NHEV

National Highways for Electric Vehicles

UPCOMING

5500 KM e-Highway

in India

ABOUT NHEV

NHEV is an E-highway pilot project based on the Public-Private Partnership (PPP) Model from the Ease of Doing Business. The 1st phase of the pilot has been implemented on the Jaipur-Delhi-Agra highways covering 500km. Going forward the pilot will be scaled up to 5000 km across India. The pilot includes setting up charging infrastructure, car-bus fleet, roadside assistance for EVs along with theft-proof geofenced highways. The first two prototype stations of NHEV are commissioned in Gurugram with 100 EV chargers as India's Largest Charging station with 75 AC and 25 DC Chargers. Ease of Doing Business proposed easing the charging infra-setup with compliance reduction.

Ministry of Power clarified in 2020 that no license is needed for setting up petrol-pump-like EV charging stations. Prime Minister's clarion call of NetZero and this fundamental REFORM brought EoDB in E-Mobility to bring down major bottlenecks and boost the techno-commercial speed of adoption. On 27th September 2022, the miniature concept model for the 3rd generation of EV charging stations with the provision for Hydrogen was revealed by Shri Nitin Gadkari, the Honorable Minister of Road Transport and Highways. NHEV has successfully held Tech-Trial II from Delhi-Jaipur and the first part of the final report was released in March 2023.

THIRD GENERATION CHARGING STATION

The introduction of Third-Generation Charging Stations through the NHEV pilot will prove to be a game-changer. These stations will have no option for traditional fuels like diesel and petrol.

With hydrogen vending capabilities and robust charging infrastructure for EV cars, buses, 2-wheelers and 3-wheelers, these stations are certainly the stations of the future.

Detailing 01

The setup, detailing, and even micro-detailing of a petrol pump is clearly defined in the public domain, but standard norms and other relevant details for setting up a charging station were yet unknown and confusing.

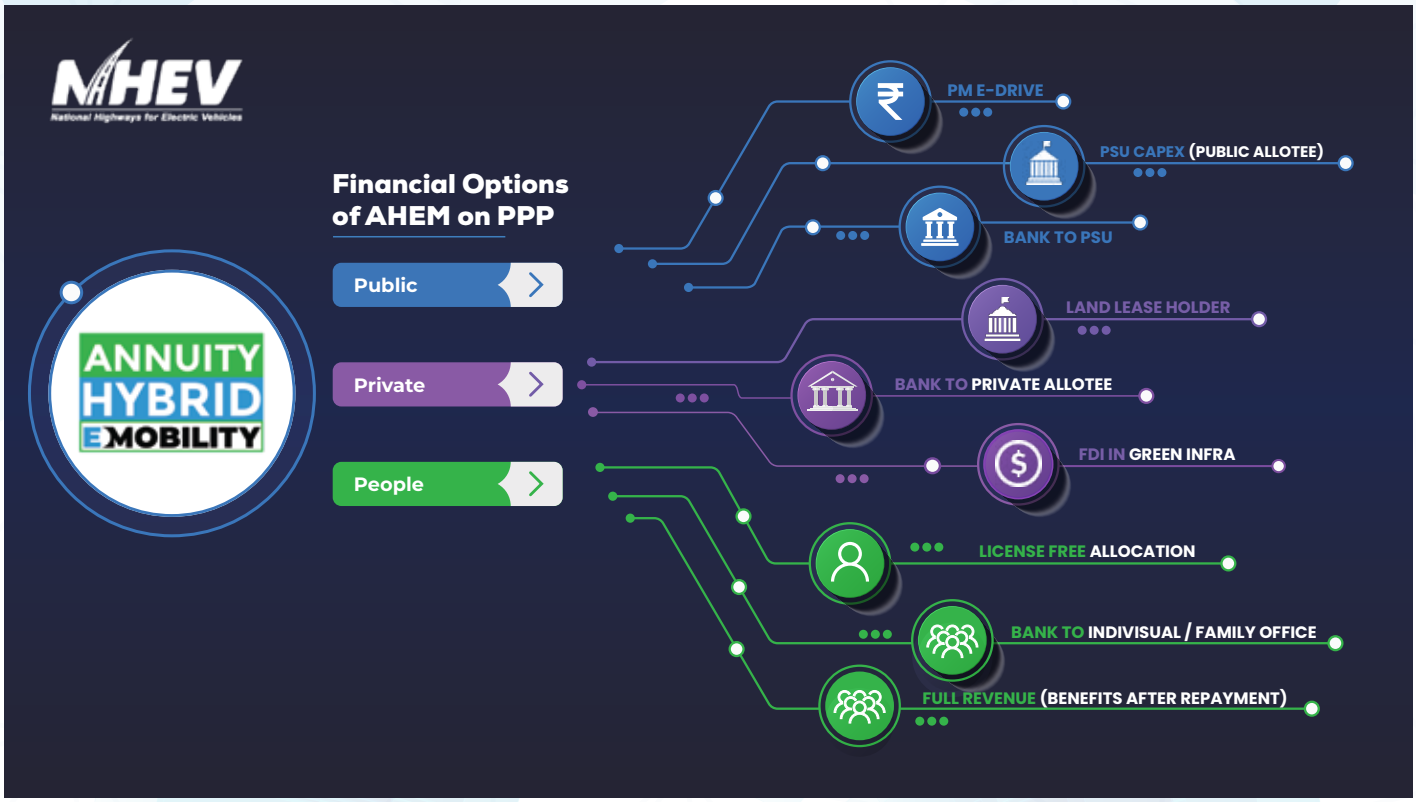
Financing 02

There was ample financial support for the notion and dialogues, but at an individual level, financing was a struggle.

Earning 03

Everyone knew infrastructural investment is a high CapEx business and the CapEx recovery periods of projects like Petrol pumps or metro were defined and calculated, but the breakeven for setting up of charging stations was unknown leaving the investors confused.

