehicle category, e.g. motorcycle, bus, taxi, truck, tricycle; (b) Project and baseline vehicle categories have comparable passenger/load capacity and power rating with a variation of no more than 20 per cent (comparing the baseline vehicle with the respective project vehicle of same category).	The project replaces petrol three-wheelers with electric three-wheelers, meaning both project and baseline vehicles belong to the same vehicle category (tricycle/auto-rickshaw). Passenger capacity, payload, and motor power fall within the ±20% variation allowed under AMS-III.C, since both ICE and EV models serve identical routes, duty cycles, and transport functions. Therefore, the project satisfies the comparability requirement for vehicle class, capacity, and performance. **Hence this condition is Applicable.**
Measures are limited to those that result in emission reductions of less than or equal to 60 ktCO_2 equivalent annually	The Annual Estimated Emission reduction value calculated is 511 tCO_2 equivalent annually which is less then 60 ktCO_2 equivalent annually, Thus Project activity is small scale, **hence this condition is Applicable**

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

Double counting is prevented through the following measures:

- Unique Asset Identification: Every electric three-wheeler, battery pack, and IoT device is assigned a unique ID and recorded in the project registry database.
- Centralized Digital Tracking System: maintains a unified fleet database that records vehicle ownership, odometer readings, GPS route data, distance travelled, and operational status to ensure exclusive attribution of emission reductions.
- Non-Participation Declaration: The project is not registered, nor under application, in any other carbon registry, programme, or crediting mechanism. Self-deceleration is Provided is also provided.

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

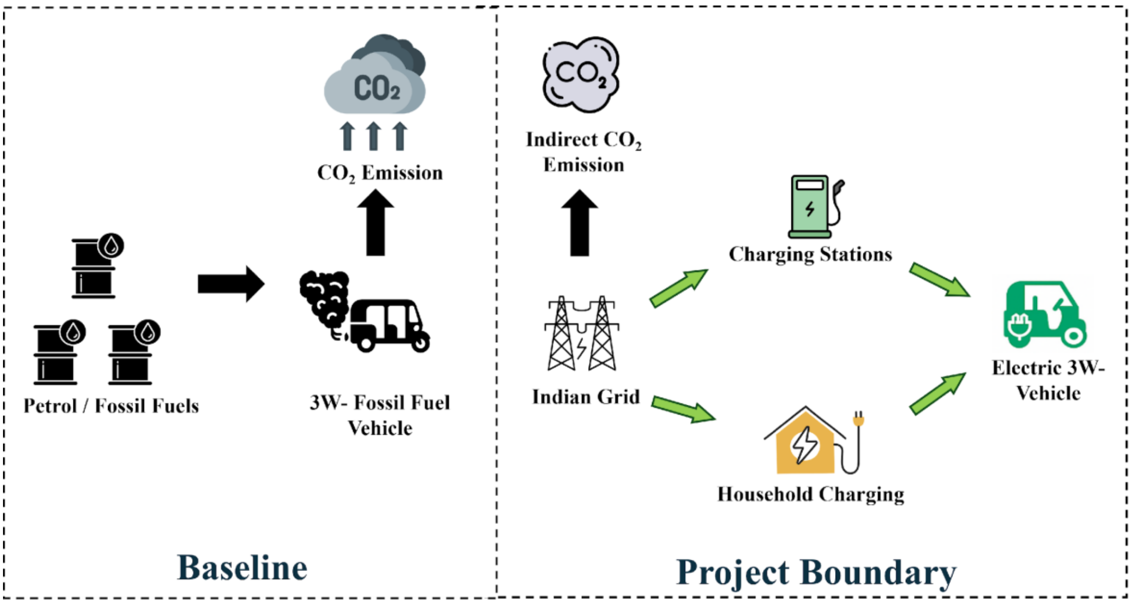
As per paragraph 19 of the applicable methodology AMS-III.C (Version 16.0), the project boundary includes :

(a) The vehicles and Batteries of the project;

(b) The geographic boundaries where the project activity vehicles are operated;

(c) The providers of the charging service to the project activity vehicles, including the charging equipment and stations of the project activities vehicle, electric supply sources (e.g. a grid and/or renewable energy generation source connected by a dedicated line to the charging stations) and other ancillary facilities

The project boundary includes the electric three-wheelers (project vehicles), the grid electricity used for charging, and the petrol-fuelled internal combustion engine (ICE) three-wheelers that represent the baseline scenario.



