



Facilitating Corporate EV adoptions in India

Key Partners of IESA



IESA's EV ADOPTER Circle



POWERED BY:



Objective

Promote & Accelerate Sustainable Urban & Rural Transportation.

Highlights

- ▶ Moving away from fossil fuel-based transportation
- ▶ Accelerating adoption of xEVs in India in public & private sector transportation
- ▶ Helping corporates in transition towards xEV fleet and setting up EV charging infrastructure for their employees, customers, goods carrier & goods delivery etc.
- ▶ Working closely with all the Industry stakeholders in the ecosystem

Become a part of EV Adoption Circle

Pledge to migrate towards xEV fleet & arrange to provide EV charging infrastructure at the premise.

Plan: 10% by **2022** **25%** by **2025** **50%** by **2030**

Basic Membership Benefits

- ▶ Get featured as a leader and implementor for sustainable transportation initiative
- ▶ Participation in knowledge sharing & networking session with peer group
- ▶ Subscription to IESA-MOVE newsletter
- ▶ 20% discount for attending other IESA events

Additional Premium Membership Benefits

- ▶ Help in decision making by monitoring and analysis, of driving routes & patterns
- ▶ Recommendations and suggestions with best use case
- ▶ CES consulting services for planning & formulating EV adoption roadmap
- ▶ Benefit from IESA partnerships with stakeholders
- ▶ 50% discounts for attending other IESA events

How can Corporates take steps towards eMobility?



➤ Employee Transportation

- Adoption of EVs in the direct fleet by leasing or procuring EVs
- Service contract with EV fleet providers
- Hiring EV cabs for employee transport
- This include electric scooters, e-rickshaws, e-cars as well as e-Buses.

➤ Logistic part of goods carrier & goods delivery

- Identifying economic cases for right size electric vehicle & adopt (2W, 3W)

➤ Providing EV charging infrastructure

- Installing EV charging station at the premise for employees & customers
- Installing EV charging station for captive fleet operation
- Providing EV charging station space to public charging infrastructure

EV options available for Employee fleet



Hyundai Kona

- Range: 345 KMs
- Battery Capacity: 39.2 KW
- Compact SUV Model
- Automatic Transmission
- Charging Time: 6 hr/ 50min



Tata Nexon EV

- Range: 312 KMs
- Battery Capacity: 30.2 KW
- Compact SUV Model
- Automatic Transmission
- Charging Time: 6 hr/ 50min



Tata Tigor EV

- Range: 143 KMs
- Battery Capacity: 17 KW
- Compact sedan Model
- Automatic Transmission
- Charging Time: 6 hr/ 50min



Mahindra e-Varito

- Range: 140 KMs
- Battery Capacity: 17KW
- Sedan Model
- Automatic Transmission
- Charging Time: 6 hr/ 50min

MG ZS EV



- Range : 419 km
- Battery Capacity : 44.5 KW
- Compact SUV Model
- Automatic Transmission
- Charging Time: 6 hr/30 min

Source: EESL

EV options available for goods carrier & delivery



Mahindra Treo Zor (L5N category)

- Battery capacity: 48V, 7.37 kWh
- Range: 110 – 125 kms
- Charging time: 3h 50min.
- Top speed: 50km/h
- Direct drive transmission



Piaggio E-Xtra FX (L5N category)

- Battery capacity: 48V, 8kWh
- Power output: 9.5kW
- Range: 110 kms
- Charging time: 3h 45min.
- Top speed: 45km/h



Gayam Taskman- Cargo Smart Auto (L5N category)

- Battery capacity: 48V, 4.8kWh
- Range: 110 km
- Top speed: 55km/h
- Charging time: 3h



Kinetic Safar Jumbo (L5N category)

- Battery capacity: 48V, 8.2kWh
- Top speed: 55km/h
- Charging time: 3 to 4 hrs



ATUL Elite Cargo

- Battery capacity: 12V 100 AH - Lead Acid
- Range: 80 kms
- Charging time: 8-10 hrs
- Top speed: 25 km/h

EV options available for goods carrier & delivery



Lohia Auto- Narain CARGO

- Battery capacity: 48V, 5 kWh
- Range: 100 kms
- Top speed: 25 km/h



Omega Seiki- RAGE +

- Battery capacity: 48V, 7.5 kWh
- Range: 70-80 kms
- Charging time: 3 to 4 hrs
- Top speed: 45km/h



Vidhyut Cargo

- Battery capacity: 60V, 6.6 kWh
- Range: 60-70 kms
- Top speed: 40 km/h
- Charging time: 4-4.5 hrs



KETO Bulk-e

- Battery capacity: 48V, 8 kWh
- Range: 100 kms
- Top speed: 45 km/h
- Charging time: 3 to 4 hrs



Touro Mini Cargo LI

- Battery capacity: 48 V, 3.8 kWh
- Range: 70 kms
- Charging time: 3.5 hrs
- Top speed: 25 km/h

2W options available



eBikeGO

- Low speed category
- Motor power: 250W
- Battery chemistry: LFP
- Range: 70 kms
- Charging time: 3h
- Top speed: 25km/h