ANNUITY HYBRID EMOBILITY



MULTI-LAYERED INVESTMENT SAFETY INDEX

Investment funds on NHEV Highway upgradation are utilized under Annuity Hybrid E-Mobility (AHEM) model. They are protected with 4 layers of safety nets and 3 optional financing processes to ensure the allocation of each utility, asset and station.

01
Strong demand and Market Share based business models

02
Advance Annuity Contracts of Minimum Guarantee (MG)

03
Conservative Utilization Matrix for schedule Breakeven

04
Securities & Warranties for operational accountabilities

01 Public
Land is made available to the Power & Petroleum Public Sector Undertakings (PSUs) by the NHAI.

02 Private
In this scenario, a private entity buys the land for the station construction.

03 People
In this case, common people offer their suitable land as collateral to the bank to get a credit line in order to erect the station.

Upcoming 5500 KM E-Highway in India

225 KM DELHI - AGRA

25th Nov to 25th Dec 2020

NHEV started its Tech-Trial Run I on 25th Nov 2020 from Delhi to Agra via Yamuna Expressway, where components of all 4 major Ease of Doing Business deliveries were showcased to bring EVs on highways.

- **30-Min** Backup for EVs on E-highways
- **30%** Lesser Priced EVs in NHEV
- **30 %** CapEx Utilization of Charging Infra
- **3-year** Breakeven of Entire Ecosystem

272 KM DELHI - JAIPUR

09th Sep to Dec 2022

Tech-Trial Run II from Delhi-Jaipur, conducted from September to December 2022, highlighted the major points of Technical Investigation of E-Mobility. These major takeaways make EV adoption easier and boost user confidence on National Highways and Expressways.

- **01 Seat Fare**
  ₹1000 v/s ₹1500
- ₹4000 v/s ₹12000
  01 Day EV Fare
- **01 KM Upgradation Cost**
  ₹1 Crore v/s 22 Crores
- 4500 MT
  01 EV CO_2 Emissions Cut

Upcoming 5500 KM E-Highway in India

PROTOTYPE STATIONS INAUGURATION

Gurgaon Sector-52

NHEV (National Highways for Electric Vehicles) inaugurated its first and India's largest Prototype Electric Vehicle (EV) charging station Model situated in Sector 52, Gurgaon, Haryana on 28th January 2022.

This charging station has been installed and operated by Alektrify. This EV charging station gets 100 charging points for four-wheelers, of which 72 units are AC slow chargers while 24 units are DC fast chargers.

72 AC Chargers

100 Charging Points

24 DC Chargers

Gurgaon Sector-86

NHEV (National Highways for Electric Vehicles) inaugurated its second Prototype Electric Vehicle (EV) charging station Model situated in Sector 86, Gurgaon, Haryana on 3rd March 2022.

This charging station has been installed and operated by Alektrify. This EV charging station gets 100 charging points for four-wheelers, of which 75 units are AC slow chargers while 25 units are DC fast chargers.

75 AC Chargers

100 Charging Points

25 DC Chargers

RECORD **72%** **UTILIZATION**

Commissioned Protoype
RECORDED HIGHEST
NATIONAL AVERAGE
With 100 Chargers & 576 EVs

MAXIMUM **36** **MONTHS**

Commissioned Protoype
REACHING ITS BREAKEVEN
NATIONAL AVERAGE RECORDS
With 75 AC & 25DC FAST CHARGERS

Upcoming 5500 KM E-Highway in India

MINIATURE EV CHARGING STATION CONCEPT MODEL REVEALED

Shri Nitin Gadkari, Hon'ble Minister of Road Transport & Highways revealed the miniature of NHEV Third Generation Charging Station

NHEV, a commercial pilot, initially aimed for Agra-Delhi-Jaipur routes to be open as India's first 500 km E-Highway under this commercial pilot. On 27th September 2022, Shri Nitin Gadkari, Hon'ble Minister of Road Transport & Highways, inaugurated the miniature model of the NHEV third-generation Green Fuel Charging Stations. His appreciation towards the pilot fueled the scale-up of the pilot tenfold up to 5000 kms. By the end of 2023, NHEV committed itself to equally increase procurement and capabilities up to tenfold as it entered the expansion phase.

01	Sensor Gate
02	AD Board (Annuity)
03	Entry Boom Barrier (EV)
04	Utility Support & Server Room (AI-ML Algorithm)
05	Compact Substation
06	Car Swapping (Relay)
07	Food Court & Lounge
08	Battery Swapping Unit
09	Road Side Assistance
10	Bank & ATM
11	Conference Room
12	EV Showroom 2W & 3W
13	Battery Swapping Area
14	Hydrogen Tank (Dispensing)
15	Green Area (Kids Play Area)
16	Parking Lane
17	Fast Charging Points
18	Slow Charging Points
19	Staff Utility Area
20	Tyre and Air Pressure
21	Cold Chain Cargo Storage
22	2W & 3W Parking
23	Solar Panels (Rooftop)
24	Smart Parking Management
25	Air Toilets
26	Baby Feeding Area
27	Salon & Spa
28	Banquet Hall

Upcoming 5500 KM E-Highway in India

BLENDED CLIMATE FINANCING

JANUARY 2023

NHEV E-highway Prototype Report draft tabled on 10th January 2023 at the 5th NHEV Working Group Meeting at New Delhi.

This was followed by a high-level interaction with the NITI Aayog for pricing revisions, citing low EV fares in the NHEV ecosystem.

FEBRUARY 2023

MARCH 2023

NHEV E-highway Prototype Report Released on 24th March 2023 at the Festival of Manufacturing by ET Edge at New Delhi.

HDFC BANK

Ease of Doing Business.in

REFORM PERFORM TRANSFORM

For

NHEV

National Highways for Electric Vehicles

MOU SIGNING CEREMONY

On 31st August 2023, HDFC Bank and Ease of Doing Business came together for National Highways for EV to structure a credit outlay of ₹3,672 Crores for the upgradation of 5500 KM of national highways and expressways into E-highways nationwide and revolutionise the Indian E-mobility ecosystem.