Emission Sources and GHGs Considered

	Source	GHG	Included	Justification/Explanation
Bas	Emissions from Petrol combustion in ICE 3-wheelers	CO_2	Included	Major source of emission
		CH_4	Excluded	Minor source, may be excluded as per AMS-III.C

eline		N_2O	Excluded	Minor source, may be excluded as per AMS-III.C
Project Activity	Emissions from Grid electricity used to charge EV batteries	CO_2	Included	Indirect emissions due to power generation in fossil-based grid
		CH_4	Excluded	Negligible share in Indian electricity generation mix
		N_2O	Excluded	Negligible share in Indian electricity generation mix

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

In the absence of the project activity, last-mile transportation services for passengers and goods in the project boundary would continue to be provided by internal combustion engine (ICE) three-wheelers running on petrol (motor gasoline). These vehicles currently dominate the commercial three-wheeler segment in the intervention areas, as confirmed through state transport registration data, national mobility statistics, and Chargeup driver onboarding records.

As per the applicable methodology AMS-III.C (Version 16.0), the baseline scenario is defined as the continued use of conventional fossil fuel vehicles providing the same transport service, since no policy, financial incentive, or market condition exists that would independently trigger the adoption of electric three-wheelers at scale. Therefore, the most realistic and credible baseline is the continued operation of petrol three-wheelers, resulting in direct CO_2 emissions from fuel combustion.

Baseline Emission:
Inlining with the selected methodology AMS-III.C., version 16.0, as per Paragraph 26 “Baseline emissions should be calculated using one of the two approaches”, We have selected Approach 1.

“Approach 1: Using distance travelled by project vehicles”

The baseline emissions are calculated based on the unit of service provided by the project vehicles (travelled distance) times the emission factor for the baseline vehicle to provide the same unit of service as per the equation below:

$$BE_y = \sum_i EF_{BL,km,i} \times DD_{i,y} \times N_{i,y} \times 10^{-6}$$ Equation (1)

Where:

BE_y	=	Total baseline emissions in year y (t CO_2)
$EF_{BL,km,i}$	=	Emission factor for baseline vehicle category i (g CO_2/km)
$DD_{i,y}$	=	Annual average distance travelled by project vehicle category i in the year y (km)
$N_{i,y}$	=	Number of operational project vehicles in category i in year y

As per paragraph 31: The Emission factor for baseline vehicle category ($EF_{BL,km,i}$) shall be determined as follows*:*

$$EF_{BL,km,i} = SFC_i \times NCV_{BL,i} \times EF_{BL,i} \times IR^t$$ Equation (3)

SFC_i	=	Specific fuel consumption of baseline vehicle category i (g/km)
$NCV_{BL,i}$	=	Net calorific value of fossil fuel consumed by baseline vehicle category I (J/g)
$EF_{BL,i}$	=	Emission factor of fossil fuel consumed by baseline vehicle category i (g CO_2/J)
IR^t	=	Technology improvement factor for baseline vehicle in year t. The improvement rate is applied to each calendar year. The default value of the technology improvement factor for all baseline vehicle categories is 0.99
T	=	Year counter for the annual improvement (dependent on age of data per vehicle category)

For SFC_i Calculation we have selected Option (5): Existing statistics

"If none of the above options apply due to lack of data, other public available existing statistics could be used as industry default values, such as host country statistics (released by transportation department or other authorities), IPCC or other international data."

