

TCO Calculation

Diesel vs e-Bus 12m

ForeSee Advisors Pvt Ltd

Premises -1/3

Parameter	Value	Notes / Source
Analysis start year	2026	
Evaluation horizon 1 (years)	7	
Evaluation horizon 2 (years)	12	
Annual km per bus	72,000	Delhi PM e-Drive, 12m buses assured ~72,000 km/year
Diesel bus assumptions (12m city bus, BS6)		
Diesel bus purchase price (INR)	90,00,000	Approx 90 lakh; adjust to latest OEM/cluster tender price
Diesel fuel efficiency (km/litre)	3.5	Typical 12m diesel bus 3.5–4.5 km/l; conservative 3.5 km/l
Diesel price (INR/litre)	87.65	Delhi retail diesel price Nov 2025
Diesel maintenance cost (INR/km)	12	Workshops & spares; can be calibrated to operator data
Diesel other opex (staff, permits, insurance etc.) (INR/km)	20	Driver+conductor+admin etc.; adjust to your norms
Diesel midlife overhaul as % of capex (at year 7)	0.2	Engine+driveline major aggregation
Diesel residual value (% of capex)	0.05	Optional; not used in base CF but you can add

Premises -2/3

Parameter	Value	Notes / Source
Electric bus assumptions (12m AC city bus)		
Electric bus purchase price incl. battery (INR)	1,50,00,000	Standard 12m non-AC/AC e-bus ~1.5 Cr (320 kWh pack)
Battery capacity (kWh)	250	Common 12m pack size; ~250–300 km/charge
Battery cost per kWh (INR)	12,000	Aligned with FAME-II subsidy level (20k/kWh)
Share of battery in bus price	0.2	Typically 35–45% of vehicle cost
E-bus energy consumption (kWh/km)	1.3	Delhi tenders cap electricity payment at 1.3 kWh/km for 12m AC
Electricity tariff for bus charging (INR/kWh)	5	Delhi EV tariff ~4.5 Rs/kWh ex taxes; ~5 Incl. taxes
E-bus maintenance cost (INR/km)	8	Lower than diesel; can be tuned
E-bus other opex (staff, permits, insurance etc.) (INR/km)	20	Assumed similar to diesel for fair comparison
Battery replacement year	7	Common practice to replace around year 6–7
Battery salvage value at end (% of new pack cost)	0.2	If second life/recycling value is captured
E-bus residual value (% of capex)	0.1	Optional; not used in base CF but you can add

Premises -3/3

Parameter	Value	Notes / Source
Financing assumptions		
Debt share of capex	0.8	
Loan interest rate (per year)	0.1	
Loan tenure (years)	7	
Corporate tax rate	0	Set >0 if you want post-tax CF (not modeled in base)
Commercial assumptions (revenue)		
Revenue per km (INR/km)	95	Use GCC/hire or fare+subsidy; e.g. DTC e-bus cost ~90 Rs/km
Real discount rate for NPV / TCO	0.1	10%; adjust to your hurdle rate
Diesel price escalation (real, %/year)	0.03	Applied to diesel price year-on-year
Electricity tariff escalation (real, %/year)	0.02	Applied to charging tariff year-on-year
IRR Calculation Mode	Equity	Options: Equity / Project

CASH FLOW DIESEL

Year	Annual km	Fuel cost (INR)	Maintenance cost (INR)	Other opex (INR)	Total opex (INR)	Capex (INR)	Midlife overhaul (INR)	Total cost before financing (INR)	Loan draw (INR)	Debt service (INR)	Revenue (INR)	Net CF to equity (INR)	Discount factor	PV of costs (INR)	PV of equity CF (INR)	Cumulative km	Residual value inflow (INR)
0	-	-	-	-	-	90,00,000	-	90,00,000	72,00,000	-	-	(18,00,000)	1	(90,00,000)	(18,00,000)	-	0
1	72,000	18,03,086	8,64,000	14,40,000	41,07,086	-	-	41,07,086	-	-	68,40,000	27,32,914	1	(37,33,714)	24,84,468	72,000	0
2	72,000	18,57,178	8,64,000	14,40,000	41,61,178	-	-	41,61,178	-	-	68,40,000	26,78,822	1	(34,38,990)	22,13,902	1,44,000	0
3	72,000	19,12,894	8,64,000	14,40,000	42,16,894	-	-	42,16,894	-	-	68,40,000	26,23,106	1	(31,68,215)	19,70,779	2,16,000	0
4	72,000	19,70,280	8,64,000	14,40,000	42,74,280	-	-	42,74,280	-	-	68,40,000	25,65,720	1	(29,19,391)	17,52,421	2,88,000	0
5	72,000	20,29,389	8,64,000	14,40,000	43,33,389	-	-	43,33,389	-	-	68,40,000	25,06,611	1	(26,90,694)	15,56,408	3,60,000	0
6	72,000	20,90,271	8,64,000	14,40,000	43,94,271	-	-	43,94,271	-	-	68,40,000	24,45,729	1	(24,80,451)	13,80,551	4,32,000	0
7	72,000	21,52,979	8,64,000	14,40,000	44,56,979	-	18,00,000	62,56,979	-	-	68,40,000	5,83,021	1	(32,10,819)	2,99,182	5,04,000	0
8	72,000	22,17,568	8,64,000	14,40,000	45,21,568	-	-	45,21,568	-	-	68,40,000	23,18,432	0	(21,09,345)	10,81,566	5,76,000	0
9	72,000	22,84,095	8,64,000	14,40,000	45,88,095	-	-	45,88,095	-	-	68,40,000	22,51,905	0	(19,45,800)	9,55,028	6,48,000	0
10	72,000	23,52,618	8,64,000	14,40,000	46,56,618	-	-	46,56,618	-	-	68,40,000	21,83,382	0	(17,95,328)	8,41,788	7,20,000	0
11	72,000	24,23,196	8,64,000	14,40,000	47,27,196	-	-	47,27,196	-	-	68,40,000	21,12,804	0	(16,56,854)	7,40,525	7,92,000	0
12	72,000	24,95,892	8,64,000	14,40,000	47,99,892	-	-	43,49,892	-	-	68,40,000	24,90,108	0	(13,86,010)	7,93,425	8,64,000	450000

