

Electric Buses in India



INDIA'S EXPERIENCE WITH ELECTRIC VEHICLES



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Bus Technology Electric vehicles

- 2 categories based on the type of technology. • Hybrid Electric Vehicles (HEV) • Battery Electric Vehicles (BEV)
- Policies supported HEV and BEV. However,
- India prefers BEV.

Bus Type Bus Length

- Predominant bus lengths in India are:
- 9m (Midi) buses and • 12m (Standard) Buses.
- Many cities preferred 9m buses due to less CAPEX Cost and narrow streets. Few cities went for 12m buses as well.

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- **Battery Type**
- Most commonly used battery for EVs are • Lithium Ion Phosphate (LFP) • Nickel Manganese Cobalt (NMC) • Lithium Titanium Oxide (LTO) LFP Batteries with a capacity of 150- 180Kwh are prevalent in India.
- However, in the case of Buses, it is difficult to achieve the daily operational kilometers with the available battery without the opportunity to charge during the day. To achieve operating efficiency without compromising on Service Levels,

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- Delhi Government targets to add 8,000 Electrical Buses to Public Transport through DTC (Delhi Transport Corporation). Recently Delhi added 97 E-Buses, which were delivered by TATA Motors. Delhi government targets 80% Electrification of the DTC Fleet by 2025.
- In Mumbai, The Brihanmumbai Electric Supply and Transport (BEST) the **first** air-conditioned double-decker bus in the nation.

FASTER ADOPTION AND MANUFACTURING OF VEHICLES

- **FAME – I**
- Under the National Electric Mobility Mission, the Faster Adoption and Manufacturing of Electric Vehicles (FAME) program was introduced in April 2015, to promote the purchase of electric and hybrid vehicles by offering financial assistance. Up till 2019, its first phase lasted four years.

FASTER ADOPTION AND MANUFACTURING OF VEHICLES

- **FAME II:**
- The second phase (FAME II) is a 3-year subsidy program. Its goal is to assist in electrifying shared and public transportation: around 7,000 electric and hybrid buses, 500,000 lakh electric three-wheelers, 55,000 electric four-wheeler passenger cars, and 1 million electric two-wheelers. Additionally, it funds the infrastructure for the 427 charging stations that were installed as part of the Phase-I of the Scheme.

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Details of E-Buses in SRTUs				Details of E-Buses in SRTUs			
S.No	Name of the Organization	No of Buses		S.No	Name of the Organization	No of Buses	
		FAME-I (CAPEX Model)	FAME-II (OPEX Model)			FAME-I (CAPEX Model)	FAME-II (OPEX Model)
1	Assam STC	15	-	19	Lucknow CSL		140
2	J&K SRTC	40	-	20	Meerut CTSL		30
3	West Bengal TCL	59	-	21	Varanasi		50
4	BEST - Mumbai	06	386	22	Ghaziabad		30
5	Telangana SRTC	40	-	23	Moradabad		15
6	HRTC	75	-		Prayagraj		40
7	NMMT	30	150	25	Aligarh		15
8	Kadamba TCL	-	50	26	Sajjanpur		10
9	Bihar SRTC	-	25	27	Bareilly		15
10	Uttarakhand TC	-	5	28	Gorakhpur		15
11	PMPML	-	406	29	Jhansi		15
12	Agra –Mathura TSL		115	30	BMTC		90
13	GSRTC		22	31	SBSTC		5
14	CRUT		10	32	A & N		24
15	CTU		80				
16	DIMTS		400				
17	DTC		150				
18	Kanpur CTSL		100				
					TOTAL	265	2393
					Grand Total	2658	

GRAND CHALLENGE

- **Convergence Energy Services Ltd (CESL)’s “Grand Challenge” Plan:**
- CESL a PSU(Public Sector Undertaking) under the Union ministry of power, recently announced a tender of Rs 5,500 crore to introduce 5,580 e-buses (5,450 single-decker and 130 double-decker ones) across the nation.
- Under the scheme it is anticipated to provide Bengaluru with 1,500 E-Buses, Kolkata will get the maximum number of buses 2,000, Delhi with 1,500 E-Buses, Hyderabad with 300 E-Buses, and Surat with 150 E-Buses. Only these five cities made the final list out of 29 that were eligible for the Grand Challenge and had a population of more than 4 million