Okinawa dual

- Low speed category
- Battery: 48V, 2.6kWh
- Motor power: 250W
- Range: 125 kms
- Charging time: 4-5h.
- Top speed: 25km/h



Hero Electric Photon LP

- L1 category
- Battery: 72V, 1.8kWh
- Range: 80 kms
- Charging time: 4-5h.
- Top speed: 45km/h



Ampere Magnus Pro

- L1 category
- Battery: 60V, 1.8kWh
- Range: 75 kms
- Charging time: 5-6h.
- Top speed: 55km/h



Ather 450X

- L2 category
- Battery capacity: 2.9kWh
- Range: 116 kms
- Home Charging time: (0 to 100%) 5h, 45 minutes
- Top speed: 80km/h

2W options available



Tunwal Lithino 2.0

- Low speed category
- Battery: 60 V 26/32 Ah
- Range: 70-85 kms kms
- Charging time: 3-4 hrs
- Top speed: 25km/h



TVS iQube

- Battery: 48V, 2.2 kWh
- Motor power: 3 kW
- Range: 75 kms
- Charging time: 4-5 hrs
- Top speed: 78 km/h



PURE ETRANCE NEO

- Battery: 60V, 2.5kWh
- Range: 90-120 kms
- Charging time: 3-4hr.
- Top speed: 60 km/h



Kabira HERMES 75

- Battery: 2.4 kWh
- Motor power: 2.5 kW
- Range: 120 kms
- Charging time: 5-6h.
- Top speed: 80km/h



Batt:RE ONE

- Battery capacity: 48 V, 1.4 kWh
- Range: 85kms
- Charging time: 2.5 h
- Top speed: 80km/h

E-Bus options available



Manufacturer: Olectra Greentech

- Model: K6
- **Length (m): ~7m (6.9m)**
- **Seating Capacity: 22+ Driver**
- GVM (kg): 9555
- Range: Up to 200 km
- Max. Speed (kmph): 80
- Battery: Lithium Iron Phosphate (LFP)
- Charging time: 3-4 hours
- Charging Mode: AC Charging <= 40kW



Manufacturer: Tata Motors

- Model: Ultra Electric
- **Length (m): 9m**
- **Seating Capacity: 31 + 1D**
- GVM (kg): 10200 +/- 300 kg
- Range: >150 kms
- Max. Speed (kmph): 75
- Battery capacity: 124 kWh
- Charging time: ~2 to 2.5 hours with fast charging, Normal; 4-6 hours
- Charging Infrastructure Required: 60 – 120 kW charger



Manufacturer: JBM Solaris

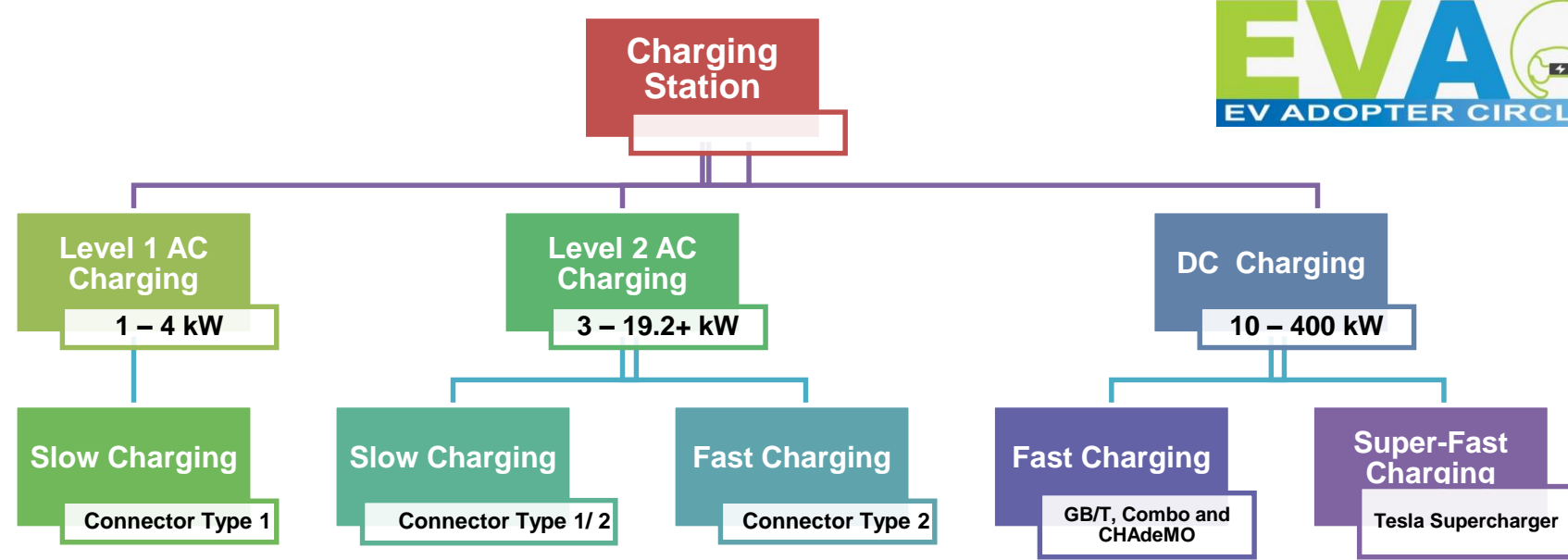
- Model: ECO-LIFE
- **Length (m): 9.4m**
- **Seating Capacity: 35+ Driver**
- GVM (kg): 13500
- Range: 150-200 km
- Max. Speed (kmph): 75
- Battery: Lithium Ion
- Charging time: 1-3 hours (Fast)
- Slow Overnight Charging: 6-8 hours



