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Chapter 1

INTRODUCTION

In many ways refuelling an electric car is even simpler than filling up a gasoline vehicle. There is no odour or mess, no fuel grades to decide between, and you don't even need to find a gas station. All you need is a connection to the same electricity grid that powers your lights, computer, or smartphone.

As long as you have access to electricity, there are only two other things you need to know: how to connect your vehicle, and how fast it will charge.

There are three charging speeds available to EVs on the market today:

Level 1 charging refers to charging through a standard 120V household outlet, the same kind of outlet used to charge your phone or plug in your TV and provides about 5kms per hour of charging.

Level 2 charging requires a dedicated Level 2 charger at your home, workplace, or public charging location and can add 40km for every hour charged. Almost all EVs in North America use same standard connection port, called SAE J1772, for Level 1 and Level 2 charging.

Level 3 charging or DC fast charging, requires a more powerful grid connection than is built into private residences. Most DC fast chargers are found along highways and can charge a vehicle in as little time as 45 minutes. Level 3 charging also requires a different standard of connection ports.

Chapter 2

BUSINESS PLAN

Cycle 1:

(January 2021–June 2023)

Building a roadmap

Over this first 30-month investment cycle, Electrify India invested in ZEV infrastructure, education, and access, thereby supporting increased adoption of ZEV technology.

Cycle 2:

(July 2023–December 2025)

Current investments

The Cycle 2 National ZEV Investment Plan detail Electrify India’s plans to invest between July 2023 and December 2025. These Cycle 2 investments are enabling millions of Indians to discover the benefits of electric driving. They also support the build-out of a nationwide network of convenient, reliable community and highway chargers.

Highlights

Electrify India expects to install (or have under development) approximately 800 public charging stations with about 3,500 chargers by the end of Cycle 2.

Marketing efforts are helping to raise consumer awareness of Zero Emission Vehicles.

Cycle 3:

(January 2025 -July 2026)

Planned investments

The Cycle 3 National ZEV Investment Plan detail Electrify India’s investments between January 2025 and July 2026. The planned investments will expand Electrify India’s network of ultra-fast charging stations in new communities and along additional travel corridors, strengthen education and awareness activities, and initiate Electrify India’s second “Green City” project in the city of Beach and eastern parts of India

Highlights

New metro charging investments in the communities of Bengaluru, Delhi, Mumbai, Hyderabad and many other metropolitan areas across the nation

Expand the nation’s largest open DC fast charging network to highways in all lower-48 states, creating two new cross-country routes and serving 28 new regional highway corridors

31-35 million rupees of investment in transit, medium- and heavy-duty fleet charging in India.

Chapter 3

MARKETING PLAN

- Gasoline being a fossil fuel is not a renewable source of energy and is expected to exhaust in the future. To support sustainable development, it is important to develop and use alternative sources of fuel. This involves use of electric vehicles, which do not use gas and is more economical than conventional vehicles. An electric vehicle converts over 50% of the electrical energy from the grid to power at the wheels, whereas the gas-powered vehicle only manages to convert about 17%–21% of the energy stored in gasoline. The demand for fuel-efficient vehicles has increased recently owing to rise in price of petrol and diesel. This is due to depleting fossil fuel reserves and growth in tendency of companies to gain maximum profit from these oil reserves. Thus, these factors boost the need for advanced fuel-efficient technologies, leading to surge in demand for electrically powered vehicles for travel
- The global Electric Vehicle Charging Station market size is projected to grow from 2,115 thousand units in 2020 to 30,758 thousand units by 2027, at a CAGR of 46.6%. Factors such as growing demand for energy-efficient commuting, governments supporting electric vehicles, and their charging infrastructure through preferential policies, subsidies, and tax rebates have led to a growing demand for this segment along with the fact that within the next 2 decades, many governments around the world have announced plans to phase out fossil fuel vehicles from the market.
- Increasing investments by governments across the globe to develop charging infrastructure and incentives offered to buyers will create opportunities for OEMs to expand their revenue stream and geographical presence. The market in Asia Pacific is projected to experience the fastest growth owing to the high demand for electric vehicles and aggressive reforms from governments of countries like China, Japan, South Korea and their efforts to promote growth of EV Charging infrastructure to make EV charging more accessible. Meanwhile the North American and European markets are growing due to the government initiatives and growing demand for fast charging segment. However, factors like high costs involved in initial investments for fast charging, need for better batteries, charging time of EV vehicles being much higher than fossil fuel vehicles (Specially in case of Level 1 and Level 2 Charging), charging compatibility not being uniform, grid capacity and current trend of pricing of EV being higher than their fossil fuel counterparts could hamper the growth of global EV and electric vehicle charging stations market.