Upcoming 5500 KM E-Highway in India

HYDROGEN DISPENSING INFRASTRUCTURE BY NHEV

The Third Generation Green Fuel Charging Stations of NHEV, planned to be installed on 26 E-Highways in a range of each 50 km on a 5500 km stretch spread across 27 Cities in 14 states, focused on EV Charging Facilities, are also equipped with Hydrogen Dispensing Capabilities for the times when Indian transportation service will be catering Hydrogen- driven vehicles.

Inducting hydrogen dispensing capabilities at the planning stage of stations was a game-changer input from our visionary Chair of NHEV Knowledge Group Dr. V.K. Saraswat, Member of NITI Aayog. It allowed us time to gather information on global tech trends and make Indian refueling stations, by creating a balanced load on one commodity as well as creating efficient transportation for all.

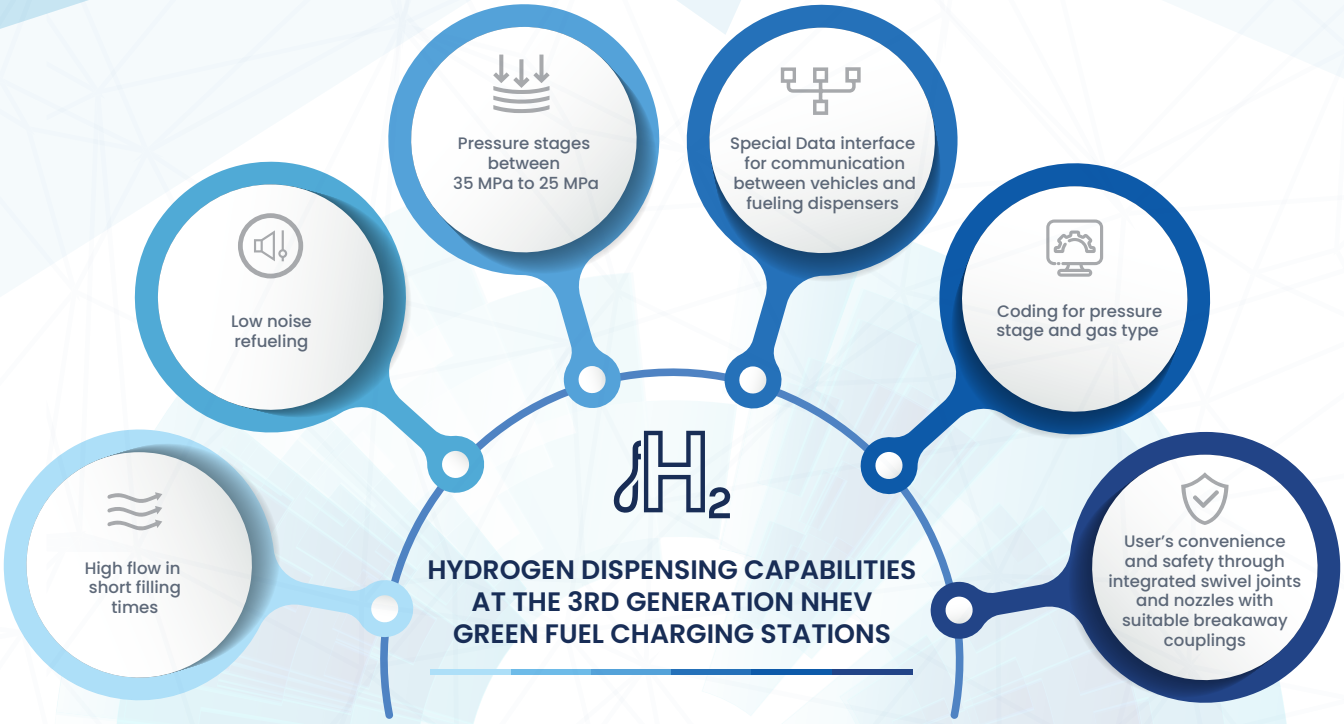
Electric BUS and EV SUVs have already conducted their 500 km tech-trial run successfully between Jaipur- Delhi– Agra in 2 phases and the ambitious pilot, National Highways for EV (NHEV), now awaits the manufacturing of hydrogen-driven heavy cargo trucks and vehicles to test its Hydrogen storage and dispensing model.

As the need of Indian Transition and requirements for heavy vehicles, which contributes a large part in automobile and transportation sector, Green Hydrogen is the most reliable alternative specifically for commercial vehicles and their needs.

The only major downside of Green Hydrogen in India is the distribution and availability, as well the compatibility First Generation of First and Second Generation Stations which are incapable of technology adaptability and refueling of Hydrogen- Driven vehicles.

Upcoming 5500 KM E-Highway in India

HYDROGEN DISPENSING CAPABILITIES AT 3rd GENERATION CHARGING STATIONS



The miniature model of the NHEV station with H_2 provision, as envisaged by Dr V. K. Saraswat, Member NITI Aayog and NHEV Knowledge Group Member, in the planning and designing phase itself was revealed in September 2022 by Shri Nitin Gadkari.

The introduction of Third-Generation Green Fuel Charging Stations through the NHEV pilot will prove to be a game-changer. These stations will have no option for traditional fuels like diesel and petrol. With hydrogen vending capabilities and robust charging infrastructure for EV cars, buses, 2-wheelers and 3-wheelers, these stations are certainly the stations of the future.

> "Utmost safety and outstanding functionality to achieve commercialization are our key focus areas in these technical trials and pilot projects; day by day we are achieving capabilities of fast filling of hydrogen in buses and trucks at upcoming NHEV green fuel stations."
>
> -Abhijeet Sinha Project Director, NHEV

COMMERCIAL TAKEAWAYS

Station Allocation on PPP Model

PUBLIC	PRIVATE	PEOPLE
1. FAME – II	1. Bank to PSU	1. Individual CapEx
2. PSU CapEx PSU CSR	2. Bank to Private Sector	2. Group CapEx
	3. FDI in Corporate Sector	

Annuity Hybrid E-Mobility (AHEM) Financial Model

Annuity Hybrid E-Mobility (AHEM) is the financial model inspired by the Hybrid Annuity Model (HAM) having the capability to upgrade any highway or expressway into an E-highway within 90 days. AHEM means procurement from on-boarded partners and suppliers for CapEx to earn OpEx for breakeven in 36 months.

