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# India SMART UTILITY Week 2024

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CENTRAL ELECTRICITY AUTHORITY

# Session : Electrification of Goods Transport in Industrial Corridors in North India

*Presented By*

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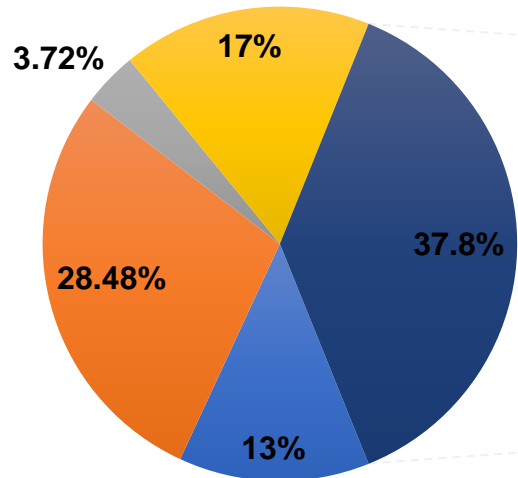
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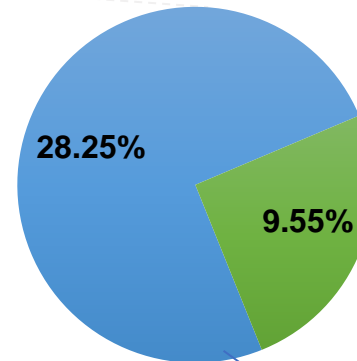
## India Consumed 99 Billion litter diesel in 2022-2023 (Total oil Import 119.2 Billion USD)

Diesel consumption by different types of resources



■ Agriculture  
■ Railways  
■ Trucks

■ Cars, Utility Vehicles  
■ Others  
■ Buses



- Government initiatives for electrification of buses
  - National Electric Mobility Mission Plan (NEMMP)
  - Faster Adoption and Manufacturing of Hybrid and Electric Vehicles FAME-I (895 Crore)
  - Faster Adoption and Manufacturing of Hybrid and Electric Vehicles FAME-II (10,000 Crore)





- Selection of appropriate routes for the pilot demonstration of running electric trucks.
- Consultations with Freight Operators, Charge Point Operators (CPO), Electric Truck OEMs
- Agreement with the Fleet Operator to purchase/lease the electric truck(s) and deploy it on the selected routes
- Procurement/lease of electric truck(s) by transport operator
- Insuring availability of charging station(s) across the route
- Training of electric truck operators
- Stakeholders consultation for policy advocacy
- Data collection to undertake cost-benefit analysis of the electric truck as against the diesel trucks
- Calculation of key metrics
- Evaluate emission reduction potential, Charging Point Operator (CPO)'s business model, of electric trucks with actual operational data, diesel displacement potential of electric trucks
- Feasibility of charging the trucks with renewable energy
- Formulation of policy recommendations

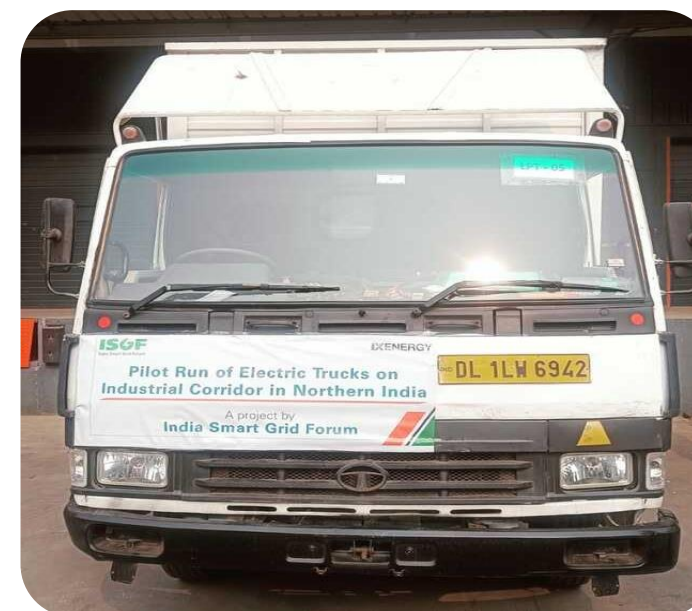
# Which Electric Truck?