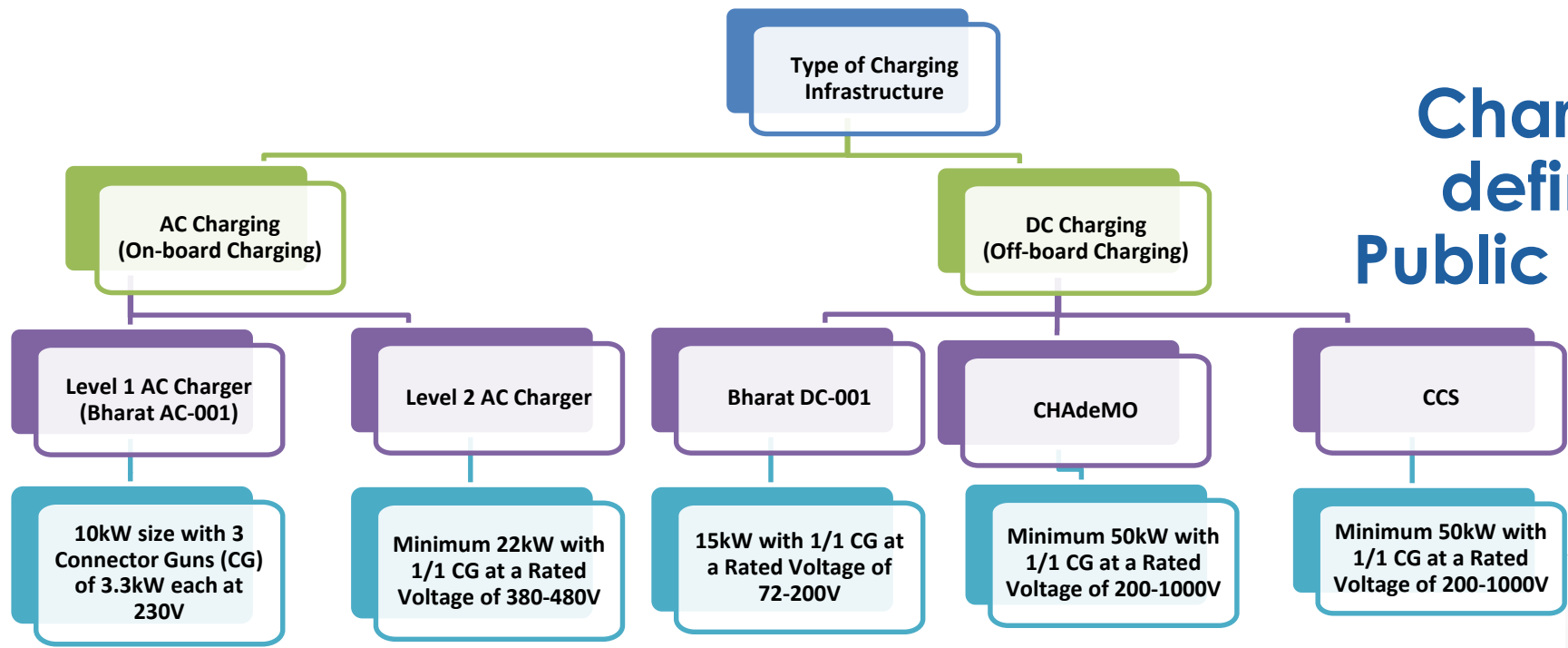
Manufacturer: Olectra Greentech

- Model: K9
- **Length (m): 12**
- **Seating Capacity: 39+ Driver**
- GVM (kg): 18000
- Range: Up to 300 km
- Max. Speed (kmph): 70
- Battery: Lithium Iron Phosphate (LFP)
- Charging time: 4-5 hours
- Charging Mode: AC Charging <= 80kW

EV Charging Station Conceptualization



Charger Connectors defined by MoP for Public Charging Stations



EV Charging Infra



Type 2 AC Chargers

Type 2 AC chargers from 3.3kW to 22kW ratings



9.9kW AC Charger

9.9 kW (3x3.3kW) AC Chargers as per Bharat AC 001 specifications



15/20/30 kW DC Charger

15/20/30 kW GB/T DC Chargers as per Bharat DC 001 specifications



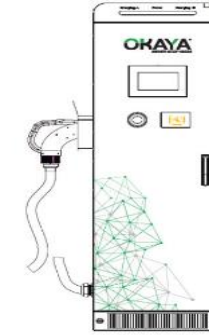
30/40 kW DC Charger

High Voltage DC wallbox Chargers with GB/T, CHAdeMO & CCS Standards



BHARAT AC EV Charger 10kW

10 kW Model with three 3.3 kW IEC 60309 Sockets.



Single Gun Quick DC Charger

40kW/60kW/80 kW continuous fast charging.