NHEV: A GEM for E-Mobility

To be onboarded with the NHEV marketplace is like being onboarded by Amazon. AHEM promotes higher-quality products & services and avoids curtailing a better-quality emerging technology due to cost constraints.

Beta Version E-Highway

NHEV has prototyped a beta version of global E-Highways in India on Relay Model Resilience where the responsibility of providing Mobility as a Service (MaaS) as the ticket/trip booked by the user is shared by the Fleet operator or the Highway operator and not burdened on the shoulders of the User or Driver.

Merit, Productivity and Performance based Procurement

NHEV has a robust takeaway for its first-mover participants and stakeholders to list themselves on the e-marketplace and participate in the speedy qualification of repeated procurements on the basis of merit, and productivity in performance.

Mobility as a Service (MaaS)

MaaS is an evidence-based policy takeaway from NHEV that embarked on changing trends in people's behaviour and approach towards their transportation needs. NHEV fits electric mobility in users' needs and pockets as well by making EVs available without drivers for intercity usage in multiple cities to make multiple trips and customised usages

People Ownership of Station in PPP Model

NHEV and its PPP Model (AHEM) have made it feasible for the first time for an individual to own a petrol pump like charging station without being dependent on any controlled licence like a petrol pump. An indented individual may invoke his/her own or partner's land on the highway for the Charging Station to obtain credit for Capex he requires to finance station structure and equipment.

TECHNICAL TAKEAWAYS

Anti-theft Ecosystem

NHEV will be able to create an Anti-Theft system for EVs through the synchronization of three key players:

The EV | The Battery | The Charger

Battery as a Subscription (BaaS)

Battery-as-a-subscription(BaaS) model is the first of its kind that is tested under the NHEV Pilot. The battery and the vehicle are sold separately which reduces the CapEx for fleet operators and owners by 30%-40%.

Relay Model Resilience

The Relay Model is piloted by taking inspiration from the operations of Metro trains. Whenever a fleet car arrives at any of the stations, it is swapped with a fully charged car. The customer now gets a fully charged car to continue the journey whereas the swapped car is put in for charging to continue the same relay process.

Battery Recycling Lifecycle

Overall competence developed by NHEV through technical prototyping of such models allows a battery to be tracked, sold, used, monitored, leased, insured and financed from day 1 of its manufacturing till repaired, refurbished, reused and recycled back without getting lost or buried in our environment unknowingly.

Vehicle-to-Grid (V2G)

Vehicle-to-Grid (V2G) is a technology enabling energy stored in a vehicle to flow back to the grid. This helps stabilise the electricity grid thereby making solar and wind scalable.

Largest H_2 Vending Network

Hydrogen Dispensers at the 3rd Generation Charging Station facilitate multiple features:
High flow in short filling times | Low noise refueling | Pressure stages between 35 MPa to 25 MPa | Special Data interface for communication between vehicles and fuelling dispensers | Coding for pressure stage and gas type | User's convenience and safety through integrated swivel joints and nozzles with suitable breakaway couplings

5500 KM
Expansion Overview

Upcoming 5500 KM E-Highway in India

830 KM SUCCESSFUL PILOTS

Currently operating Electric Cars, SUVs, Buses & Trucks

DELHI - AGRA	DELHI - JAIPUR	CHENNAI – TRICHY
225 KM	272 KM	332 KM

EXPANSION OVERVIEW

01 Dehi – Jaipur (272 KM)	02 Jaipur – Udaipur (396 KM)	03 Udaipur–Ahmedabad (257 KM)
04 Ahmedabad – Vadodara (111 KM)	05 Vadodara – Surat (150 KM)	06 Surat – Mumbai (283 KM)
07 Mumbai – Pune (148 KM)	08 Pune – Goa (444 KM)	09 Goa – Bangaluru (558 KM)
10 Bengaluru - Chennai (328 KM)	11 Chennai – Trichy (332 KM)	12 Trichy – Madurai (125 KM)
13 Krishnagiri – Madurai (350 KM)	14 Madurai–Kanyakumari (245 KM)	15 Coimbatore – Ulundrapet (301 KM)
16 Chennai - Visakhapatnam (797 KM)	17 Visakhapatnam - Bhubaneswar (442 KM)	18 Balasore - Bhubaneswar (196 KM)
19 Kolkata – Balasore (247 KM)	20 Dhanbad – Kolkata (272 KM)	21 Varanasi – Bodhgaya (255 KM)
22 Prayagraj – Varanasi (131 KM)	23 Lucknow – Prayagraj (201 KM)	24 Agra – Lucknow (336 KM)
25 Delhi – Agra (225 KM)	26 Chennai – Vijayawada (453 KM)	

The total cost of the overall project for the Upgradation of National Highways and Expressways into 26 E-Highways nationwide will be approximately ₹5500 Crores where infra is ₹3,672 Crores.

TECH TRIAL RUN

CHENNAI - TRICHY

TECH TRIAL RUN III

CHENNAI - TRICHY

332 KM

CHENNAI

09 SEPTEMBER 2024

TRICHY

TECHNICAL TRIALS OUTCOMES

WHAT DID WE TEST?

- **1 Ton / Kilometer**
  Diesel Vs Electric Vs Hydrogen cost
- **Total Cost of Ownership**
  10 EV Buses & ZET Truck fleet
- **Breakeven Period of**
  1 EV Bus/Truck as per utilisation
- **EHighway Freight Infra**
  Per KM upgradation cost for ZET vehicle

WHY DID WE TEST?

