

Presentation on Developments in Urban Transportation Sector and Electric Mobility



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URBAN

Urban means a region connected to city where the density of people is high, and the major trips are work trips.

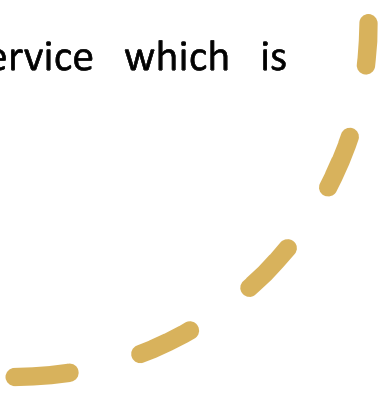
TRANSPORT

Transportation means the movement of people, animals and goods from one location to another. The transport of a person or goods may involve one or several modes.





Urban Transport

- Urban Transportation also called as mass transportation or public transportation, referred as the movement of people within urban areas using buses and trains.
 - The essential feature of mass transportation is that many people are carried in the same vehicle like in buses or collection of attached vehicles like trains, metros.
 - This allows to move people in same corridor with greater efficiency, which can lead to lower costs to carry each person.
 - Public transport is a shared transport service which is available for the use by general public.
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Significance of Urban Transport

- India's urban population has been estimated to grow at 30% of its total population. As such it was 285 million in 2001 and currently it has increased to 500 million in 2022. India's urban population is expected to grow to about 820 million by 2051.
- Thus, it is of important for urban areas to be able to support the required level of economic activity, that would support the easy and sustainable flow of goods and people.



Why Urban Transport

- Transportation in developing country mega cities is in a state of crisis. Challenges like extreme congestion, long commute times, choking air pollution, deadly traffic accidents and inadequate public transport are some major issues being faced.
- Crores of rupees in economic productivity are lost due to congestion.
- Air and noise pollution severely impact health and quality of life.
- The people lack affordable and sustainable mobility.
- Transportation is also one of the most significant contributors to climate change accounting 25% of global emissions. (IEA, 2003)

Urban Transport Challenges in India

- Increase in Traffic on Urban Roads.
- More gridlock and less for urban life.
- Inadequate pedestrian infrastructure.
- Narrow ROW and encroachments on city roads.
- More priority to Cars, less to pedestrians.
- Broad road lane and narrow footpaths/ walkways.
- Absence of organized public Transport.
- Large prevalence for personal cars.
- Lack of basic facilities- unpaved roads, drainage, signage.
- Unavailability of funds.
- Increasing trip rates and travel times.
- Loss of lakhs of extra man hours everyday.
- Poor air quality and higher levels of green house gas emissions.
- Alarming rate of road fatalities.
- Due consideration to pedestrians and cyclists in planning.

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Areas of Intervention

- Integrating land use and transport planning
 - Infrastructure development
 - Equitable allocation of road space
 - Priority to the use of public transport
 - Quality and pricing of Public Transport
 - Technologies for Public Transport
 - Integrated public transport systems
 - Financing
 - Role of para-transit
 - Priority to non-motorized transport
 - Parking
 - Use of cleaner technologies
- 
- A yellow dashed line in the bottom right corner, consisting of several short segments that curve upwards and to the right.

Service Level Benchmarks (SLBs) for Urban Transport - MoHUA

- The following Level of Service Criterias for Public Transport Facilities were proposed

Level of Service (LoS)	1	2	3	4
1. Presence of Organized Public Transport System in Urban Area (%)	≥ 60	40-60	20-40	< 20
2. Extent of Supply Availability of Public Transport	≥ 0.6	0.4-0.6	0.2-0.4	< 0.2
3. Service Coverage of Public Transport in the City	≥ 1	0.7-1	0.3-0.7	< 0.3
4. Average waiting time for Public Transport Users (mins)	≤ 4	4-6	6-10	> 10
5. Level of Comfort- Load Factor in Public Transport	≤ 1.5	1.5-2.0	2.0-2.5	> 2.5
6. % of Fleet as per Urban Bus Specification	75-100	50-75	25-50	≤ 25

Calculation for Level of Service:

- LoS 1. = Total number of buses under the ownership of SPV or under concession agreement/Total number of buses operating on road
- LoS 2: No of Buses/ train coaches available in a city on any day/Total Population of the city (1 Train Coach = 3 Buses)
- LoS 3: Total length in road kms of the corridors on which public transport systems ply in the city/Area of the urban limits of the city.
- LoS 4: Make Frequency distribution table, median of the frequency distribution defines the average waiting time
- LoS 5: Passenger count on bus at key identified routes/ Seats available in the bus
- LoS 6: Total number of buses as per urban bus specifications in the city/Total number of buses in the city

Development of Urban Transport in Uttar Pradesh under JnNURM

Development of Urban Transport under the JnNURM Mission

- 7 cities under JnNURM mission selected for running of city bus services
- UPSRTC was given the responsibility to run these buses in cities
- 6 SPVs were formed in 2010 for 7 cities (**Agra – Mathura as single SPV**)
- The Ministry of Urban Development **directed in June 2013 to nominate** a single department at State Level to deal with all Urban Transport issues.
- Directorate of Urban Transport was established in 2015 as nodal agency in state for city bus services.



