

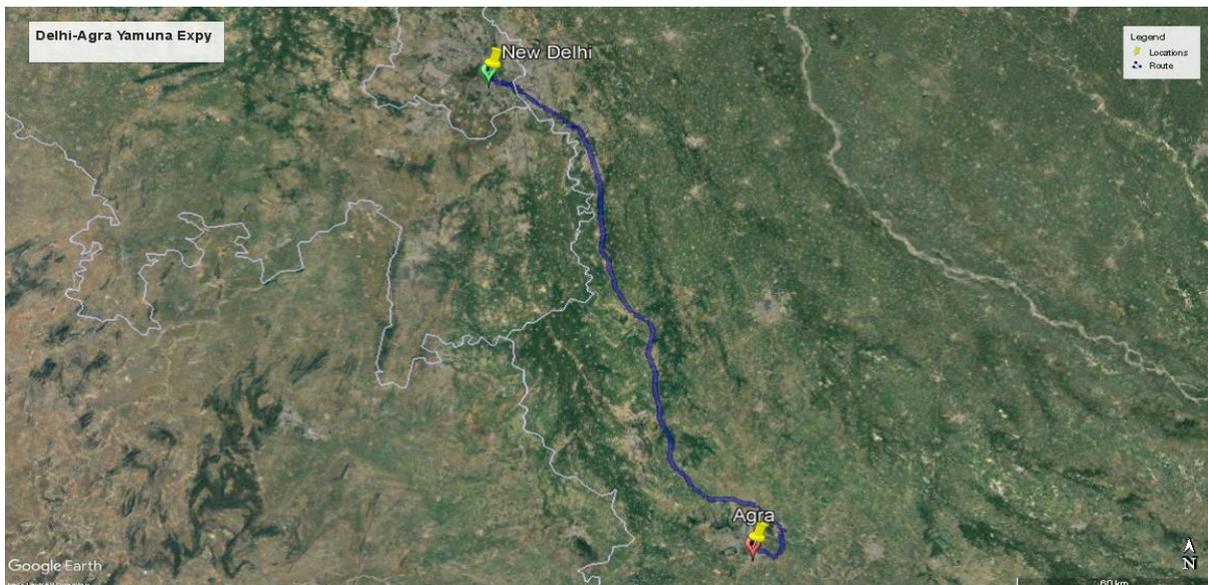
Prospectus Document

Yamuna Expressway (Delhi-Agra)

Stretched along the Yamuna River, the Yamuna expressway connects cities of Noida (NCR) and Agra via Mathura and Jewar. It starts from Pari chowk in Noida and culminates at Kuberpur in Agra. The six-lane expressway was inaugurated in 2012 to reduce congestion on NH-19 (Delhi-Mathura-Agra) and provide uninterrupted freight and passenger traffic movement for the towns and commercial centres on the eastern side of the Yamuna Expressway. It also provides better connectivity to Lucknow, the capital of Uttar Pradesh, as it further extends to Agra-Lucknow expressway starting from Agra. The expressway was constructed to serve the infrastructure development in Greater Noida region. It significantly reduces the time travel between Agra and Delhi by at least two hours.

The total cost of construction of the highway was INR 13,300 crore. There are very few traffic junctions on the highway, roughly 50 flyovers, and only 60 places where pedestrians can cross making the highway strictly vehicle prone. For safety, CCTV cameras and SOS booths have been installed all along the route. For local commuters, a total of 13 service roads totaling around 168 km were constructed along the expressway.

There are several amenities along the route like rest areas with parking facilities, restaurants, gas stations, auto repair shops, pay phones, public restrooms, and drinking water kiosks.



Yamuna Expressway	
Length	165 Kms
Districts	Gautam Budh Nagar, Bulandshahar , Aligarh, Hathras and Mathura
Toll plazas	Jewar, Mathura and Agra
Total Cost of Construction	₹13,300 crore
No. of Villages	1,182
Managing Authority	Yamuna Expressway Industrial Development Authority (YEIDA)

Corridor Analysis

Though, Yamuna Expressway is among the several routes considered under electrification of highway programme and a trial run for Electric Bus was undertaken by NHEV in November 2022, it was observed that there are still major developmental blocks that need to be addressed before electric commercial vehicles can run on this route. Some of the major findings were:

- Majority of the charging points were either installed near the entry point (Greater Noida) or at the exit (Agra). The facilities for charging along the route were not satisfactory
- A few charging stations which were along the route were installed a few years back and had less rated power capacity
- The charging stations were not maintained and were either dysfunctional or had other technical issues
- Locating the charging stations was difficult as they were not along the route but on service roads
- From commercial vehicle perspective, the existing charging infrastructure lacked both the capacity and volume
- The cities along the expressway are not in proximity to the route and their exit routes stretched several kilometres; not a viable alternative for freight vehicles to use this expressway when commuting between say Delhi and Mathura
- The toll charges are also on the higher side on this route which can further influence the decision of a commercial fleet owner. The alternate option of NH-19 which connects Delhi with Agra and well connected to cities along the route seems a better choice

Details of the charging stations surveyed along Delhi-Jaipur Highway with its specifications:

1. EESL Charging Station

Service Provider	Energy Efficiency Services
Manufacturer	Exicom
Number of Charging Point	01
Location	Sector 125, Noida
Model	NA
Power Rating	142 kW
Connector	Double
Input Voltage	450 V AC
Output Voltage	200-750 V DC
Rated Frequency	50/60 Hz
Production Date	July 2021
Status	Operational

