MSRTC’s Electrifying Transformation: 5150 E-Bus Project

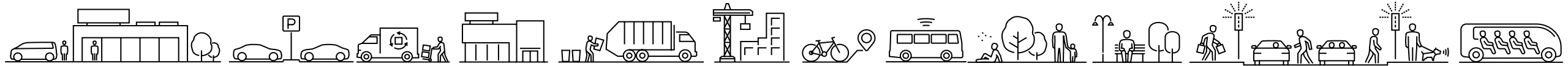
A Unique Learning on E-Bus Feasibility for Non-Urban Routes

- Presented by MSRTC GM(Traffic)

ITDP Global Webinar on Battery & Charging

Introduction

- MSRTC is leading **India's largest intercity e-bus transformation initiative** with 5150 e-buses under state and central government e-bus policies and schemes.
- 150 e-buses commenced in operation in 2023 and MSRTC has operating buses with efficient EPKM.
- With successful implementation of MSRTC'S previous e-bus initiative, decision to procure 5150 e-buses focusing on Sustainable Transportation and Green Energy
- Focus on **sustainable, efficient public transport** beyond urban areas.
- Pioneering the deployment of electric buses on **mofussil (Non-Urban) and long-distance routes.**
- Aims to **reduce emissions, fuel dependency, and operational costs.**



Are e-Buses feasible for non-Urban routes ?

Yes!

- Rural and intercity routes have predictable high-range operations
- Charging infrastructure can be strategically placed at key depots
- Lower congestion allows e-buses to operate efficiently with optimized charging cycles
- Significant cost savings (up to 30%) over diesel due to high daily utilization

Procurement of 150 E-Buses GCC Model under FAME - II

MSRTC procured 50 buses on GCC for a period of 12 years of operation under FAME-II

MSRTC procured 100 buses on GCC for a period of 12 years of operation under FAME-II

MSRTC Electrification Strategy

Procurement and Deployment

- **Largest single e-bus tender in India:** 5150 e-buses on the Gross Cost Contract (GCC) model.
- 2800 12 Meter Buses and 2350 9 Meter Buses

Charging Infrastructure

- Phase wise Implementation of Charging Infrastructure at 71 location
- Charging Station placed every 100km for seamless operations
- Depot electrification with a **mix of slow and fast chargers.**

Route Planning & Depot Development

- Route planning optimized for high ridership, reduced dead kilometers, lowest replacement ratio and efficient charging making it **operationally feasible.**

Financial Model & Cost efficiency

- **GCC model** reduces capital expenditure of MSRTC
- Focus on **financial sustainability** through Viability Gap Funding (VGF) and carbon credit monetization.

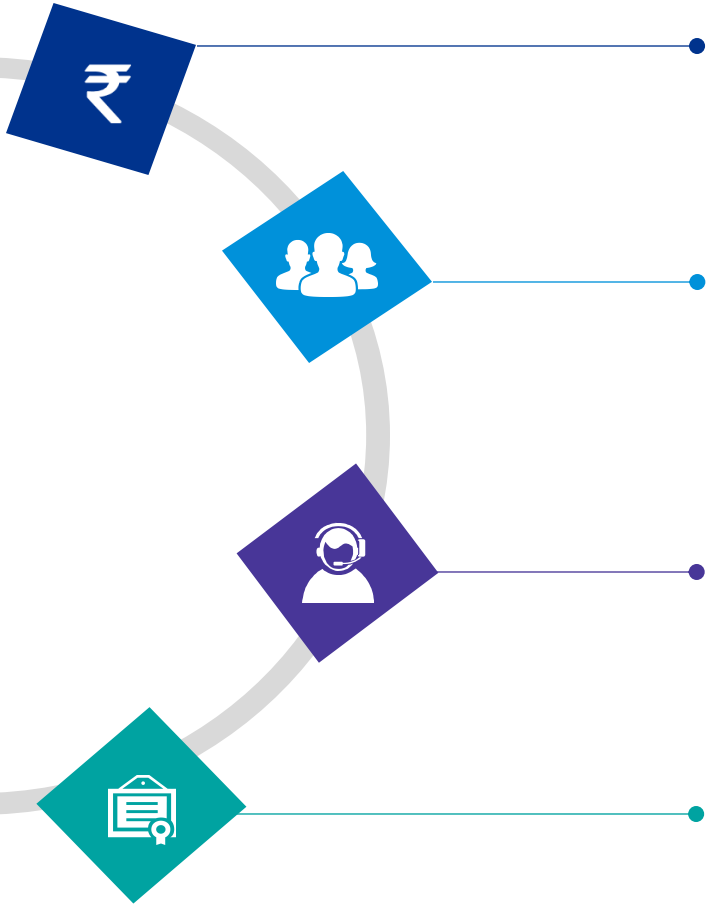
Environmental & social Impact

- Significant **carbon footprint reduction** through emission free buses

Technological Intervention

- **Integration** with existing automatic vehicle location system**(AVLS)**
- In-bus GPS, CCTV and PIS-PAS systems

Key Implementation Challenges & Solutions



High bid rates → Addressed through structured VGF and Capex subsidies.