1140

Procured Fleet

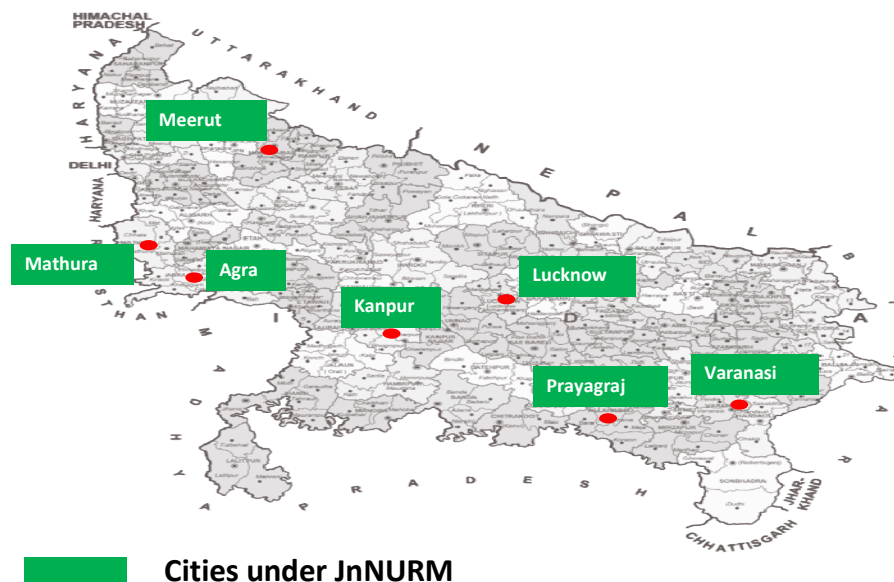


6

SPVs formed

7

Cities



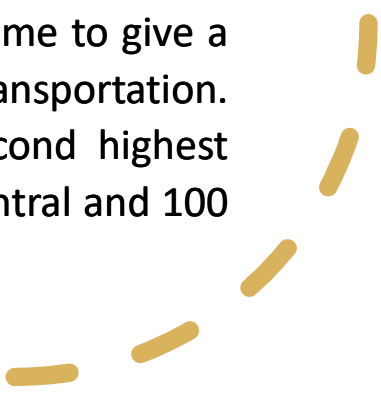
Transition of Urban Transport in Uttar Pradesh towards Greener Mobility

Electric buses are set to play an increasingly important role in the energy transition.

In order to fight climate change, the country is aiming to achieve net zero emissions by 2070. Electric buses are a key part of that process.

India entered the realm of electric buses quite recently.

The Department of Heavy Industry has approved the sanction of electric buses to 64 Cities, State Government Entities, State Transport Undertakings (STUs) for intra-city and intercity operation under FAME India scheme to give a further push to clean mobility in public transportation. Uttar Pradesh being the state to receive second highest number of buses with 640 electric buses by central and 100 buses by state government which totals to 740.



Procurement of e-buses in Uttar Pradesh

Main thrust of **FAME** (Faster Adoption and Manufacturing of Hybrid and Electric Vehicles) Scheme is to encourage electric vehicles by providing subsidies.

- First phase (FAME -1) began on 1 April 2015, and was extended till 31 March 2019
- Second phase (Fame-2) that began on 1 April 2019

The State of Uttar Pradesh was provided with **40 Electric Vehicles under FAME-1**
(**Capex subsidy on Electric bus and Charger cost**)

Further, under **FAME-II** subsidy for 600 buses was provided by the Central Government and 100 buses were subsidized by the State Government.

(**Opex Model** – Subsidy per bus by Gol & State Govt. / **GCC** (Gross Cost Contract) Model for procurement of e buses)