Dual technology allowing multiple standard AC and DC both simultaneously.
142 kW continuous fast charging.



IEC 62196 (Type 2)



IEC 60309



GB/T



CHAdeMO



CCS



GB/T



CHAdeMO



CCS

NORMAL CHARGING



Home



Office



Retail



Public

SEMI-QUICK CHARGING



Office



Retail



Public

QUICK CHARGING



Retail



Public



Highways



IESA
India Energy Storage Alliance

POWERED BY:



Moving Onwards Vehicle Electrification

INDIA ENERGY STORAGE DATABASE (IESDB)

<https://www.indiaesa.info/initiatives/iesdb>

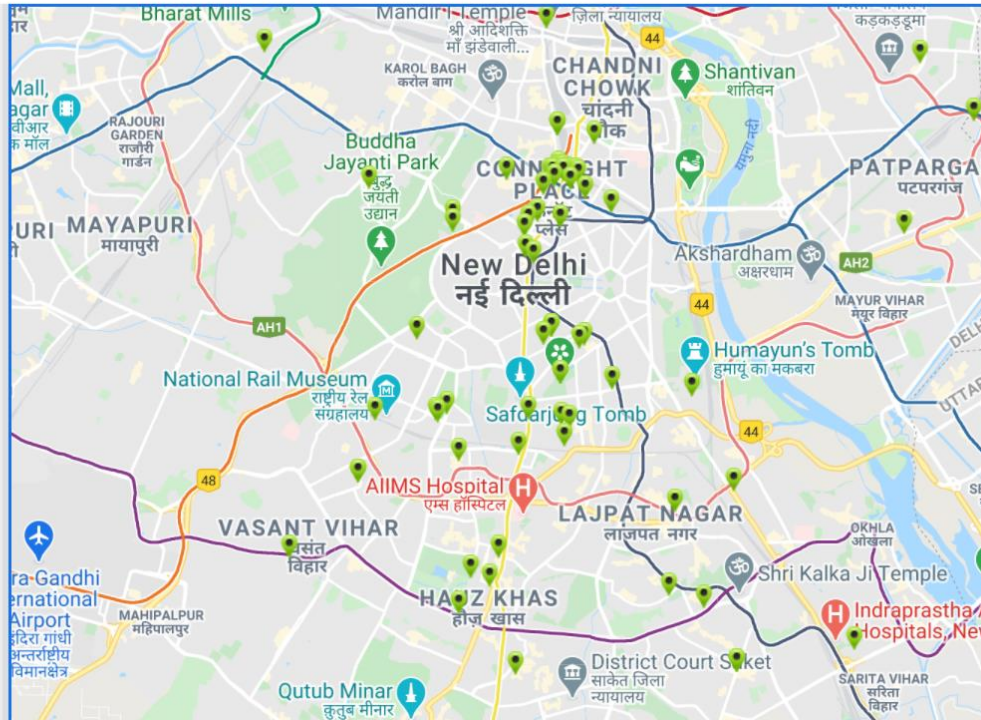


ESS Projects Manufacturing Plants Recycling Plants **EV Charging Stations** R&D Institutions Microgrids

Enter city, state, country or zip code

Charging Station

- 1 Anand Vihar Railway ...
Gate No. 2, Anand Vih...
[More details >](#)
- 2 Autovikas sales & serv...
Block B RAMA ROAD, ...
[More details >](#)
- 3 EESL Akashwani Bha...
Akashwani Bhawan, S...
[More details >](#)
- 4 EESL Aurbindo Market...
SDMC Parking, Aurbin...
[More details >](#)
- 5 EESL Barakhamba
Near NDMC Office, Fir...
[More details >](#)
- 6 EESL Bharat Sanchar ...
Outside Bharat Sanch...
[More details >](#)



EESL Energy Efficiency Services Limited
16,427 followers
1w • 🌐

We are pleased to announce that we have signed an MoU with **India Energy Storage Alliance (IESA)** to ensure faster adoption of **#emobility** & scaling up the **#EV** infrastructure in the country. The focus of the partnership will be on the development & deployment of a pilot **#ElectricVehicle** tracker tool, along with the analysis of the potential for Telecom towers to double as **#EV** charging stations in India. A joint study will be undertaken with telecom tower companies to determine the viability of retrofitting telecom tower facilities to allow them to also serve as **#ElectricVehicle** charging stations to promote the use of **#greenenergy**.

Battery Swap Stations



IESA online 3rd Roundtable on Battery Swapping Roadmap for India (3/4)
 Date- 18th June '20 | Timing- 3.00 to 5.00 pm IST