- To build 100% stakeholders' confidence
- To reduce 14% logistics cost to 9%
- To reduce oil import bills by 30%
- 5% deployment of zero emission transportation for decarbonisation of surface transportation

WHAT WAS UNDER TECH TRIAL?

- Electric Trucks, Hydrogen Trucks, E-Buses, E-Cars & SUVs, e2W & e3W
- Electric Vehicle Supply Equipment (EVSE) Charging infra
- ZET & EV Tracking and Connected CPOs Networks
- Regional Demand and Commercial Utilization Volume

WHY SHOULD YOU TEST-RUN THEM?

- Commercial Viability, Profitability
- Technical Competence & Precision
- Operational Know-How Descriptions
- Deployment & Real-State Acquisition

WHAT IS THERE FOR YOU TO TAP FROM TTR III?

- Immediate Deployable Pilots (IDP) for governments
- Immediate purchase order on Cap-Ex for industry
- Cheaper & cleaner alternatives for the logistics sector
- ESG & clean transport for the industry to leasing ZET

WHAT DID WE GET FROM TECH TRIAL RUN III?

- 6 IDR - Immediate Deployable Routes - Values & Volume
- 500 Cr. Disbursement from 5000 Cr. Climate Financing
- All 4 Technical Testing Parameters for IDR

WHO ALL PARTICIPATED WITH US?

- OEM / Manufacturers
- Owner / Investors
- Fleet Operators
- Infra Operators
- Users with demand
- Financers with credit outlays

WHAT DEPLOYMENT DID TTR III BRING?

- Electric Trucks
- ZET Loaders & Vehicles
- Electric Buses
- Intercity & Intracity Electric SUV Fleets

MEDIA & NEWS

HT Auto
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DELHI TO JAIPUR ON ELECTRIC HIGHWAY? TRIAL RUN BEGINS

Post successful tech trail run, the Delhi-Jaipur highway will be ready for EVs and be thrown open to public by March 2023.

ThePrint

TECH TRIAL RUN FOR E-VEHICLES STARTS ON DELHI-JAIPUR EXPRESSWAY

The one-month tech trial run which started from India Gate in the national capital was flagged off by Ashwini Kumar Choubey, Minister of Environment, Forest and Climate Change, Government of India.

पत्रिका

Electric Highway: दिल्ली-जयपुर के बीच इलेक्ट्रिक हाईवे के ट्रायल रन की हुई शुरुआत, जानिए क्या है खास

mint

DELHI-JAIPUR EXPRESSWAY: TECH TRIAL RUN FOR E-VEHICLES

The objective of this trial run is to understand the economic feasibility of the EV infrastructure along the 270 km Delhi-Jaipur highway.

10 Sep 2022, 05:44 AM

आज तक

दिल्ली-जयपुर हाईवे पर सितंबर से शुरू होगा इलेक्ट्रिक वाहन हाईवे पर दूसरे फेस का ट्रायल

28 जून 2022, 7:09 AM

TIMES DRIVE

e-highway corridors in India: EV charging stations on Delhi-Jaipur and other highways soon

TIMES NOW

The first highway corridors in India for electric vehicles are expected to be set up along the Delhi-Jaipur and Delhi-Agra highways by March 2020.

mint

India's EV incentive plan finds no takers–government weighs fix

MHEV NEWS LIVE RECENTLY

Upcoming 5500 KM E-Highway in India

MEDIA & NEWS

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NHEV NEWS RECENTLY

India's 1st ever miniature EV charging station for highway unveiled: NHEV

28 Sept 2022 , Delhi: Union minister for road transport and highways Nitin Gadkari has unveiled India's first-ever miniature NHEV (National Highways for EV) charging station, which will compete with the petrol pumps. A statement by the ministry claims that this model has been conceptualised as a comprehensive wayside amenities plaza that can reimagine and replace the traditional petrol refuelling stations and wayside amenities on the highways.

As the MoRTH has pledged to upgrade 5,000 km of national highways to e-highways through its pilot project, NHEV, this EV charging station could be crucial in amplifying the EV drive in the country.

A pilot project is currently conducting its concluding phase of the technical and commercial trial with busses and long-range electric SUVs on the Delhi - Jaipur stretch from 9th September 2022. This would add a 278 km stretch in the previously conducted 210 km trial run between Delhi-Agra in 2021 to accomplish technical trials of a total of 500 km across four states UP, Delhi, Haryana and Rajasthan in its pilot phase.

The miniature EV charging station comes as a carved dome like structure with a host of amenities inside.

The miniature EV charging station comes as a carved dome-like structure with its inside resembling a solar-powered air-conditioned space station. It has a charging station with an in-built food court lounge, ayurvedic wellness spa, eco-friendly bio-toilets, ATM & bank outlets, conference arena, child & mother's room, two-wheeler EV showroom and Road Side Assistance (RSA) facility equipped with a battery swapping units for local e-mobility.

Speaking about this project, Nitin Gadkari said that he has been talking about electric vehicles for the last three to four years. He also said that electricity is the fuel of the future. "Now there are waiting lists for electric cars and scooters and I can say that electric is the fuel of the future. Currently electric double decker AC bus cost is coming Rs. 60 per km, non AC Rs. 39 per kilometre and for normal electric AC bus Rs. 41 per km and diesel bus is costing Rs. 115 per km. If you can bring business class comfort in an electric bus with trolley on economical ticket cost to passengers, it will make public transportation more competent for users," he added.

THE HINDU

NHEV NEWS RECENTLY

Confident of achieving e-highway target by 2027, says NHEV official

mint

NHEV NEWS RECENTLY

New model likely for e-highway bids

An electric highway refers to a highway with adequate charging infrastructure at regular intervals, with dedicated public electric vehicles plying on the same route

THE ECONOMIC TIMES

India's largest EV charging station opened at Delhi-Jaipur National Highway in Gurugram

"This station is now open with 96 chargers for technical inspection for various 'Certification Compliance' and 'Safety Standards' laid two week ago by Power Ministry, Govt of India and which also opened the doors for offering government land to government or public agencies and private entities for setting up charging stations on a revenue-sharing basis," the company said in a statement.