FAME I



FAME II

Details of DUT Bus Project

Fleet Size

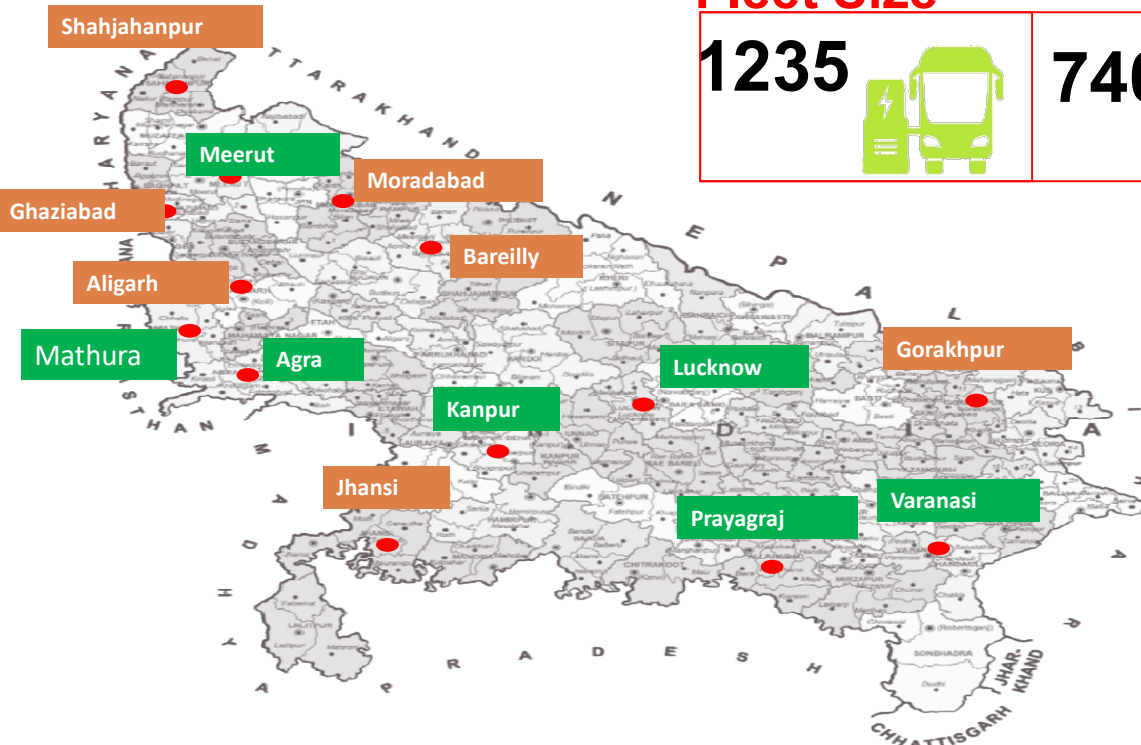
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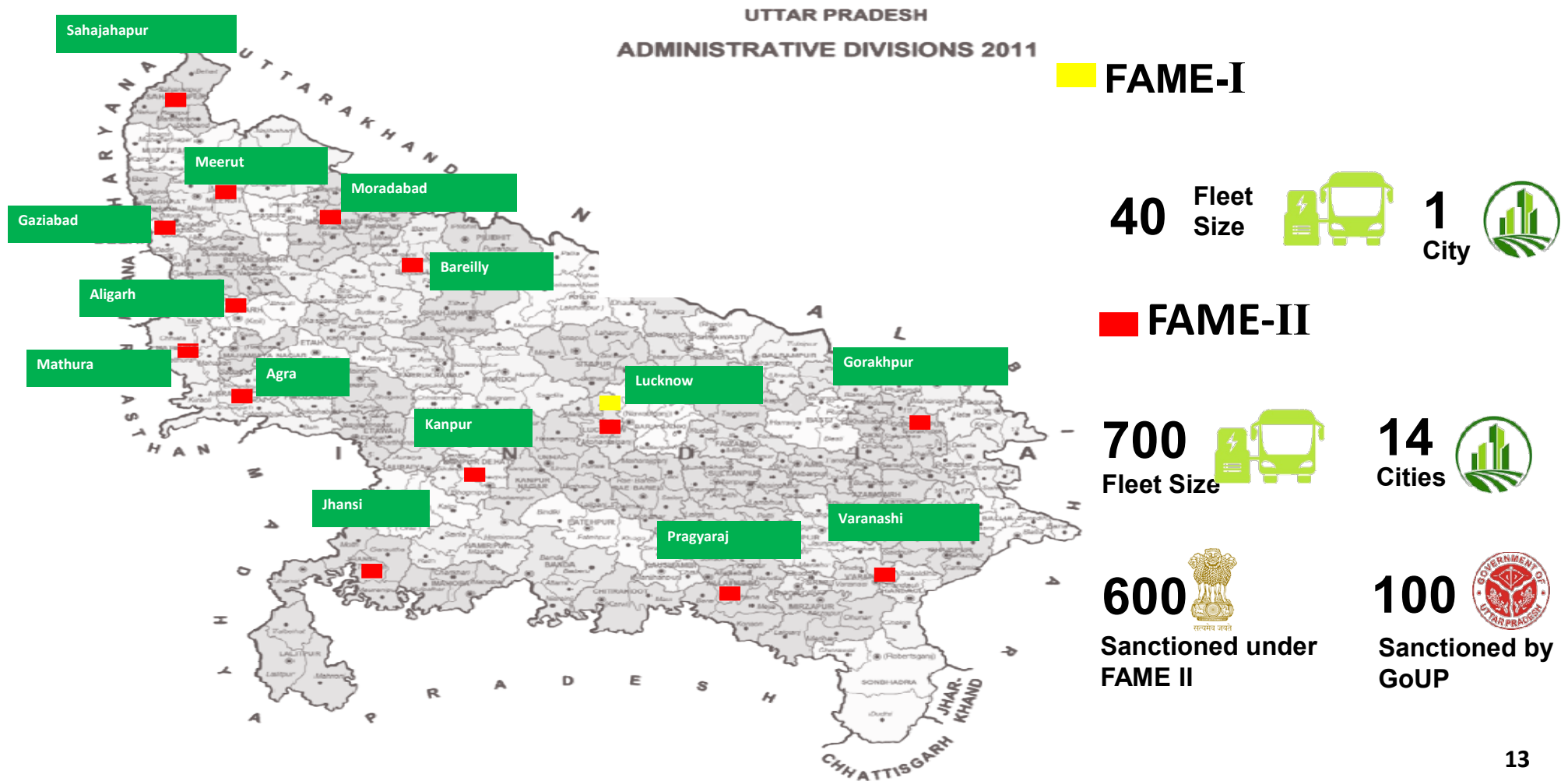
740 E-Buses 357 CNG 138 Diesel