Need & Ecosystem	Business Model	Technical aspects	Policy Barriers & Drivers
<ul style="list-style-type: none"> Viability of battery swapping as a solution <ul style="list-style-type: none"> electric two-wheelers (2W) & three-wheelers (3W) for last mile connectivity Electric 4 wheeler (Car) Electric Bus and commercial vehicle Evolving Business Case <ul style="list-style-type: none"> Swapping in Controlled environment vs Open market Service Type (Subscription Model, Pay-Per-Use Model) Swapping solutions vs. portable Battery for home charging for 2W/3W Hybrid Swapping Model (small battery in vehicle rest in swappable mode) Investment required & Financing Options 	<ul style="list-style-type: none"> Reduces the upfront cost of EVs by 30-40% and can improve the demand for EVs <ul style="list-style-type: none"> total cost of ownership vis-a-vis ICE vehicles, scale of investment required and Internal Rate of Return (IRR) for swapping stations Levelised cost of energy (LCOE) approach to determine tariff to be charged to customers with falling battery prices and continuous increase in energy density, swap will still be a viable solution or not Insurance for vehicle and battery Charges for each swapping Role of Battery Swapping Operators (BSOs) Co-ordination between BSOs and standard operation procedure Options of Solar charging of Batteries at Swapping stations Swapping stations to support the 	<ul style="list-style-type: none"> Standards and interoperability of Batteries <ul style="list-style-type: none"> Standardisation on battery technologies & other parameters like voltage, temperature Common minimum agreement on size and weight for battery for vehicle type category Manual Swapping vs mechanical / automated swapping Cyber Security Load connection requirements for a swapping station and how DISCOM will facilitate it Other Points for Discussion <ul style="list-style-type: none"> Monitoring the battery and addressing the social concern like theft of batteries Options for Second life of swappable batteries for stationary use 	<ul style="list-style-type: none"> Government Involvement <ul style="list-style-type: none"> Incentives for Battery Swapping Solutions under FAME II and Beyond. Incentive structure for BSO vs. OEMs Policy Framework Framework to control the price of swappable battery GST for swappable battery & components (smart meter, swapping station) Expansion of VGF offer to Swapping stations for initial investment Role of government authorities Role of Local authorities



Participating companies



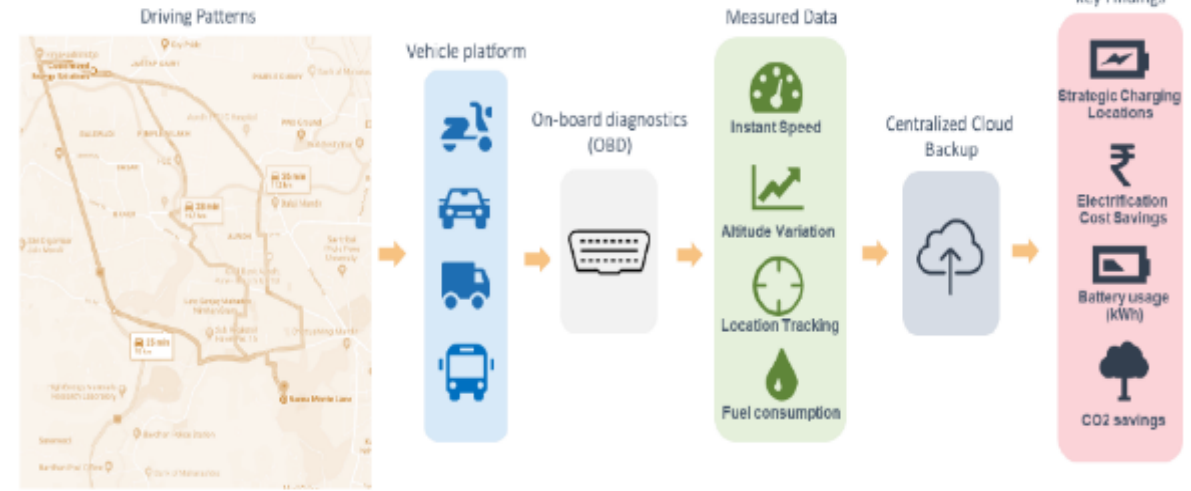
Optimized Fleet Electrification Strategy

(Analysis of battery sizing and charging infrastructure requirements based on real driving patterns)

Thought Process

- Driving patterns and battery usage of different vehicle operators: commuters, taxis, heavy vehicles, inter or intra city
 - Previously done studies in China and UK show 3x differences between energy consumption of EVs and Conventional ICE engine driven cars
- Effect of stop and go traffic on battery usage (with regenerative braking). Comparison with ICE.
 - Due to large traffic congestion in India the difference between EV and ICE could be much higher
- Effect of elevation change (with regenerative braking). Comparison with ICE.
 - If a round-trip involves a large change in elevation back and forth, the regenerative braking can reduce energy consumption dramatically.
- Effect of intra city vs. inter city driving: True fuel consumption and comparison with BEV.