ANI Last Updated: Jan 28, 2022, 02:02 PM IST

India's largest electric vehicle (EV) charging station with a capacity of 100 charging points for 4 wheelers, was opened on Friday at Delhi-Jaipur National Highway in Gurugram.

Previously, India's largest EV charging station was situated in Navi Mumbai with 16 AC & 4 DC charging ports for EVs.

The new EV charging station has been developed by tech-piloting company Alektrify Private Limited.

"This station is now open with 96 chargers for technical inspection for various 'Certification Compliance' and 'Safety Standards' laid two week ago by Power Ministry, Govt of India and which also opened the doors for offering government land to government or public agencies and private entities for setting up charging stations on a revenue-sharing basis," the company said in a statement.

"This EV charging station will not only boost electric vehicles industry in the region, but will also act as a benchmark for large EV charging stations across the nation in future," it said.

During the inauguration programme, the representatives from the government agencies were given a guided tour of the facility and provided with information regarding various government standard compliances and industry best practices followed in the establishment and operations of the station.

During the ceremony Abhijeet Sinha, National Programme Director, Ease of Doing Business programme and Project Director of National Highway for Electric Vehicle in additional charge said, "India is on the verge of making investment in E-mobility charging infra setup highly competitive compared to fuel stations in terms of ease in licensing, commissioning, electrification, certification and to draw revenue equivalence with existing petrol pumps."

"Electric vehicle charging station of this size and magnitude is rare and will be instrumental for the industry to experience actual Ease of Doing Business in smooth 'Certification Compliance' and 'Safety Standards'. Electric vehicles are the future and this station is our prototyped preparation for that future," he said. (ANI)

MEDIA & NEWS

THE HINDU

NHEV NEWS RECENTLY

Tech Trial Run III: Electric vehicles flagged off from Chennai to Trichy

10 Sept 2024, Chennai: As part of Tech Trial Run III, the National Highways for Electric Vehicles (NHEV) flagged off electric cars, buses, and freight vehicles from Chennai to Trichy, on the occasion of World EV Day. This is done in a bid to understand the cost of logistics, reduce it, and also upgrade the five highways in the State into e-highways.

These trials will give a competitive analysis of diesel, liquefied natural gas (LNG) and electric (EV) vehicles, the respective fuel consumption, and cost of logistics. This will be helpful for companies that want to lease or buy them, Abhijeet Sinha, Program Director, NHEV, said.

The trial run will have 200 buses and 200 trucks that will cover 1,360 km, and the focus will be on five key routes— Chennai to Trichy, Trichy to Madurai, Coimbatore to Ulundurpet, Krishnagiri to Madurai, and Madurai to Kanyakumari. The results of the trials will be out in a month.

On the charging infrastructure along the highways, he said, "We have installed temporary charging points for the trials. The results of the trials will tell us about the number of charging points required on the highway."

NEWS18

NHEV NEWS RECENTLY

Tamil Nadu To Test Electric Highways, NHEV Begins EV Trial Run From Chennai To Trichy

10 Sept 2024, Chennai: National Highways for Electric Vehicles (NHEV) has launched its 2nd Tech Trial Run of electric vehicles in Tamil Nadu, aiming to upgrade five major highways into e-highways.

The trial will cover a 333 km route from Chennai to Trichy, featuring electric, hydrogen, and zero-emission freight vehicles for the first time. Previous trials focused on electric SUVs and buses.

The trial was flagged off at the Chennai Trade Centre by Dr. P. Alarmelmangai, IAS, along with Tamil Nadu government officials and industry partners. This initiative seeks to evaluate the potential of Zero-Emission Trucks (ZET) and other eco-friendly vehicles on Tamil Nadu's highways.

The trial will help stakeholders assess the cost-effectiveness of electric versus diesel and hydrogen vehicles, the total ownership cost for electric buses or trucks, and the investment needed for e-highway infrastructure upgrades. It aligns with India's efforts to promote zero-emission transportation for a greener future.

This technical trial will assess the deployment of zero-emission trucks (ZETs), hydrogen, and electric freight vehicles on this key route.

Abhijeet Sinha, NHEV Program Director, shared that the trial will focus on freight and logistics, aiming to integrate electric, hydrogen, and ZET vehicles on the 5500 km e-highway network. This trial will help gather real-time data to support the deployment of electric trucks, which are not yet in business use.

The trial covers five key routes, including Chennai to Trichy and Madurai to Kanyakumari, and will help determine optimal charging station locations and costs. The project also aims to reduce India's logistics costs from 14% to 9% by decarbonizing the trucking industry.

Tamil Nadu, a major hub for the logistics and automotive sectors, was chosen for its strategic importance in India's economy. NHEV's previous trials in Delhi, Jaipur, and Agra have already helped stakeholders plan for electric mobility, and Tamil Nadu's trial is expected to provide valuable insights for the future of e-highways.

THE NEW INDIAN EXPRESS

NHEV NEWS RECENTLY

'Tech Trial Run' to upgrade five TN highways into e-highways commences

10 Sept 2024, Chennai: National Highways for Electric Vehicles (NHEV) under its Ease of Doing Business (EoDB) programme has started the third "Tech Trial Run" of electric vehicles for upgrading five of Tamil Nadu's highways into e-highways.

The trial focuses on five key routes — Chennai to Trichy, Trichy to Madurai, Coimbatore to Ulundurpet, Krishnagiri to Madurai, and Madurai to Kanyakumari. The initial focus will be on a 332 km stretch from Chennai to Trichy with electric, hydrogen, and zero-emission freight vehicles for the first time, in addition to electric SUVs and buses tested in previous trials.