4
Nodal SPVs

14
Cities



Procurement of e-buses in Uttar Pradesh



Special Features of the Project

- Everyday **700 Electric Buses** will run **1,26,000 Kms in total**
- **Population Served – more than 2 crore**
- Advanced Charging Station cum Maintenance Depot
- Project will help in realizing **daily reduction** of harmful **greenhouses gases**;
- State of the Art - **Intelligent Transit Management System (ITMS)** and Central Command Centre for effective and efficient monitoring and management of Electric Buses
- **Smart Bus Shelters** are built to provide ease to commuters in these cities under Smart Cities Mission

FAME II Electric Bus – Features

- **Semi-low floor AC Midi Buses**

- Eco-friendly – Zero Emission
- Air and Noise pollution reduction
- 150 Km range in single charge
- Full Charging Time - 45 Minutes (Fast Charging capability)
- Ultra silent air-conditioned cabin
- CCTV cameras enabled
- GPS and Vehicle Tracking System
- Passenger Information System
- Panic Button
- Automatic Doors
- Public Address System
- Long term economic benefits
- Air Suspension



Benefits of Electric Buses in Uttar Pradesh

- Electric bus are much quieter than a diesel bus, giving travelers a more pleasant experience.
- Electric buses emit no harmful gas, whereas diesel buses emit harmful pollutants which can cause respiratory diseases.
- These electric Buses are installed with the “Panic Button”, “Cameras” which ensure safety and security of the citizens travelling.
- These electric Buses have the vehicular tracking systems which enhances the efficiency of the operations.
- The cost of maintenance is lower than the maintenance cost of a diesel bus.

Challenges faced

As Electric Buses are quite new initiative in our country, there is need of supported infrastructure for a smooth functioning of its operations. Few challenges faced for procurement and operation are as follows:

- ◆ **Huge Cap-ex @3-4 times cost of ordinary vehicles.**
- ◆ **Support infrastructure required (Charging stations and depot**
- ◆ **Depot area requirement- Approx. 5 acres for 100 buses.**
- ◆ **KM restriction in schedule preparation (120 KMs in single charge)**
- ◆ **Technical know how**
- ◆ **Availability of OEMs (Supplier of buses)**
- ◆ **Electric Load requirement**
- ◆ **Battery & Spares (Procurement cycle)**

DUT At A Glance

Daily Ridership



1.8 Lakh

SPVs



14

No. of Routes



155

Total route Km



4200 +

Daily Operating Km



2 Lakh+

Utilization/Bus/Day



192 KM

Operated Trips



7400 +

Load Factor



70 %

Bus Staff Ratio



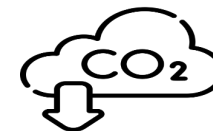
2.80

Fuel Saving/Day



32,000+ Ltr

Co2 Reduction/day



70,844 Kg + Co2

Earning/KM



25.97

➤ Available Fleet- 1235

- ✓ Electric-740
- ✓ CNG - 357
- ✓ Deisel -138



Digital Innovation : COMMON MOBILITY CARD (ONE UP ONE CARD)

- Launched on 7th Oct 2023 for Lucknow in Phase-1
- Phase-2 for other 13 cities from first week of November 2023

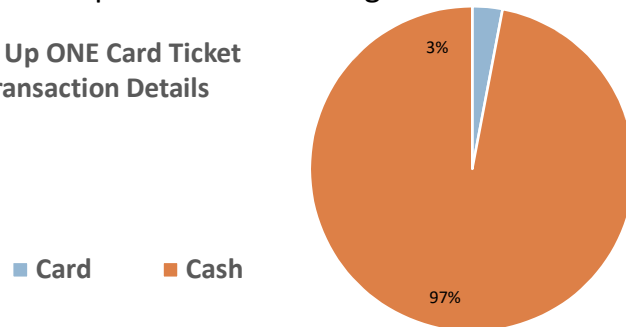
Features of One UP One Card

- Applicable for all City buses (Electric/CNG/Diesel)
- Card is Free for all the city bus users
- 10% discount on every ticket purchase
- Seamless online recharge : through DUT website and Mobile App