$$SFC_{,i} = Fuel\ Consumpition\ (L/km) \times Density\ of\ Fuel(kg/L)$$

Considered Estimated parameter:-

Parameters	Value	Unit
$DD_{i,y}$	80 km X 25 days X 12 month = 24,000	km/year

$N_{i,y}$	4,245	Number of vehicle
Baseline Average	22.50	Km/l
Fuel Consumption	0.04444	(L/Km)
Mean Density of Petrol (motor gasoline)	0.845	kg/L
SFC_i	37.555	g/km
$NCV_{BL,i}$	43,000	J/g
$EF_{BL,i}$	0.0000741	g CO_2/J
IR^T	0.99	Fraction
T	1	Year
$EF_{BL,km,i}$	118.466	gCO_2/km

Now as per above mentioned equation (1) ,

$$BE_y = \sum_i EF_{BL,km,i} \times DD_{i,y} \times N_{i,y} \times 10^{-6}$$

$$BE_y = 118.466 \times 24{,}000 \times 4{,}245 \times 10^{-6}$$

$$\boldsymbol{BE_y = 12{,}069\ tCO_2e/year}$$

Project Emission:
Inlining with the selected methodology AMS-III.C., version 16.0, as per Paragraph 40 "Project emissions include the electricity and fossil fuel consumption associated with the operation of project vehicles and shall be calculated by two approaches", We have selected Approach 1.

"Approach 1: Using distance travelled by project vehicles"

$$PE_y = \sum_i EF_{PJ,km,i,y} \times DD_{i,y} \times N_{i,y} \qquad \text{Equation (4)}$$

Where:

PE_y	=	Total project emissions in year *y* (t CO_2)
$EF_{PJ,km,i,y}$	=	Emission factor per kilometre travelled by the project vehicle type *i* (t CO_2/km)
$N_{i,y}$	=	Number of operational project vehicles in category *i* in year *y*
$DD_{i,y}$	=	Annual average distance travelled by the project vehicle category *i* in the year *y* (km)

As per paragraph 43: The emission factor of the project vehicles shall be established as follows:

$$EF_{PJ,km,i,y} = \sum_i SEC_{PJ,km,i,y} \times EF_{elect,y} / (1 - TDL_y) \times 10^{-3} + \sum_i SFC_{PJ,km,i,y} \times NCV_{PJ,i} \times EF_{PJ,i} \times 10^{-6} \quad \text{Equation (6)}$$

Where:

$SEC_{PJ,km,i,y}$	=	Specific electricity consumption by project vehicle category *i* per km in year *y* in urban conditions (kWh/km)
$EF_{elect,y}$	=	CO_2 emission factor of electricity consumed by project vehicle category *i* in year *y* (kg CO_2/kWh)
$SFC_{PJ,km,i,y}$	=	Specific fossil fuel[4] consumption by project vehicle category *i* per km in year *y* in urban conditions (g/km)
$EF_{PJ,i}$	=	CO_2 emission factor of fossil fuel consumed by project vehicle category *i* in year *y* (g CO_2/J)
$NCV_{PJ,i}$	=	Net calorific value of the fossil fuel consumed by project vehicle category *i* in year *y* (J/g)
TDL_y	=	Average technical transmission and distribution losses for providing electricity in the year *y*

Considered Estimated parameter: -

Parameters	Value	Unit
$SEC_{PJ,km,i,y}$	0.0512	kWh/km
$EF_{elect,y}$	0.757	kg CO_2/kWh
$SFC_{PJ,km,i,y}$	0	g/kg
$EF_{PJ,i}$	0	g CO_2/J
$NCV_{PJ,i}$	0	J/g
TDL_i	0.1927	Fraction
$EF_{PJ,km,i,y}$	0.0000480099	tCO_2/km

Now as per above mentioned equation (4) ,

$$PE_y = \sum_i EF_{PJ,km,i,y} \times DD_{i,y} \times N_{i,y}$$

$$PE_y = 0.0000480099 \times 24{,}000 \times 4{,}245$$

$$\boldsymbol{PE_y = 4{,}892\ tCO_2e/year}$$

Leakage Emission:

As per Paragraph 44: No leakage calculation is required.