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Tata 407 Retrofit Electric Truck	
Manufacturer Name	IX ENERGY PVT LTD
Model Name	TATA 407 LPT "EED6T" kit, 14 feet
Vehicle GVW (Kg)	6250
Payload (Kg)	2569 (with open body it will increase)
Battery capacity	53.7 kWh
Range	118 km
Charging Time(h)	1
Top Speed (Kmph)	55
Charger	CCS2



# Which Electric Truck?



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Rihno 5536 - e	
Manufacturer Name	IPLTECH
Model Name	RHINO 5536e 53 feet Electric Truck
Vehicle GVW (Ton)	55
Payload (Ton)	35
Battery capacity	256 kWh
Range (Km)	185
Charging Time(h)	1.30
Top Speed (Kmph)	70
Charger	GB/T





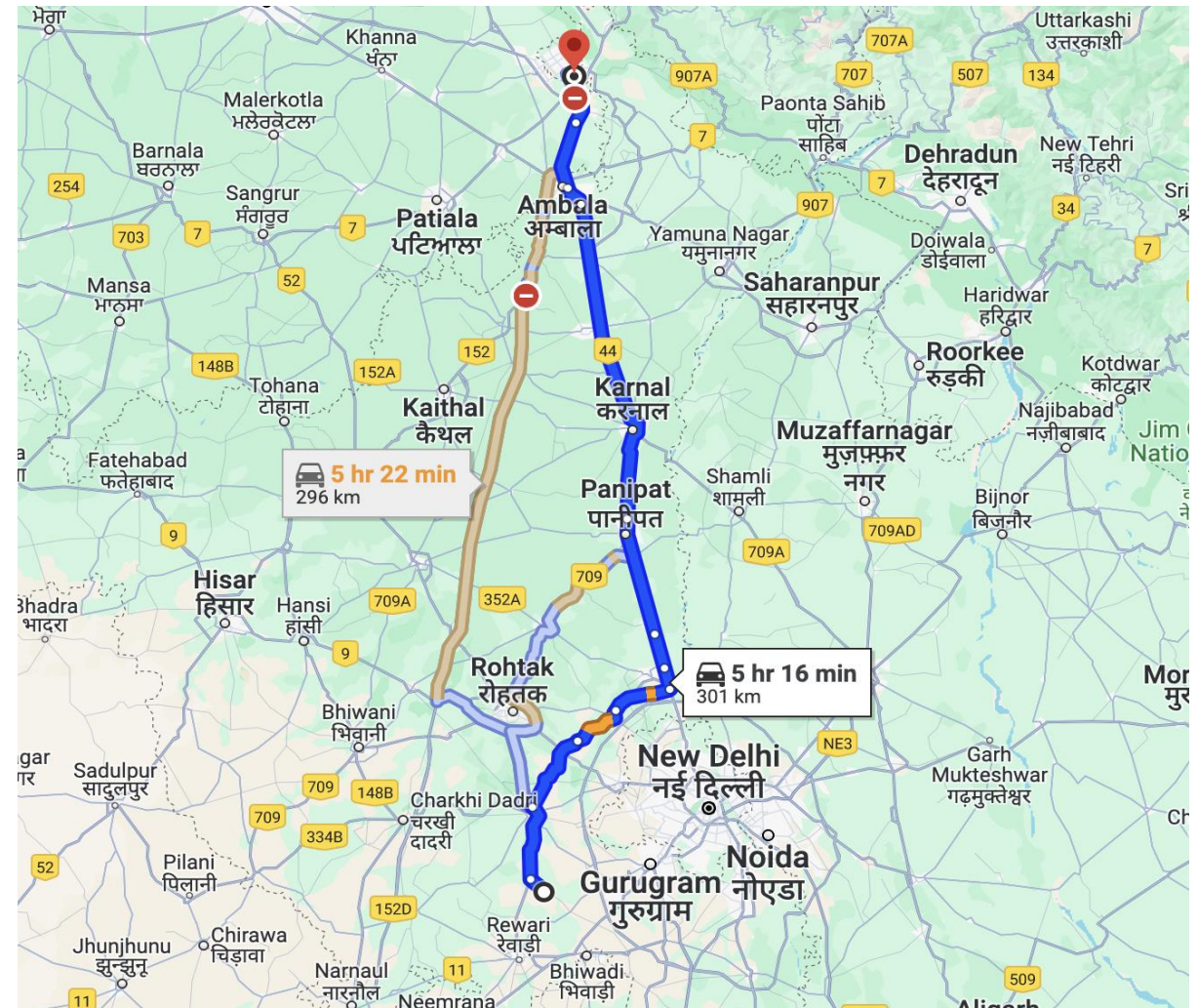
# Pilot Run on Delhi to Chandigarh Route



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Delhi to Chandigarh Route	
Total Distance Travelled	347 km
Average speed	44 kmph
Charging Time	3 hrs
Total Stoppage time - Included meal, stay, and charging setup	5.6 hrs
Total Time Taken for the Trip (Hrs)	11 hrs
Total Electricity Consumed	140.85 kWh