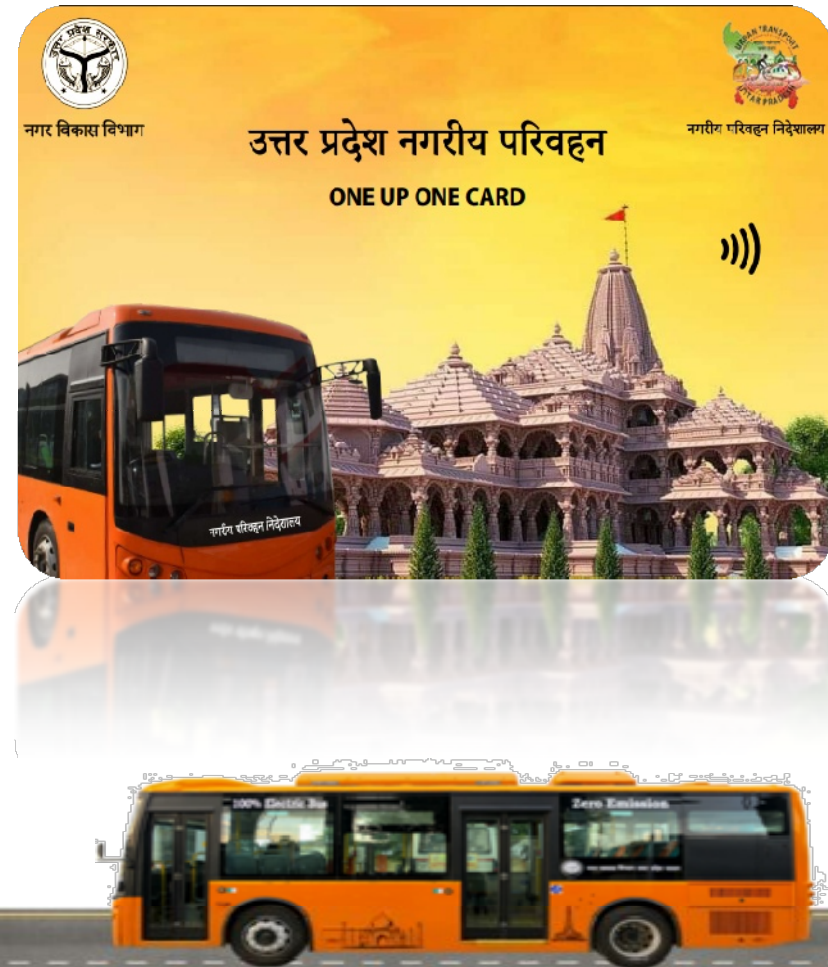
One UP One Card demand details:

- More than 7000 cards has been sold in last 45 days
- 3% of total ridership is converted in digital mode

One Up ONE Card Ticket
Transaction Details



❑ Development of National Common Mobility Card is Under Progress



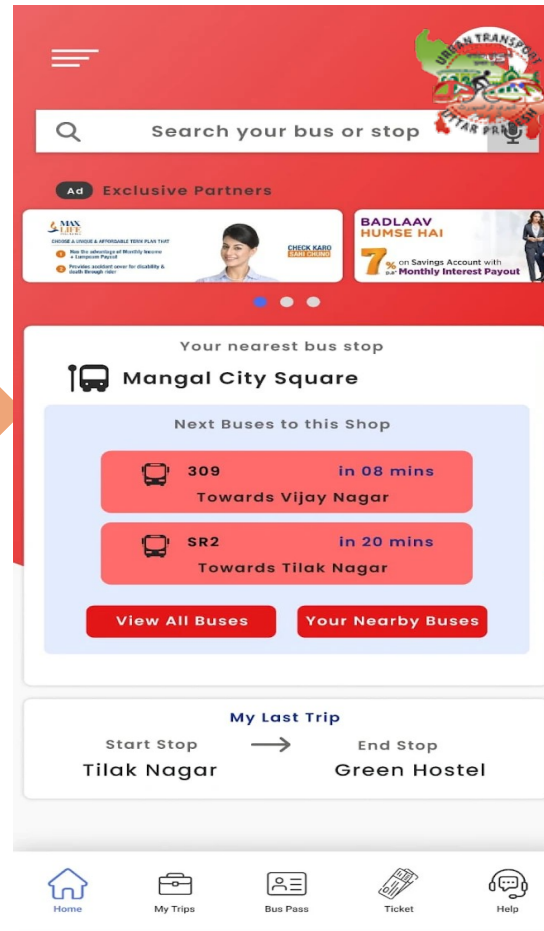
Digital Innovation : Common Mobility App (Under Development)



Create Account or Sign in

+91 ▼ Enter your Mobile number

GENERATE OTP



Features

- Mobile Ticketing
- Journey planning
- Parking Payment
- Pass Recharge
- Wallet Card Recharge
- Live Bus Tracking
- Public Charging Station Location
- Charging Tariff
- Available Charging Space on Live basis
- Charging Payment will be automatically deducted by the Common Mobility App



Digital Innovation : Common Mobility App for Mobile Pass



Know How To

Buy A Mobile Bus Pass

- Upload documents at your convenience anywhere, any time
- Pay online and that's it! Your mobile bus pass is ready for use right away.