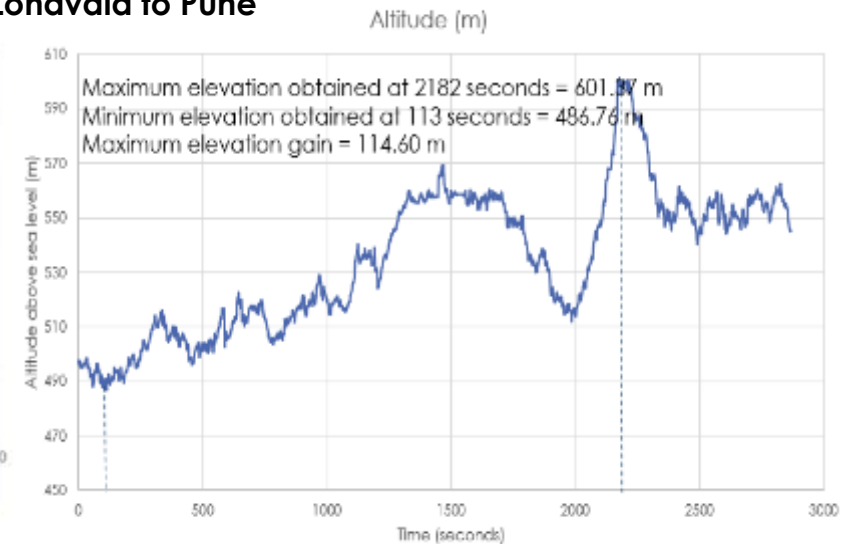
Project Flow and Outcome



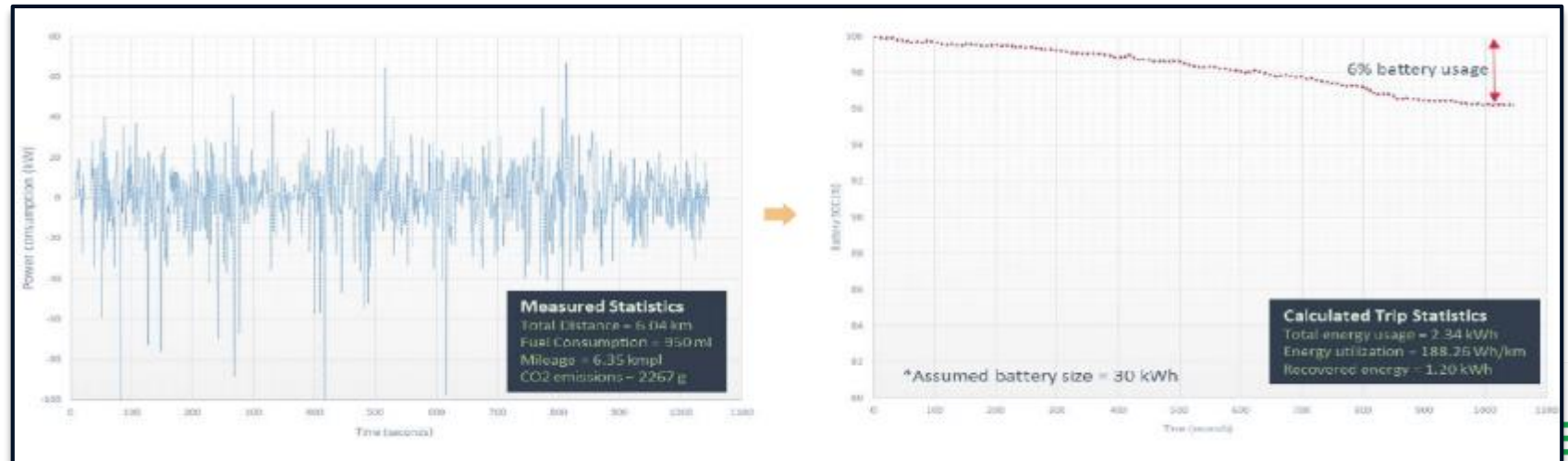