# Pilot Run on Delhi to Ludhiana Route

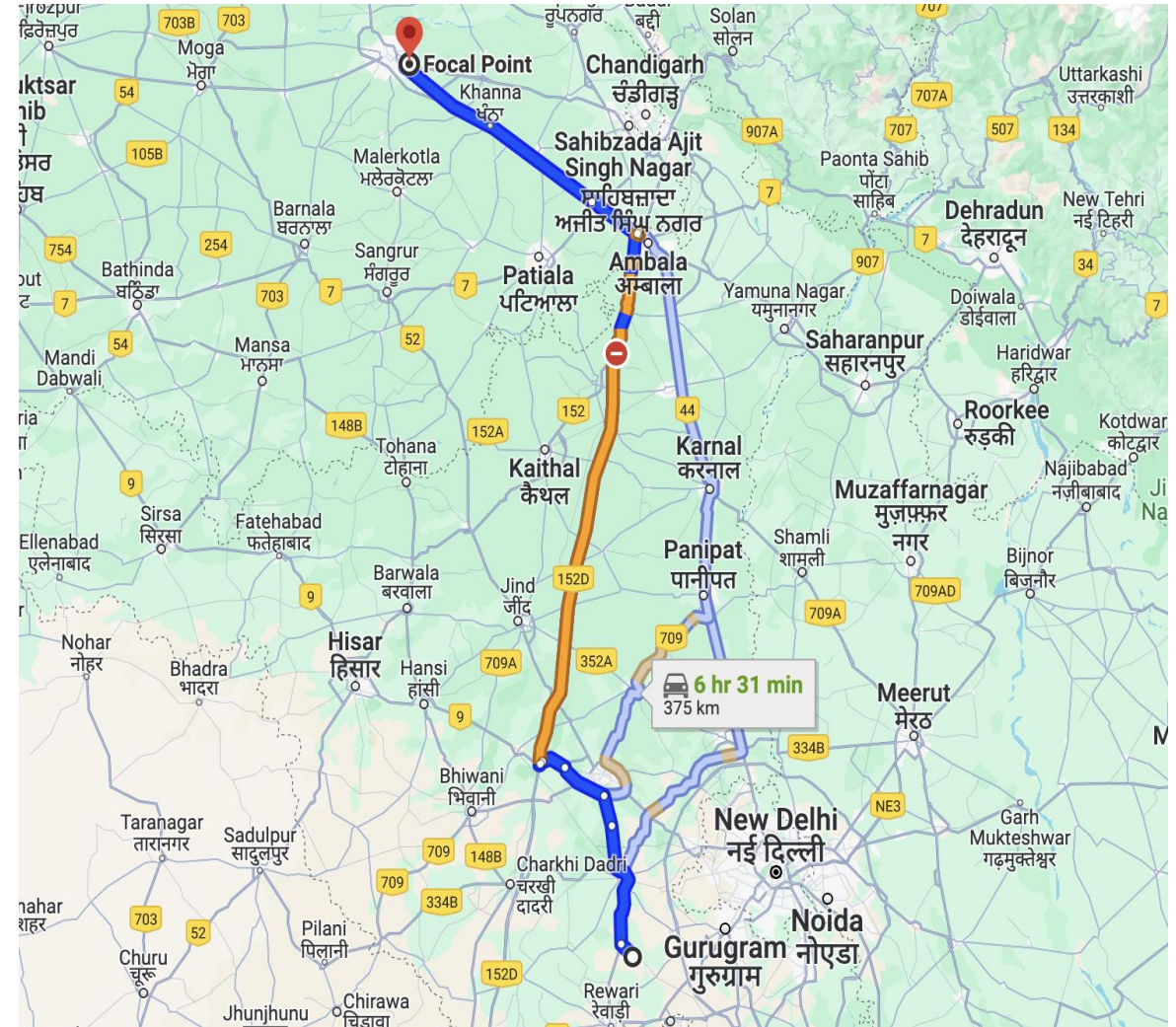


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## Delhi to Ludhiana Route

Total Distance Travelled	415 km
Average speed	55 kmph
Charging Time (hrs)	5 hrs
Total Stoppage time – Includes meal, stay, and charging setup	9 hrs
Total Time Taken for the Trip	13 hrs
Total Electricity Consumed	550 kWh



# Key Challenges



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- No charging station at warehouse
- Most of the bigger trucks are 32 foot with unibody
- Standardization of trailer size and warehouses as per electric mobility requirements
- Difficulties in obtaining high-power electricity connections – high cost and long time for approvals
- Most states the upper limit of LT connections is below 100 kW.
- Availability of land on highways for setting up charging stations
- Though there is concessional EV tariffs many states levy demand charges
- MW scale charging has to go for HT only
- The limited range on a single full charge restricted the distance a truck could cover