Experience The Convenience Of



Mobile Bus Pass

Buy your mobile bus pass on the Mobile App, and you will never have to visit the pass counter or wait in the queue ever again.


What's more, travelling with a mobile bus pass is safer than paying cash in the bus. Just show your pass on your mobile and scan the QR code to travel.



Digital Innovation : Common Mobility App for Single Journey Ticket



Select Your Trip



Select Route

▼

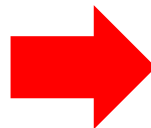
Select Start Stop



▼


Select End Stop


▼


NEXT






 SR2

 Tilak Nagar

 Vijay Nagar



ONE WAY BUS TICKET

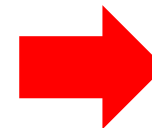
Adult ⊖ 1 ⊕



Child ⊖ 1 ⊕

20

Terms And Conditions


PROCEED TO PAY







Select Your Preferred Mode Of Payment


Transaction Ref. No. : 23464638561


 **Paytm**


 **RazorPay**

 **UPI**

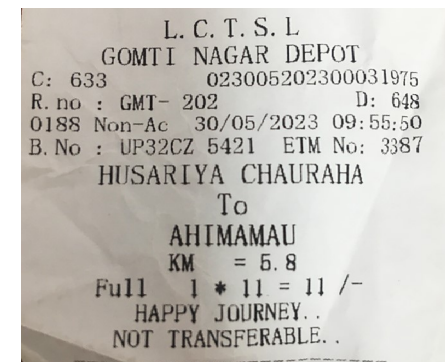
Ad Exclusive Partners


MAX LIFE
Get the advantage of identity-linked insurance & health services


BANK OF BARODA
7% on Savings Account with 2% Monthly Interest Payout



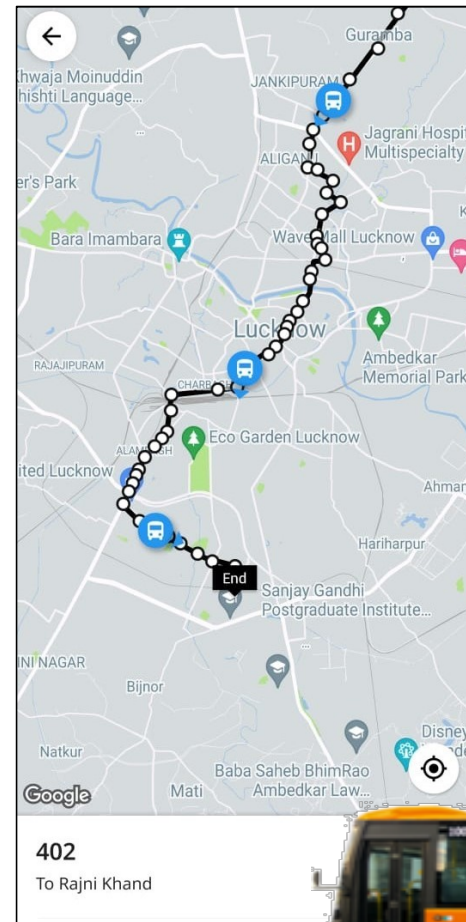
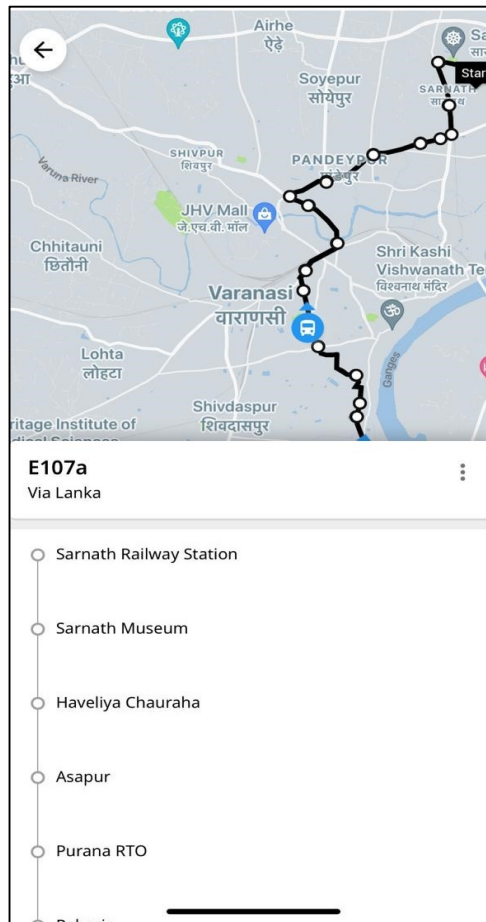
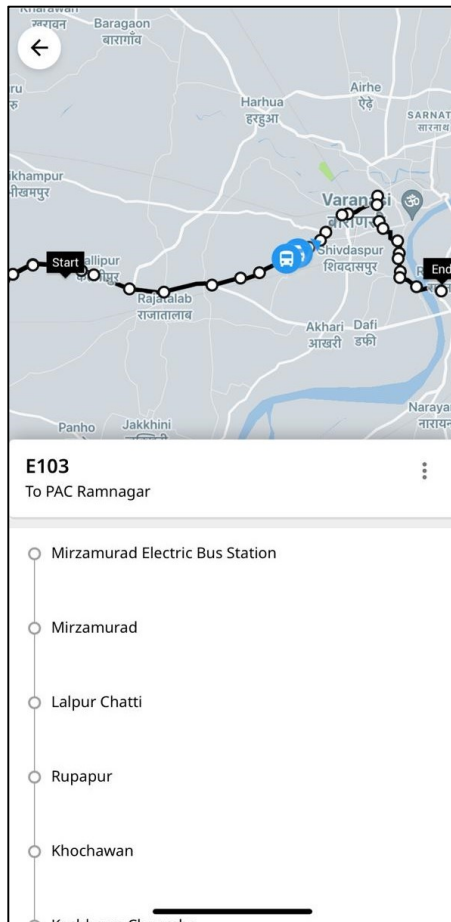
Digital Innovation : Common Mobility App