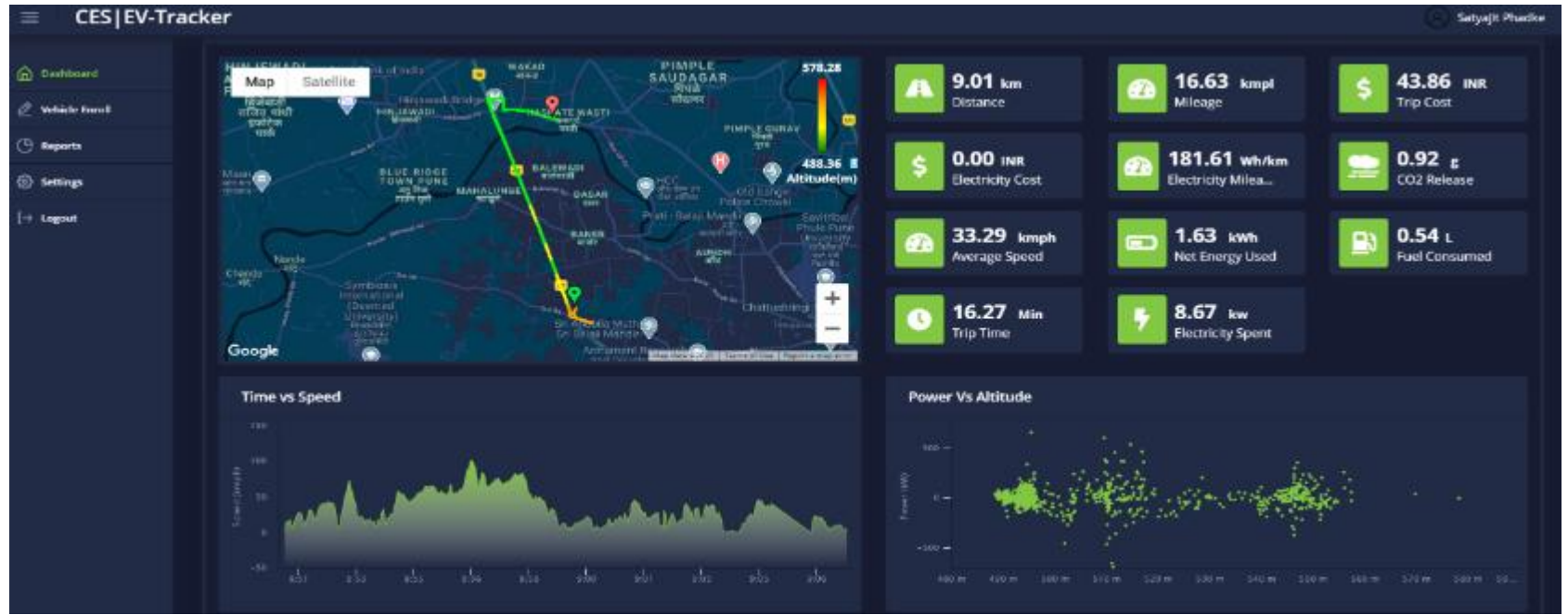
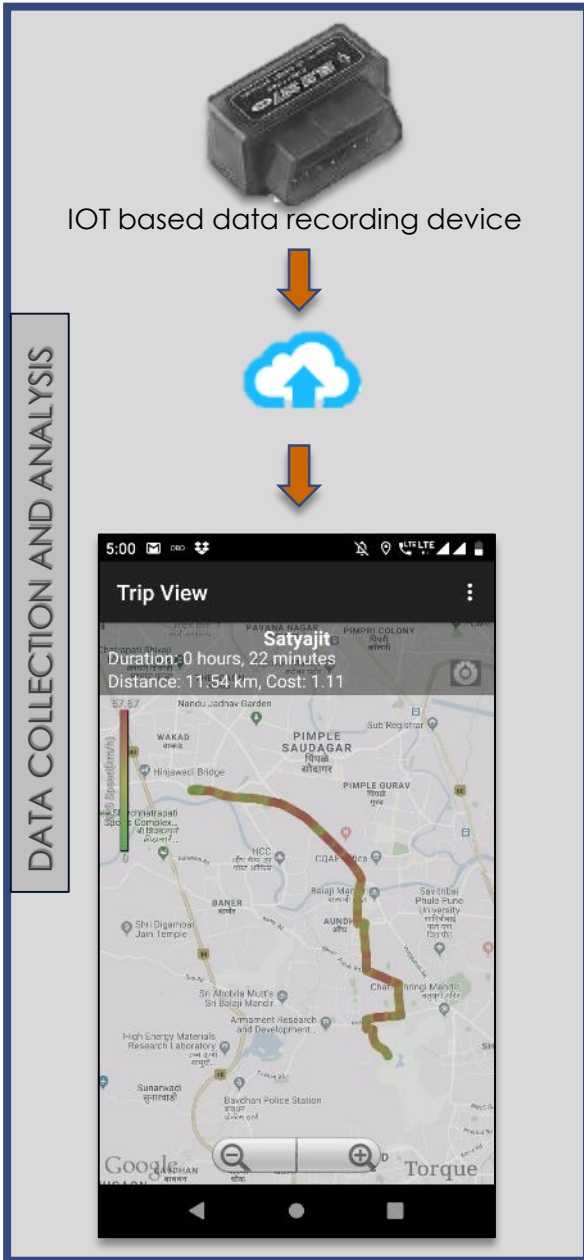
Phased Approach Planned