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4 For electric vehicle the values is 0.00.

$$LE_y = 0$$

Estimated Emission Reductions:

As per Paragraph 45:

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \qquad \text{Equation (1)}$$

ER_y = Emission reductions in year *y* (t CO_2e)

BE_y = Baseline emissions in year *y* (t CO_2e)

PE_y = Project emissions in year *y* (t CO_2e)

LE_y = Leakage emissions in year *y* (t CO_2e)

ER_y = 12,069 - 4,892 - 0
ER_y = 7,177 tCO_2e/year

Estimated Emission Reduction				
Years	**Estimated Baseline emissions** (tonnes of CO_2e)	**Estimated Project activity emissions** (tonnes of CO_2e)	**Estimated Leakage** (tonnes of CO_2e)	**Overall Estimated emission reductions** (tonnes of CO_2e)
Year 1	12,069	4,892	0	7,177
Year 2	12,069	4,892	0	7,177
Year 3	12,069	4,892	0	7,177
Total (tonnes of CO_2e)	**36,207**	**1,468**	**0**	**21,531**
Total number of Crediting Year	**03**			
Average (tonnes of CO_2e)	**12,069**	**4,892**	**0**	**7,177**

Estimated **Annual or Total baseline emission reductions (ERy)** = 7,177 CoUs/year (7,177 tCO_2eq/yr)

B.6. Prior History

The project activity has not applied to any other GHG program for generation or issuance of carbon offsets or credits for the said crediting period.

B.7. Changes to start date of crediting period

There is no change in the start date of crediting period.

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: 03 years, 00 months – 01/11/2025 to 31/10/2028

B.8. Monitoring plan>>

The project will monitor two key parameters required for calculating emission reductions under AMS-III.C (Version 16.0):
(i) the number of electric three-wheelers actively operating within the project boundary, and (ii) the total distance travelled by these vehicles during each monitoring period.

Each electric three-wheeler deployed under the project is equipped with a GPS-enabled IoT telematics device that continuously records odometer readings, distance travelled, trip start and end times, and operational status. These data are automatically transmitted in real time to the Chargeup backend server via a secure cellular network. No manual data entry or sampling is required, as 100% of the vehicles are monitored digitally throughout the crediting period.

Every vehicle is assigned a unique identification code that links its asset record, ownership status, and operational history to the project registry, enabling complete traceability and preventing the risk of double counting. Data collection, storage, validation, processing, and reporting are fully managed by Chargeup through its centralized monitoring dashboard, which also serves as the authoritative database for verification and issuance purposes. All activity data are archived for the full crediting period and retained for at least two years beyond the final issuance, as required by UCR.

The monitored distance data (km) is multiplied by the applicable baseline emission factor (kg CO_2/km) to determine the baseline emissions that would have occurred in the absence of the project. In accordance with AMS-III.C, only CO_2 is included in the emission reduction calculation, while CH_4 and N_2O are excluded.

Ex-ante (Fixed):-

Data/Parameter	***SFC_i***
Data unit	g/km
Description	Specific fuel consumption of baseline vehicle category i.
Source of data	Calculated.
Value(s) applied	37.555
Measurement methods and procedures	Derived from (a) average km/litre fuel efficiency of ICE 3-wheelers from transport statistics and (b) density of petrol (0.74 kg/l).

Monitoring frequency	N.A
Purpose of data	Calculation of Baseline Emission.

Data/Parameter	***$NCV_{BL,i}$***
Data unit	j/g
Description	Net calorific value of fossil fuel consumed by baseline vehicle category I
Source of data	https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf
Value(s) applied	43,000
Measurement methods and procedures	N.A
Monitoring frequency	N.A
Purpose of data	Calculation of Baseline Emission.

Data/Parameter	**Baseline Average**
Data unit	Km/L
Description	Average Distance covered by Baseline vehical in 1 Liter of Fuel
Source of data	Publicly available[5]
Value(s) applied	30 km/L
Measurement methods and procedures	N.A
Monitoring frequency	N.A
Purpose of data	Calculation of Baseline Emission.

Data/Parameter	***$EF_{BL,i}$***
Data unit	g CO_2/J
Description	Emission factor of fossil fuel consumed by baseline vehicle category i
Source of data	Convert 69300 kg/TJ, https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
Value(s) applied	0.0000741
Measurement methods and procedures	N.A
Monitoring frequency	N.A
Purpose of data	Calculation of Baseline Emission.