- QR Code Scan By EMT Machine & Validate QR-ticket
- Conductor/ETM will Provide the Paper ticket to the costumer

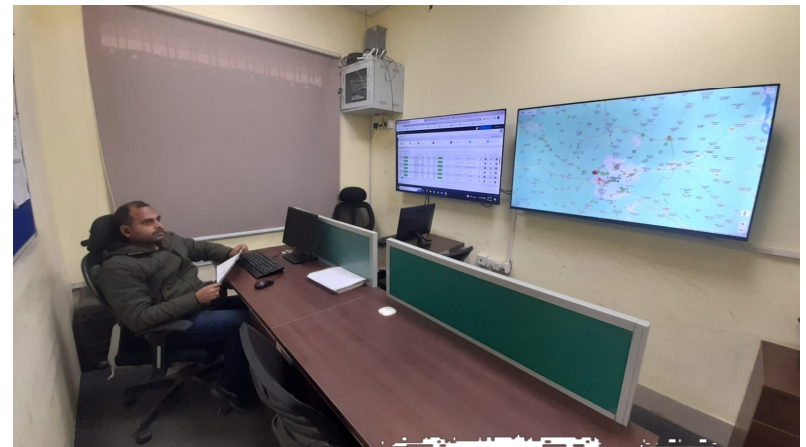
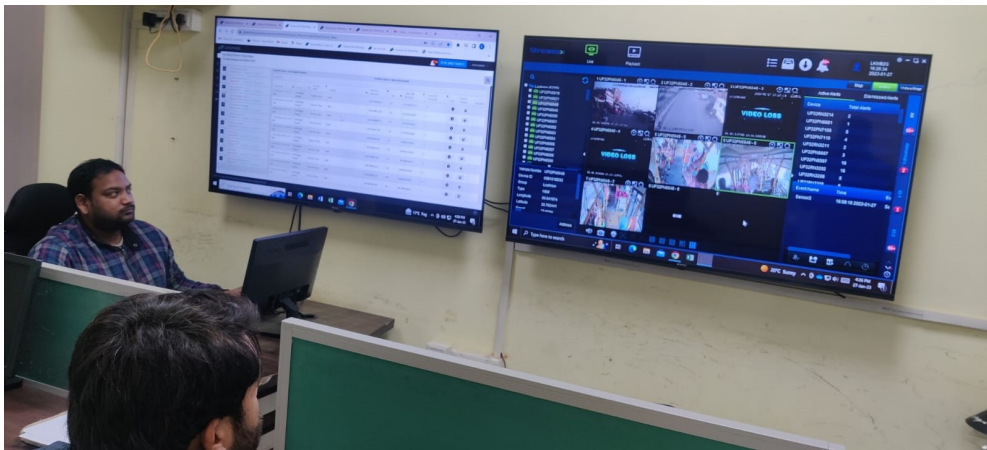