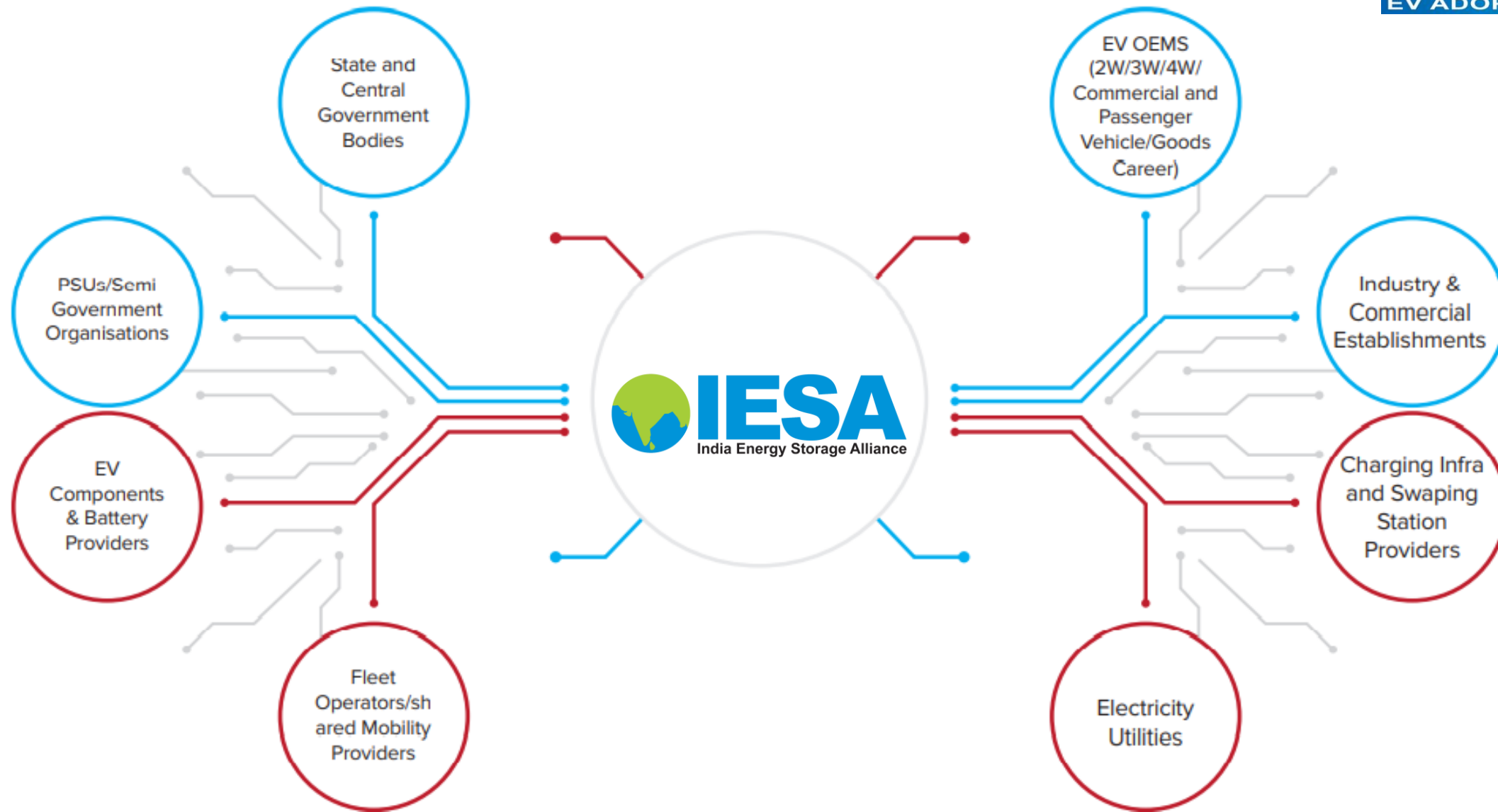


Case Study: Lonavala to Pune



DASHBOARD REPRESENTATION





Supported By



POWERED BY:



ELECTRIC MOBILITY, THE NEXT FRONTIER

Basic Membership Benefits	Additional Premium Membership Benefits
Free	INR 1 Lakh (\$1500 USD)
<ul style="list-style-type: none"> ■ Get Featured as a leader and implementer for sustainable transportation initiative ■ Participation in knowledge sharing & networking with peer group ■ Subscription to IESA-MOVE Bulletin ■ 20% discounts to attend IESA events 	<ul style="list-style-type: none"> ■ Help in decision making by monitoring and analysis of driving routes and patterns ■ Recommendations and Suggestions with best use cases ■ Consulting services for planning and formulating EV adoption roadmap ■ Business connects and benefits from IESA partnership with stakeholders ■ 50% discounts to attend IESA events

Become a part of EV Adopter Circle

Pledge to migrate towards xEV fleet & arrange to provide EV charging infrastructure at the premise.

Plan: **10%+** by **2022** **25%+** by **2025** **50%+** by **2030**

Share with the community as you take steps towards your goal!

Why to be part of EV Adopter Circle



- ❑ Bringing relevant stakeholders & Business Exchange platform (Corporate buyers, bulk buyers, EV OEMS, Charging Infra Providers, Fleet Operators)
- ❑ Support in
 - ❖ Choice in appropriate EV
 - ❖ Analyzing right driving range
 - ❖ EV charging infra planning
- ❑ Strategic roadmap planning support for each stakeholders
- ❑ Financial comparison (Fuel Cost saving, emission reduction) between ICE vehicle and EVs through CES vehicle monitoring platform.
- ❑ IESA will create Success story/case story and will promote through its network
 - ❖ EV vs ICE Study
 - ❖ City planning study
 - ❖ Air quality study

Join EV Adopter Circle



Please select IESA-EVAC membership category (Tick mark): Basic (Free) Premium (INR 1 Lakh + GST)

We will strive to adopt sustainable transportation, contributing towards reduction in GHG emission for the greener planet.

Our commitment means that we will engage in the good-faith effort to

- Migrate towards xEVs for our employee transportation
- Migrate towards xEV for our commercial vehicles & material handling equipment
- Provide EV charging infrastructure for our employees/customers

Organization Name: _____

Registered Address: _____

GST Number (If applicable): _____

Website: _____

Organization Logo: _____

Name : _____

Title of Authorized Representative: _____

Signature (Authorized Representative*):

*By executing this document, I acknowledge that I am an authorized representative of my organization to provide the consent for IESA–EVAC initiative.

IESA MEMBERS

Join IESA to gain insights and access to one of the fastest growing energy storage, microgrid and EV markets

LEADERSHIP CIRCLE



PLATINUM



GOLD



SILVER



BRONZE



SPECIAL



START-UPS



STRATEGIC PARTNERS

JOIN



LET'S MAKE A CHANGE

Email: Contact@indiaesa.info