CASH FLOW e-BUS

Year	Annual km	Energy cost (INR)	Maintenance cost (INR)	Other opex (INR)	Total opex (INR)	Capex (INR)	Battery replacement (INR)	Total cost before financing (INR)	Loan draw (INR)	Debt service (INR)	Revenue (INR)	Net CF to equity (INR)	Discount factor	PV of costs (INR)	PV of equity CF (INR)	Cumulative km	Battery salvage inflow (INR)	Bus residual value inflow (INR)
0	-	-	-	-	-	1,50,00,000	-	1,50,00,000	1,20,00,000	-	-	(30,00,000)	1	(1,50,00,000)	(30,00,000)	-	0	0
1	72,000	4,68,000	5,76,000	14,40,000	24,84,000	-	-	24,84,000	-	-	68,40,000	43,56,000	1	(22,58,182)	39,60,000	72,000	0	0
2	72,000	4,77,360	5,76,000	14,40,000	24,93,360	-	-	24,93,360	-	-	68,40,000	43,46,640	1	(20,60,628)	35,92,264	1,44,000	0	0
3	72,000	4,86,907	5,76,000	14,40,000	25,02,907	-	-	25,02,907	-	-	68,40,000	43,37,093	1	(18,80,471)	32,58,522	2,16,000	0	0
4	72,000	4,96,645	5,76,000	14,40,000	25,12,645	-	-	25,12,645	-	-	68,40,000	43,27,355	1	(17,16,171)	29,55,641	2,88,000	0	0
5	72,000	5,06,578	5,76,000	14,40,000	25,22,578	-	-	25,22,578	-	-	68,40,000	43,17,422	1	(15,66,323)	26,80,779	3,60,000	0	0
6	72,000	5,16,710	5,76,000	14,40,000	25,32,710	-	-	25,32,710	-	-	68,40,000	43,07,290	1	(14,29,649)	24,31,353	4,32,000	0	0
7	72,000	5,27,044	5,76,000	14,40,000	25,43,044	-	30,00,000	49,43,044	-	-	68,40,000	18,96,956	1	(25,36,563)	9,73,438	5,04,000	600000	0
8	72,000	5,37,585	5,76,000	14,40,000	25,53,585	-	-	25,53,585	-	-	68,40,000	42,86,415	0	(11,91,266)	19,99,644	5,76,000	0	0
9	72,000	5,48,337	5,76,000	14,40,000	25,64,337	-	-	25,64,337	-	-	68,40,000	42,75,663	0	(10,87,529)	18,13,299	6,48,000	0	0
10	72,000	5,59,303	5,76,000	14,40,000	25,75,303	-	-	25,75,303	-	-	68,40,000	42,64,697	0	(9,92,891)	16,44,225	7,20,000	0	0
11	72,000	5,70,489	5,76,000	14,40,000	25,86,489	-	-	25,86,489	-	-	68,40,000	42,53,511	0	(9,06,549)	14,90,830	7,92,000	0	0
12	72,000	5,81,899	5,76,000	14,40,000	25,97,899	-	-	4,97,899	-	-	68,40,000	63,42,101	0	(1,58,646)	20,20,789	8,64,000	600000	1500000

TCO Summary

Metric	Diesel bus (12m)	Electric bus (12m)
Capex (INR)	90,00,000	1,50,00,000
Annual km per bus	72,000	72,000
Fuel / energy cost per km (Year 1)	25.0	6.5
Opex per km incl. energy (Year 1)	57.0	34.5
Revenue per km	95	95
7-year total km	5,04,000	5,04,000
7-year NPV of costs (INR)	(3,06,42,274)	(2,84,47,986)
7-year levelised TCO (discounted, INR/km)	61	56
7-year equity NPV (INR)	98,57,710	1,68,51,999
12-year total km	8,64,000	8,64,000
12-year NPV of costs (INR)	(3,95,35,610)	(3,27,84,867)
12-year levelised TCO (discounted, INR/km)	45.8	37.9
12-year equity NPV (INR)	1,42,70,042	2,58,20,785