2. TATA Charging Station

Service Provider	Tata Power
Manufacturer	ABB
Number of Charging Point	01
Location	Sector Swarn Nagri, Greater Noida
Model	NA
Power Rating	30 kW
Connector	Single
Input Voltage	240 V AC
Output Voltage	240 V DC
Rated Frequency	50/60 Hz
Production Date	March 2022
Status	Operational but Poorly maintained

3. REIL Charging Station



Service Provider: Tata Power
Manufacturer: ABB
Number of Charging Points: 03
Location: Vrindavan exit, Yamuna Expressway
Model: NA
Power Rating: 30 kW, 7.5 kWx2
Connector: Single
Input Voltage: 415V AC
Output Voltage: 200-750V DC
Rated Frequency: 50 Hz
Production Date: October 2021
Status: Operational

SWOT Analysis of Yamuna Expressway

<p style="text-align: center;">STRENGTH</p> <ul style="list-style-type: none"> • Connects two major industrial and tourist hubs • Better road infrastructure • Preferred route for vehicles heading from Delhi to Agra • Government support for developing the expressway into an e-highway • Connected to other important freight corridor (Agra-Lucknow) • Uncongested traffic movement 	<p style="text-align: center;">WEAKNESS</p> <ul style="list-style-type: none"> • Expressway specifically designed for passenger vehicle movement • Underdeveloped charging infrastructure along the expressway • Locating charging stations is a challenge • Long exit routes to cities along the expressway • Demand limited to vehicles plying on the expressway • Unregulated tariff structure
<p style="text-align: center;">OPPORTUNITY</p> <ul style="list-style-type: none"> • Great scope for charging infrastructure development • Readily available infrastructure support • Possibility of shifting freight movement from alternate route • Additional support from tourism • Economical for transportation of agriculture products 	<p style="text-align: center;">THREAT</p> <ul style="list-style-type: none"> • High toll charges can limit the development of freight movement • Remote location a challenge for development of service network • Connectivity to grid can be a major issue in some land pockets • Preference of service provider to install charging points within city limits due to logistical constraints

Strength

- The expressway connects two major industrial hubs and tourist attractions – Delhi & Agra. The traffic movement along the route will grow and subsequently the movement of electric vehicles
- There are also several planned projects alongside the highway like Jewar international airport, the UP Film City project, the Toy Park, the Medical Device Park and the Leather Park which will give a further boost to economic activities and can play a crucial part in installation of charging infrastructure
- Existing infrastructure support like rest areas with parking and shelters, hotels and restaurants, gas stations, auto repair shops, pay phones, public restrooms, and drinking water kiosks can aid the charging infrastructure development
- The expressway is supported through policy and regulatory framework for transforming into an e-highway
- The expressway further extends to Agra-Lucknow expressway which can attract long term freight movement given the charging infrastructure is well developed

Weaknesss

- The charging infrastructure along the expressway is underdeveloped with very few charging points. The existing ones were either defunct or were installed for two-wheelers
- The expressway was specifically designed to decongest the NH-19 and reduce travel time with focus on passenger vehicles. Incorporating freight vehicles into the fold has many challenges
- Locating charging point along the expressway is another weakness as the few that are installed are along the service roads/ exit routes
- The connectivity to cities along the route is good but quite far from the expressway which demotivates commercial vehicle owners to operate on this route
- The demand for charging station on Yamuna-Expressway will remain limited to vehicles running on the road which can affect the decision of charging service provider

Opportunity

- Land availability is not a concern and plenty of partnership opportunities for charging service providers already exist
- As stated earlier, existing infrastructure support in the form of public amenities can be a booster for charging infrastructure development
- Given that charging infrastructure is developed, the long distance freight movement could see a gradual shift to the expressway as it is well connected to other major cities of Uttar Pradesh and does not cross through inner city regions
- With the area being a major tourist attraction with famous heritages like Taj Mahal and Fatehpur Sikri , electrification of Yamuna expressway can aid in faster and smoother related supply chain operations
- As the area is one of the biggest producers of Sugarcane in India, promoting electric medium and heavy duty vehicles for agro-transport can go a long way and serve for the economic benefits of farmers and the agriculture value chain

Threat

- Since the expressway is well built and has few additional features as well, the road tax is on the higher side. This can demotivate commercial fleet operators for putting vehicles on the expressway
- Given the remoteness of the expressway, development of service network is a big challenge. Service providers may also shy away from investing in this region due to revenue loss concerns owing to higher logistical cost

- Some pockets of areas along the expressway have very poor or no grid connectivity. Additional efforts would be required for a uniform development of charging infrastructure leading to increased cost

Assessment

The success of Yamuna expressway can be attributed to its robust infrastructure and presence of modern facilities. But in terms of providing support for electric vehicles, many other national and state highways have done far better.

The upside is that of infrastructure support and land availability not being a concern which is essential for transitioning into an e-highway. There are several infrastructure projects which are in planning state in this region including Noida International airport in Jewar which will escalate transportation across all categories. A well-developed charging infrastructure on Yamuna expressway can promote electric vehicles not only in passenger segment but in goods movement as well. The Uttar Pradesh government issued state EV policy in October 2022 and can further assist the development of charging infrastructure on Yamuna expressway. At the present stage, it can be assumed that the expressway is not yet ready for electric vehicles especially in commercial vehicle segment.