[5] Avegage of real world range of Baseline Vehical ,https://www.researchgate.net/publication/353278036_Real-world_emission_and_impact_of_three_wheeler_electric_auto-rickshaw_in_India

Data/Parameter	IR^T
Data unit	Fraction
Description	Technology improvement factor for baseline vehicle in year t
Source of data	Default value from AMS-III.C, Version 16.0
Value(s) applied	1
Measurement methods and procedures	N.A
Monitoring frequency	N.A
Purpose of data	Calculation of Baseline Emission.

Data/Parameter	T
Data unit	Year
Description	Year counter for the annual improvement (dependent on age of data per vehicle category)
Source of data	N.A
Value(s) applied	1
Measurement methods and procedures	N.A
Monitoring frequency	N.A
Purpose of data	Calculation of Baseline Emission.

Data/Parameter	$EF_{BL,km,i}$
Data unit	g CO_2/km
Description	Emission factor for baseline vehicle category i
Source of data	Calculated (refer B.5)
Value(s) applied	118.4666832500
Measurement methods and procedures	N.A
Monitoring frequency	N.A
Purpose of data	Calculation of Baseline Emission.

Data/Parameter	$SEC_{PJ,km,i,y}$
Data unit	kWh/km
Description	Specific electricity consumption by project vehicle category i per km in year y in urban conditions
Source of data	Calculated based on technical specification .
Value(s) applied	0.0512
Measurement methods and procedures	N.A
Monitoring frequency	N.A
Purpose of data	Project Emission

Data/Parameter	$EF_{elect,y}$
Data unit	Kg CO_2/kWh
Description	CO_2 emission factor of electricity consumed by project vehicle category i in year y
Source of data	CERC Database Version 20.0
Value(s) applied	0.757
Measurement methods and procedures	N.A
Monitoring frequency	N.A
Purpose of data	Project Emission

Data/Parameter	$SFC_{PJ,km,i,y}$
Data unit	g/kg
Description	Specific fossil fuel consumption by project vehicle category i per km in year y in urban conditions
Source of data	Not applicable , Since there is no Fossil Fuel used in project scenario
Value(s) applied	0
Measurement methods and procedures	N.A
Monitoring frequency	N.A
Purpose of data	Project Emission

Data/Parameter	$EF_{PJ,i}$
Data unit	kg CO_2/kWh
Description	CO_2 emission factor of fossil fuel consumed by project vehicle category i in year y
Source of data	Not applicable , Since there is no Fossil Fuel used in project scenario
Value(s) applied	0
Measurement methods and procedures	N.A
Monitoring frequency	N.A
Purpose of data	Project Emission

Data/Parameter	$NCV_{PJ,i}$
Data unit	J/g
Description	Net calorific value of the fossil fuel consumed by project vehicle category i in year y
Source of data	Not applicable , Since there is no Fossil Fuel used in project scenario

Value(s) applied	0
Measurement methods and procedures	N.A
Monitoring frequency	N.A
Purpose of data	Project Emission

Data/Parameter	TDL_i
Data unit	Fraction
Description	Average technical transmission and distribution losses for providing electricity in the year y
Source of data	General Review 2024 by Ministry of Power , Gov of India.[6]
Value(s) applied	0.1927
Measurement methods and procedures	N.A
Monitoring frequency	N.A
Purpose of data	Project Emission

Data/Parameter	$EF_{PJ,km,i,y}$
Data unit	tCO_2/km
Description	Emission factor per kilometre travelled by the project vehicle type i
Source of data	Calculated (refer B.5)
Value(s) applied	0.0000480099
Measurement methods and procedures	N.A
Monitoring frequency	N.A
Purpose of data	Project Emission

Ex-Post to be Monitored: -

Data / Parameter:	$N_{i,y}$
Data unit:	Number of Vehicle.
Description:	Number of operational project vehicles in category i in year y
Source of data:	Chargeup digital asset registry / vehicle onboarding database
Measurement procedures (if any):	Each vehicle is assigned a unique identification number. Vehicles are counted as “active” only when operational in the monitoring period. Decommissioned, inactive, or non-operational vehicles are excluded.
Monitoring frequency:	Continuous tracking in database.