Labor union and operational resistance → Transparent stakeholder engagement.

Charging infrastructure in non-urban areas → Strategically placed depots with high-tension supply.

Long-range e-buses → Optimized battery capacity to support 325+ km daily operations

Financial Viability of E-Buses

Diesel bus cost/km rising due to fuel price escalation.

Cost of electricity is three times lower than diesel per km.

E-buses have 80% lower maintenance costs compared to diesel buses.

Net cost per km lower than diesel considering government subsidies and carbon credits.

Procurement of 5150 Electric Buses

9 Meter	12 Meter

Project Benefits

Daily Emission Reduction: 1334.60 tonnes
Lifetime Emission Reduction: 5.45 million tonnes

Daily Fuel Savings: 0.4 million litre.
Lifetime Fuel Savings: 1,800 million litre.

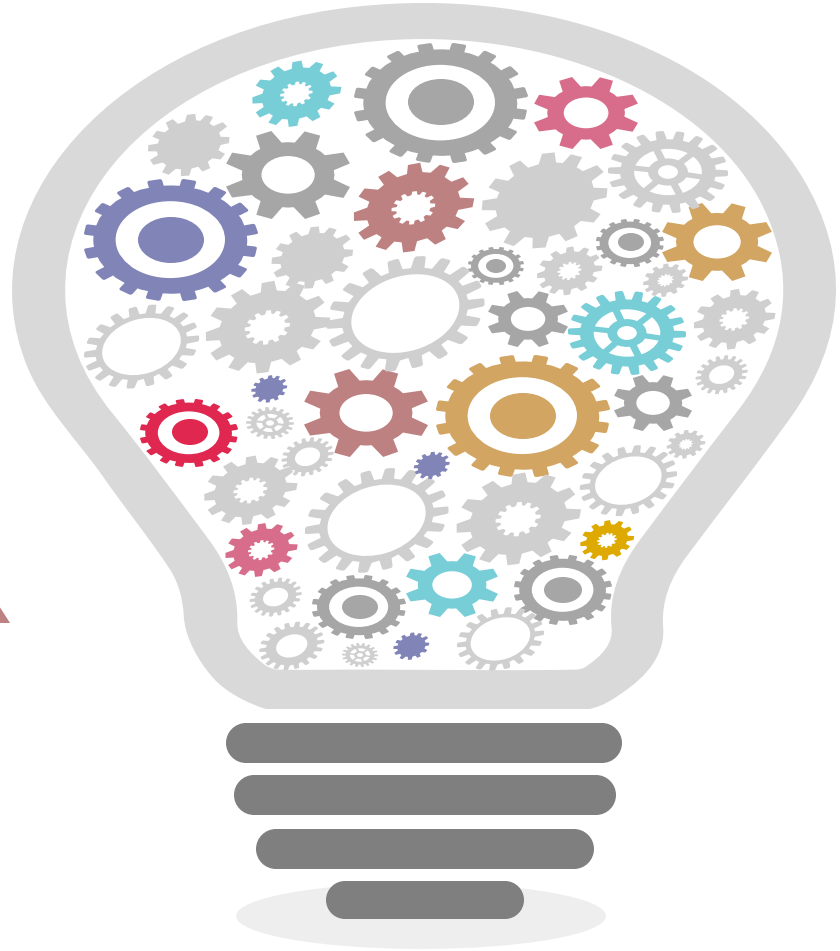
NPV of Lifetime Fuel Savings:
1.38 billion USD

Daily Projected Ridership: 1.9 million

Total New Employment:
22,454

Conclusion & Call to Action

01	MSRTC's 5150 e-bus project is a landmark case of electrification beyond urban areas.
02	A holistic approach covering procurement, operations, and financing ensures long-term sustainability.
03	Government agencies, STUs (PTA), and private stakeholders must collaborate to scale electrification.
04	Lessons from MSRTC can help develop a global roadmap for intercity e-bus adoption.



Thank You