The flag-off was held on Monday at the Chennai Trade Centre to mark World Electric Vehicle Day, in the presence of Dr. P. Alarmelmangai, Executive Director, Guidance Tamil Nadu, and officials from Startup TN.

The third tech trial run of electric vehicles from Chennai to Trichy was flagged off at the Chennai Trade Centre on Monday

Key factors under assessment during the trial included cost efficiency, the total cost of ownership for a fleet of electric buses or trucks, the breakeven period for investment recovery, and the costs associated with upgrading e-highway infrastructure.

Data from the technical trial will be used to determine the optimal locations for charging stations, their required frequency, associated costs, and the overall investment needed to upgrade these highways into e-highways.

The focus will be on decarbonizing the trucking industry and transitioning to zero-emission trucking, said Abhijeet Sinha, Program Director at NHEV. Despite their lower operating costs compared to diesel, hydrogen and electric trucks are not yet available for business use. According to its website, NHEV is a pilot Program adopted by the Government of India.

TIMESDRIVE

NHEV NEWS RECENTLY

World EV Day 2024: NHEV Tests Hydrogen, Electric Trucks On Chennai-Trichy E-Highway

In a significant step towards green mobility, the National Highways for Electric Vehicles (NHEV) has initiated its third technical trial, focusing on testing hydrogen and electric freight vehicles. This 332 km route between Chennai and Trichy is part of a larger plan to develop electric highways and reduce India's logistics costs.

10 Sept 2024, Chennai: On World EV Day, September 9, NHEV launched its third technical trial, spanning the 332 km Chennai-Trichy stretch. This marks the first time that hydrogen and zero-emission freight trucks are included, alongside the electric buses and SUVs that were put to Trial earlier. The trial will assess how these vehicles can operate on a large scale across India's highways, gathering vital data on their technical and commercial viability.

The trial comes at a time when India is making strides towards reducing logistics costs from 14% to 9%, with trucking accounting for a significant portion of these expenses. The focus of this initiative is to decarbonize the trucking sector, which is vital given Tamil Nadu's role as a major industrial and logistics hub in southern India. As an automobile manufacturing center, the state plays a crucial part in India's broader logistics and freight transport network.

Key objectives of the trial include evaluating the comparative costs of diesel, electric, and hydrogen-powered vehicles, fleet ownership costs, and the financial breakeven points for operating zero-emission trucks. Insights from the trial will guide the establishment of the necessary infrastructure, such as charging stations, and identify the investments required to upgrade roads to support electric vehicles.

The trial, conducted under the "Ease of Doing Business" program, is a continuation of earlier trials in Delhi, Jaipur, and Agra. The focus now shifts to freight vehicles as India moves closer to meeting its climate goals, ensuring economic growth while reducing carbon emissions in its transport sector. The outcome of the trial could pave the way for more widespread adoption of hydrogen and electric trucks across the nation's logistics industry.

BW AUTO WORLD

NHEV NEWS RECENTLY

NHEV Conducts EV Tech Trial Run 3 On Chennai–Trichy Highway

10 Sept 2024, Chennai: National Highways for Electric Vehicles (NHEV) under its Ease of Doing Business (EoDB) program started the 3rd Tech Trial Run of Electric Vehicles for upgrading five of Tamil Nadu's highways into e-highways. The trial covers a 332 km stretch from Chennai to Trichy including electric, hydrogen, and zero-emission freight vehicles for the first time, in addition to electric SUVs and buses tested in previous trials.

The trial covers a 332 km stretch from Chennai to Trichy including electric, hydrogen, and zero-emission freight vehicles for the first time, in addition to electric SUVs and buses tested in previous trials

The technical trial aims to evaluate the deployment of Zero-Emission Trucks (ZET), hydrogen, and electric freight vehicles along a 332 km route from Chennai to Trichy. This initiative seeks to provide stakeholders—including users, financiers, and manufacturers—with critical insights to facilitate informed decisions on intermediate vehicle deployment.

Key factors under assessment include the cost efficiency of electric versus diesel and hydrogen vehicles, the total cost of ownership for a fleet of electric buses or trucks, the breakeven period for investment recovery, and the costs associated with upgrading e-highway infrastructure. The trial is part of a broader effort to accelerate the transition to zero-emission transportation in India, aligning with environmental and economic goals.

Despite their lower operating costs compared to diesel, hydrogen and electric trucks are not yet available for business use. This trial seeks to gather real-time data to support their initial pilot deployment, similar to the earlier e-mobility pilot project under the Ease of Doing Business program for electric buses and SUVs, Sinha further added.

The Tech Trial 3 focuses on five key routes: Chennai to Trichy, Trichy to Madurai, Coimbatore to Ulundurpet, Krishnagiri to Madurai, and Madurai to Kanyakumari. Data from a no-load trial between Chennai and another location will be used to determine the optimal locations for charging stations, their required frequency, associated costs, and the overall investment needed to upgrade these highways into e-highways.

The project aims to reduce logistics costs in India from 14 to 9 per cent. Trucking significantly contributes to these costs, and Tamil Nadu's progress in cutting logistics expenses could serve as a model for other states. The focus will be on decarbonizing the trucking industry and transitioning to zero-emission trucking, Sinha added.

Tamil Nadu has been chosen after a very extensive exercise to understand what it brings to the table. It has a positive in the Indian economy that is poised to become a one-trillion-dollar economy. Second, it has a place in the Indian logistics sector. It serves as a hub for automobiles, logistics, and trucking to the southern part of India. It sends and receives huge amounts of goods. It also has a large number of industries, conglomerates' purlieus, steel and cement manufacturers, and many other manufacturing units in this part of India.

National Highways for Electric Vehicles is a pilot for electric mobility and adoption towards net zero. This brings a third trial after NHEV has conducted trials in Delhi, Jaipur, and Agra. Both of these trials have highly benefited the stakeholders in planning for users, buses, four-wheelers, SUVs, their operations, and fleet ownership.