GRAND CHALLENGE

- This Year 2022, CESL-Convergence Energy Services Ltd. (Subsidiary of EESL- Energy Efficiency Services Ltd.) awarded a contract for 3,450 electric buses on behalf of five state governments. CESL is planning to launch a tender of \$10-billion (Rs.80,000 Cr.) for 50,000 electric buses which is approved by NITI Ayog to decrease the pollution rate in India and also encourage the E-Bus Manufacturers.

CESL Grand Challenge - I

Total demand received from cities

City	12m Low Floor AC	12m Low Floor Non-AC	12m Std. Floor AC	12m Std Floor Non-AC	9m Std. Floor AC	9.5m Double Decker bus	Total
Delhi	1500	-	-	-	-	100	1600
Kolkata	600	-	600	-	800	0	2000
Bangalore	-	1500	-	-	-	5	1505
Hyderabad	-	-	-	300	-	5	305
Surat	-	-	-	-	150	25	175
Total	2100	1500	600	300	950	135	5585

CESL Grand Challenge - II

The lot wise and Authority wise demand received

Authority/STU	City	Lot 1	Lot 2	Lot 3	Lot 4	Lot 5	Lot 6	Lot 7	
		12m Low Floor AC	12m Low Floor Non-AC	12m Std. Floor AC	9m Low Floor AC	9m Std. Floor AC	7m Std. Floor AC	(Type - III) 12m Std. Floor Non- AC	TOTAL
Department of Transport, Delhi	Delhi	1900	-	-	1040	-	-	-	2940
Delhi Transport Corporation	Delhi	-	-	-	1040	-	-	-	1040
Telangana State Road Transport Corporation	Telangana	-	500	-	-	-	-	500	1000
Transport Department, Haryana	Haryana	-	-	375	-	175	-	-	550
Surat Municipal Corporation	Surat	-	-	150	-	-	-	-	150
Department of Transport, Arunachal Pradesh	Arunachal Pradesh	-	-	-	-	6	4	-	10
TOTAL		1900	500	525	2080	181	4	500	5690

Conversion of HSD buses to Electric buses

- Status of the retro fitment of buses.
- Government of india's initiatives

THANK YOU

- Faster Adoption and Manufacturing of Hybrid & Electric Vehicles (FAME) in India is the Initiative of the Government of India to Reduce the use of Diesel and Petrol Powered Vehicles in the country. The project is an integral part of the Government's National Electric Mobility Mission Plan (NEMMP).
- FAME I : 2015- 2019 Based on Level of Localization Min 15% : 60% of Bus Cost (Max :Rs 85 lakh) Min 60% : 60% of Bus Cost (Max :Rs 1 Cr.) SUBSIDY Business Model Outright Purchase, GCC, NCC Budget :Rs. 895 Cr to support 640 E Buses Utilized : Rs. 529 Cr FUNDS 2W, 3W and 4W; Both Hybrid and Electric variants of all vehicles. Types of Vehicles Supported 419 Buses No. of E-Buses Supported Approx. 4,000 buses till date No. of E-Buses Supported
- FAME II : 2019-2024 Based on Bus Length and Battery Capacity 9 /12 M Bus : Rs 45/55 lakh per Bus SUBSIDY Budget : Rs. 3545 Cr / 6265 E Buses Utilized : Rs. 1500 Cr/3120 E Buses FUNDS Business Model GCC, Utility led variant of GCC BEV for Buses, 2W and 3W; BEV and HEV for 4W

- FAME II, with an outlay of INR 10,000 crores, is aimed to provide upfront subsidies and create EV charging infrastructure. This scheme proposes to support 7,090 e-buses with an incentive of up to INR 50 lakhs each. Bids to procure 5,580 e-buses have recently been sought by CESL under the 'Grand Challenge' as part of FAME II.