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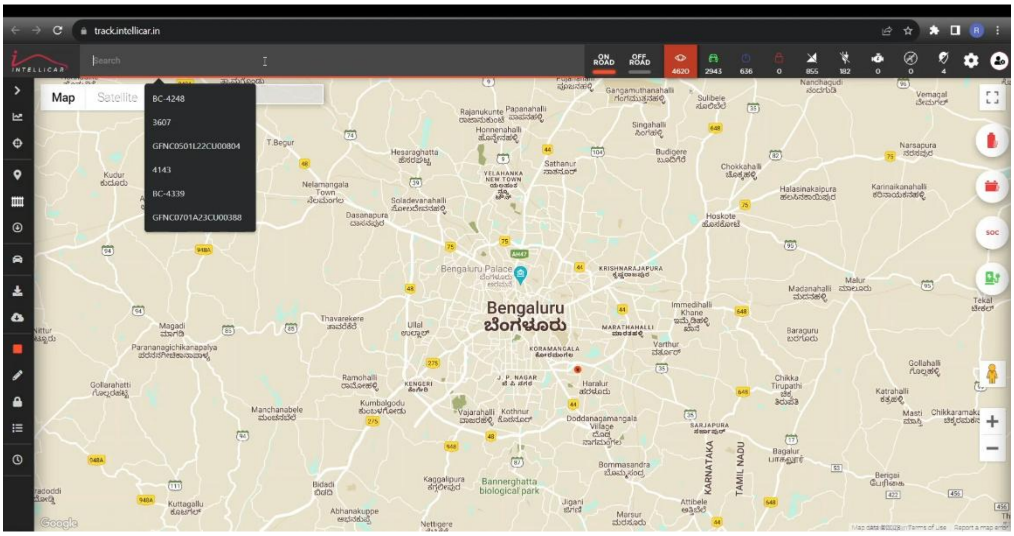
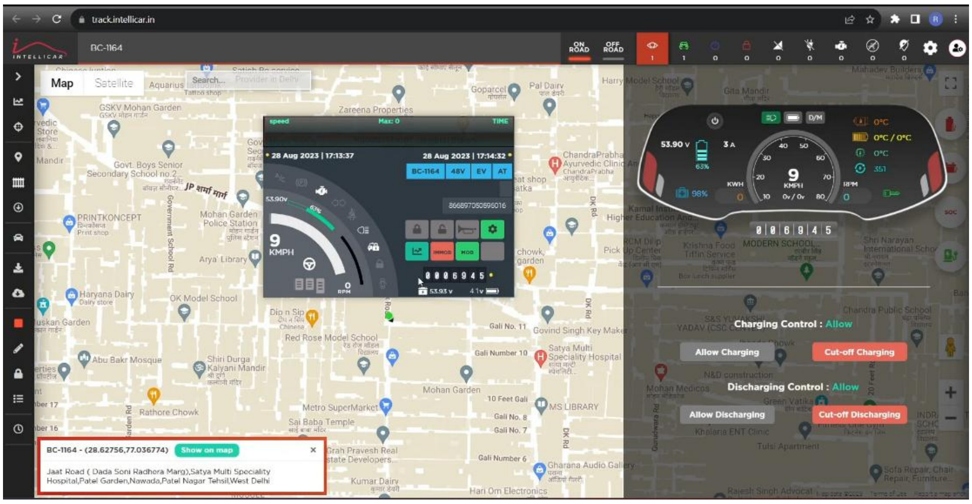
[6] page 119, Table 6.4, State-wise system losses in the year, https://cea.nic.in/wp-content/uploads/general/2024/General_Review_2024_2.pdf