# Key Findings / Recommendations

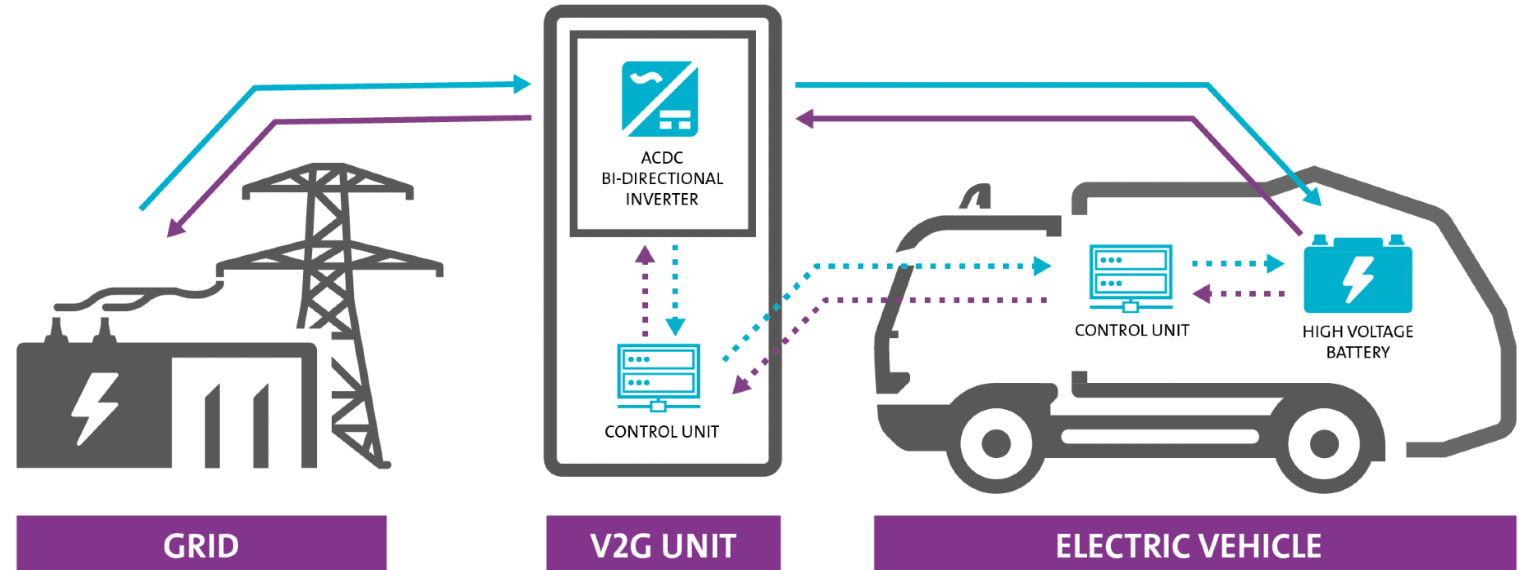


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- Payback period for RHINO 5536e Electric Trucks is around 8 year whereas 7 years for retrofit Tata 407 Electric Truck
- Greenhouse gas reduction for RHINO 5536e Electric Trucks is 48 % whereas 68 % for retrofit Tata 407 Electric Truck
- Total diesel displacement by RHINO 5536e Electric Trucks is 75,000 litre per annum, whereas 37,500 litre per annum for retrofit Tata 407
- Total Cost Ownership for Tata 407 diesel truck is INR 14.840 per km whereas INR 9.128 for retrofit Tata 407 electric-truck
- Total Cost Ownership for 55 Ton diesel truck is INR 50.12 per km whereas INR 29.20 for RHINO 5536e Electric Trucks
- **Policies for cargo movement by Electric Trucks**
- **Creation of MW scale charging facilities on highways**
- **Highway electrification**
- **Strengthening power supply in rural feeders across highway**
- **Charging with green electricity**
- **Government support for the availability of Electric Trucks**

## Demonstration of Vehicle to Grid (V2G) Technology in India and Charging of EVs with Green Electricity





- Selection of appropriate EVs to retrofit with on board bidirectional chargers.
- Retrofitted EVs with V2G functionality and test the different use cases in consultation with various stakeholders
- Demonstration of V2G Technology and Testing of the Functionalities to the concerned authority
- Convening with relevant stakeholders to develop model regulations for V2G Adoption
- Policy recommendations for V2G adoption in India
- Policy recommendations endorsed by concerned stakeholders
- Research and Convenings with charge point operators and green energy developers
- Preparation of the charging framework for Green electricity charging and certificates for EVs
- Engage with concerned stakeholders on the identified framework
- Installation of required hardware and software for EV charging through green electrons
- Development and testing of blockchain platform to generate green energy certificate
- Demonstration of EV charging with Green electrons and issuance of green energy certificate to the concerned authority



# THANK YOU

***For discussions/suggestions/queries email:***

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