Digital Innovation : Mobile App for Live Bus Tracking



ITMS/ITS based Monitoring System at SPVs level

- Route deviation
- Over Speed
- Harsh Breaking
- Unauthorized bus stoppage
- Reporting
- Panic Button
- Bus Tracking
- Conductor/Driver controls
- Last Mile delivery
- Quick action



Digital Innovation :Management Information System Portal

Total Ticket Sale

₹ 86258

Total Revenue Collected (In Thousand)

₹ 2,884.74

Average IPKM

₹ 22.80

BU

195.00

Fleet Utilization

Available Fleet-665

Dispatch Fleet-648

Avg. Fleet Utilization-97.44

KM Summary

Schedule KM-119700.00

Run KM-126,518.10

Ridership & Revenue (Bus/Day)

Ridership & Revenue Per Bus/Per Day

Route	Revenue	Ridership	KM
Lucknow	1600	140	6500
Kanpur	1500	140	5500
Gorakhpur	2400	230	7500
Varanasi	1200	130	7500
Prayagraj	1400	120	5500
Jhansi	700	70	5500
Meerut	1400	120	5500
Ghaziabad	1600	150	6500
Bareilly	1100	100	5500
Moradabad	1000	130	5500
Shahjhanpur	1500	110	5500
Agra	1100	120	4500
Aligarh	800	100	5000
Mathura	1300	130	6000

Top 5 SPV (KM & Income In Thousand)

SPV Name	Bus	KM	Ticket	Income
Lucknow	82	17,069.10	11087	427,495.96
Kanpur	84	15,434.00	11987	366,099.25
Agra	98	15,375.00	12765	361,928.00
Ghaziabad	48	10,098.00	8332	262,683.70
Mathura	47	9,031.00	6166	231,361.50

Remain SPV (KM & Income In Thousand)

SPV Name	Bus	KM	Ticket	Income
Jhansi	23	4,363.60	1424	45,454.90
Aligarh	24	4,044.40	2429	64,620.40
Moradabad	24	4,951.50	3431	82,452.57
Bareilly	24	4,908.00	2071	93,126.50
Shahjhanpur	25	5,125.00	2790	124,340.50
Gorakhpur	23	5,730.10	5261	183,466.00
Varanasi	48	11,841.00	6332	189,835.00
Meerut	48	9,009.40	5924	220,801.80
Prayagraj	50	9,538.00	6259	231,078.80

Comprehensive Mobility Plan

Work Progress, Timeline and Payment Schedule

Particulars	Agency Name	Agreement Signing Date (T)	Deliverables (Milestones) and Timelines				
			Inception Report	Interim Report	Planning Stage Report	Draft CMP Report	Final CMP Report
			(T+1) Month	(T+5) Month	(T+8) Month	(T+10) Month	Within 1 month of receipt of comments on Draft CMP Report.
Moradabad	UMTC	16 June 2021	Submitted	Submitted	Submitted	Submitted	Submitted
Bareilly		12 July 2021	Submitted	Submitted	Submitted	Submitted	Submitted
Aligarh		28 June 2021	Submitted	Submitted	Submitted	Submitted	Submitted
Shahjahanpur		24 June 2021	Submitted	Submitted	Submitted	Submitted	Submitted
Ayodhya	RITES	09 June 2021	Submitted	Submitted	Submitted	Submitted	Submitted
Jhansi		17 July 2021	Submitted	Submitted	Submitted	In progress	-
Saharanpur		05 July 2021	Submitted	Submitted	Submitted	In progress	-
Payment Schedule			10 %	30 %	20 %	20 %	20 %

Cost

- 80% share by Central Government
- 20% share by State Government

Preparation of Revised CMP for five Cities in Uttar Pradesh

- ✓ As per MoHUA guidelines CMPs of **Lucknow, Kanpur, Agra, Meerut & Prayagraj** to be revised after **completion of 5 years** from the preparation of **last CMP**.
- ✓ Date of Completion of CMPs:
 - Lucknow- April, 2012*
 - Kanpur- December, 2017*
 - Agra- January, 2018*
 - Meerut- January, 2018*
 - Prayagraj- February, 2018*
- ✓ Lucknow – Agreement Signed between Municipal Corporation and UMTC.
- ✓ Meerut – Agreement Signed between Municipal Corporation and DIMTS.
- ✓ Kanpur and Agra- Tender to be issued.
- ✓ Prayagraj – Proposal for Quick CMP has been Issued to UMTC by the Development Authority.

E- Auto and Public EV Charging Stations

✓ E-Auto

500 E-Auto three wheelers are being introduced in 7 cities namely-

- Lucknow,
- Kanpur,
- Agra,
- Varanasi,
- Prayagraj,
- Gorakhpur
- Ayodhya



✓ Public EV Charging Station.

- Tender for establishing Public Charging Station for 2 wheeler, 3 wheeler and 4 wheeler in 17 Municipal Corporations of Uttar Pradesh.
- UPEIDA already issued tender for development of Public Charging Stations on Expressway.



Thank You