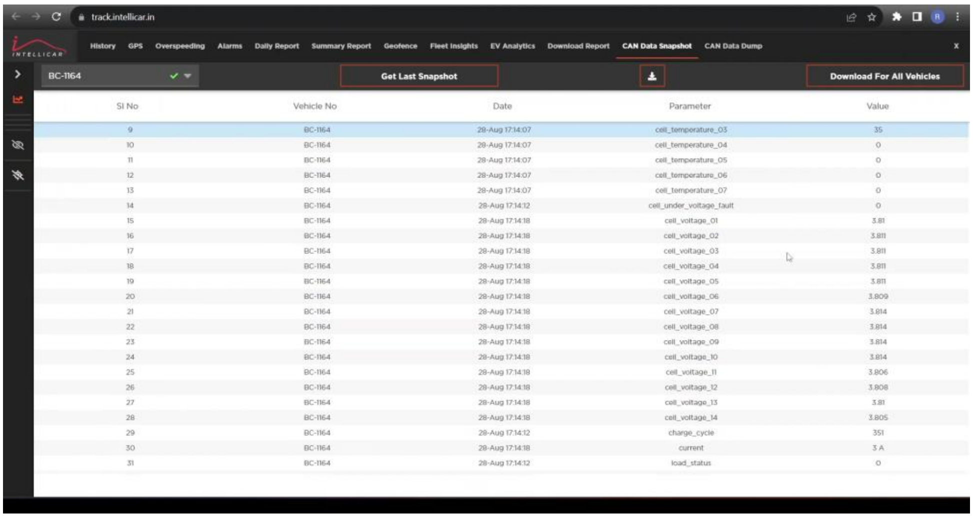
QA/QC procedures:	Cross-check with vehicle activation logs, and IoT device status. Only vehicles with valid data and active telematics reporting are included
Any comment:	This parameter is required under AMS-III.C. No sampling is applied.

Data / Parameter:	$DD_{i,y}$
Data unit:	Km/year
Description:	Annual average distance travelled by project vehicle category i in the year y (km)
Source of data:	IoT telematics system installed on each vehicle, automatically recorded in the Chargeup backend database. / vehicle onboarding database
Measurement procedures (if any):	Distance is recorded from odometer/GPS logs at trip level. Data is auto-synced to the server and aggregated per vehicle per month. No manual entry or sampling is used.
Monitoring frequency:	Continuous real-time logging,
QA/QC procedures:	Cross-check between IoT data and odometer reading history
Any comment:	-

Changeup Monitoring Dashboard:







Sl No	Vehicle No	Date	Parameter	Value
9	BC-1164	28-Aug 17:14:07	cell_temperature_03	35
10	BC-1164	28-Aug 17:14:07	cell_temperature_04	0
11	BC-1164	28-Aug 17:14:07	cell_temperature_05	0
12	BC-1164	28-Aug 17:14:07	cell_temperature_06	0
13	BC-1164	28-Aug 17:14:07	cell_temperature_07	0
14	BC-1164	28-Aug 17:14:12	cell_under_voltage_fault	0
15	BC-1164	28-Aug 17:14:18	cell_voltage_01	3.81
16	BC-1164	28-Aug 17:14:18	cell_voltage_02	3.811
17	BC-1164	28-Aug 17:14:18	cell_voltage_03	3.811
18	BC-1164	28-Aug 17:14:18	cell_voltage_04	3.811
19	BC-1164	28-Aug 17:14:18	cell_voltage_05	3.811
20	BC-1164	28-Aug 17:14:18	cell_voltage_06	3.809
21	BC-1164	28-Aug 17:14:18	cell_voltage_07	3.814
22	BC-1164	28-Aug 17:14:18	cell_voltage_08	3.814
23	BC-1164	28-Aug 17:14:18	cell_voltage_09	3.814
24	BC-1164	28-Aug 17:14:18	cell_voltage_10	3.814
25	BC-1164	28-Aug 17:14:18	cell_voltage_11	3.806
26	BC-1164	28-Aug 17:14:18	cell_voltage_12	3.808
27	BC-1164	28-Aug 17:14:18	cell_voltage_13	3.81
28	BC-1164	28-Aug 17:14:18	cell_voltage_14	3.805
29	BC-1164	28-Aug 17:14:12	charge_cycle	351
30	BC-1164	28-Aug 17:14:18	current	3 A
31	BC-1164	28-Aug 17:14:12	load_status	0