AutoEVtimes

NHEV NEWS RECENTLY

Tamil Nadu to evaluate electric highways, NHEV takes up EV test run from Chennai to Trichy

10 Sept 2024, Chennai: National Highways for Electric Vehicles (NHEV) has started its 2nd Tech Trial Run of electric vehicles in Tamil Nadu, goaling to enhance five major highways into e-highways.

For the first time, 332 km of the Chennai to Trichy route will be traversed by electric, hydrogen, and zero-emission freight vehicles as part of the trial. Earlier trials concentrated on electric buses and SUVs.

Dr. P. Alarmelmangai, IAS, along with representatives from the Tamil Nadu government and business partners, officially opened the trial at the Chennai Trade Centre. The goal of this project is to assess the possibilities of eco-friendly cars, such as Zero-Emission Trucks (ZET), on Tamil Nadu's highways.

The trial will assist stakeholders in determining the total cost of ownership for electric buses or trucks, the investment required for e-highway infrastructure modifications, and the cost-effectiveness of electric vehicles compared to diesel and hydrogen vehicles. It supports India's initiatives to advance emission-free mobility for a more environmentally friendly future.

The trial will concentrate on freight and logistics with the goal of integrating electric, hydrogen, and ZET vehicles on the 5500 km network of e-highways, according to Abhijeet Sinha, Director of the NHEV Program. In order to facilitate the deployment of electric trucks—which are not yet in commercial use—this pilot will assist collect real-time data.

The study would assist in determining the best placements and prices for charging stations along five important routes, such as Chennai to Trichy and Madurai to Kanyakumari. The initiative also seeks to decarbonize the trucking sector in order to cut India's logistics expenses from 14% to 9%.

Tamil Nadu was selected because of its strategic significance in the Indian economy and its status as a significant hub for the logistics and automotive sectors. Previous NHEV experiments in Delhi, Jaipur, and Agra have already aided stakeholders in making plans for electric mobility, and the trial in Tamil Nadu is anticipated to yield important information on e-highways in the future.

Upcoming 5500 KM E-Highway in India

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E-HIGHWAY

GERMANY INDIA

TRIAL 1

10 **KM** Length, Location: A5 Federal Autobahn, Speed:56 mph,
Frankfurt Airport to Reinfeld junction / Lübeck interchange
Funding: **132 Cr** for motorway installation, Trial Run Cost: 138 Cr

2020 **Electric Vehicle participated**
Compatiblity: 5 Pantograph Scania Trucks
Trucks from Schanz, Meyer Logistics, Contargo & Merck

225 **KM** Length, Speed: 100kmph, Yamuna Expressway
India Gate via Greater Noida Yamuna Exp to Agra
Funding: Rs. **2 Cr** from NHEV Partners, Trial Run: 1 Cr

2021 **Electric Vehicle participated**
Compatible : NueGo Electric Bus (Greencell)
Cars - Sedan Fleet Vehicle from Blusmart Mobility

TRIAL 2

12 **KM** Length, Speed: 56 mph, Location: A5 federal Autobahn
From Zeppelinheim/Cargo City, Frankfurt to Darmstadt
Trial Run Cost: 90 Cr INR (EUR 2 Million per Kilometer)

2020 **Electric Vehicle participated**
Compatibility : 5 Scania R 450 hybrid trucks
OEM: Schanz, Meyer Logistics, Contargo, Merck & Knauf

272 **KM** Length,Speed: 100kmph, Location: Delhi- Jaipur(NH 48)
From India Gate to Albert Hall Museum, Jaipur, Rajasthan
Funding: Rs. 4 Cr INR from EoDB, Trial Run Cost: 7 Cr INR

2022 **Electric Vehicle participated**
Compatible : NueGo Electric Bus (Greencell)
Cars - SUV from Blusmart Mobility

TRIAL 3

3.4 **KM** Length, Location: B 462 Federal Highway,
Funding: 253 Cr INR, Trial Cost: 75 Cr INR, **June 2021**
5 Fully Electric, Hybrid and Hydrogen-Fueled Trucks participated

3 **rd** Generation Charging Station Miniature Model
Revealed in **Sept 2022** by Nitin Gadkari,
Union Minister Road Transport & Highway, Govt. of India

4000 km into E-Highways by 2030 ..... **UPGRADATION** ..... **5,500 km** into E-Highways by 2030

22 Cr INR / Km ..... **COST** ..... **1 Cr INR / Km**

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On Annuity Hybrid E-Mobility (AHEM) PPP Model

CHALLENGES

- **Overhead lines** may be adversely affected by **strong winds** causing wires to swing resulting in short circuit
- **Storms** can knock the power out with **lightning strikes** on the wires, stopping trucks following a **power surge**
- During **cold or frosty weather**, ice may coat overhead lines, resulting in **electrical arcing** and power surges

- Commercial Prototyping on **23 proposed E- Highway** Routes
- **E-Vehicle Manufacturing** & Deployment on **BAAS Model**
- Uninterrupted Power supply & speedy connection from Grid
- Federal cooperation on **Annuity Hybrid E-Mobility** (AHEM)
- State and Central Government collaboration to upgrade their **National Highways into E-Highways** on AHEM Model

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REFORM PERFORM TRANSFORM

National Highways for Electric Vehicles (NHEV) is a pilot program adopted by Govt of India; initially supported by the Ministry of Commerce & Industry whereas Tech-Trials were non-commercially supported by the DST Ministry of Science and Technology to upgrade highways into E-Highways. It conducted Tech-Trials on 2 pilot corridors, namely Delhi-Agra (Yamuna Expressway - 2020) and Delhi - Jaipur (NH48 - 2022) out of 12 National Corridors proposed by the Ministry of Power for electrification in its Guidelines and standards dated 14.12.2018 to be converted into E-highway. NHEV is built and funded on a Hybrid PPP Model called Annuity Hybrid E-Mobility (AHEM); currently in expansion mode of 5500 km e-highways on Bharatmala & Sagarmala routes from Delhi to Kanyakumari via Mumbai and Kolkata corridors.

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