Chapter 4

SERVICES

Residential Installation Services:

Electrify India makes it easy to go electric with our residential and commercial installation services. Our nationwide network of EV-certified and licensed electricians will install and test your EV charging station, facilitate permitting and final inspection, and train you on how to best use your new charger.

What Sets Our Installation Services Apart?

At Electrify India, we specifically train our network of certified installers on the specifics of installing residential and commercial EV charging. They're required to know all of the relevant local requirements for charger installation, and they are equipped with special equipment that allows them to certify that a charger is functioning properly. Not only that, but our installers will also obtain necessary permits and manage the inspection of the completed installation by the local regulatory agency. This takes added hassle off your shoulders and allows you to enjoy your new EV and charging experience worry-free.

3-Year Warranty on Parts and Labour:

Sometimes equipment can fail, and problems arise, even with one of the best reputations in the industry for reliability. If in the unlikely event that you have an issue with the operation or installation of your EV charger, we offer a 3-year hassle-free limited warranty that includes on-site hardware replacement. If you ever have a problem, you can be confident that our customer service team has your back.

Turn-Key Installation Services:

Depending on your garage configuration, we offer a standard one-day installation service with prior pre-assessment and permit gathering. Our installation partners will handle the permit process for you. All you need to do is speak with one of our Customer Service Representatives who will ask you a few questions and get your service scheduled. To get started, simply give us a call at +91 7259644228.

What Does a Standard Installation Include?

- 20 or 40 ampere, 240-volt circuit breaker in existing utility panel
- 30 feet or less of feeder from utility panel to the EV charger or NEMA 6-20 receptacle where your EV charger or TurboCord will be connected or plugged in
- The EV charger or NEMA 6-20 receptacle will be installed at your preferred location per assessment
- The EV charger or NEMA 6-20 receptacle will be fully tested and certified as operational
- Customer will be trained on operation and troubleshooting
- Permit will be pulled (fees may apply)
- Industry leading warranty. 3 years parts and labour. 24/7 call centre support

Charger types & socket	Picture	Origin & popular ev models	Maximum power output & communication protocols
A. AC Chargers			
Type-1 with Yazaki Socket		Japan, USA (uses separate standard – JSAE 1772 due to 110 Voltage)	Up to 7.4 kW (32 Amps, Single Phase)
Type-2 with Mennekes Socket		Europe (Germany) – many European cars	Up to 44 kW (63 Amps, 3 Phase)
Type-3 with Le Grand Socket		France and Italy – some European cars	Up to 22 kW (32 Amps, 3 Phase)
B. DC Charger			
CHAdEMO		Origin from Japan; Most popular DC charger in the world; used in Japan, Korea and parts of USA and Europe; Nissan Leaf, Mitsubishi, Kia etc.	Up to 400 kW DC charging (1000 Volts, 400 Amps); Control Area Network (CAN) for communication between EV and EVSE
GB/T		Used in China; as well as Bharat chargers in India; Chinese vehicles & Mahindra electric in India	Up to 237.5 kW DC charging (950 Volts x 250 Amps); CAN for communication between EV and EVSE
Tesla Super Charger		Tesla has its own supercharger. Tesla also sells adapter for connecting to a CHAdEMO charger	Up to 135 kW DC charging (410 Volts x 330 Amps); CAN for communication between EV and EVSE

Chapter 5

INSPECTION AND QUALITY CONTROL

- Testing of the charging station and components,
e.g., according to the standards IEC 61982, IEC 62133, IEC 62196, IEC 61851, IEC 61851-1, -21, -22, -23, IEC 61850, IEC 60950, SAE J2929, SAE J2464, SAE J2894, SAE J1772 and SAE J2293.
- Electrical safety testing
- Electromagnetic compatibility (EMC) testing
- Environmental testing
- Compliance certification of the charging station and components to national and international standards (e.g., CE Mark or UL Mark)
- Inspection
- Periodic inspection of the charging station

Chapter 6

FINANCIAL ASPECTS

FIXED CAPITAL

6.1 MACHINARY AND EQUIPMENTS

SL NO.	DESCRIPTION	QUANTITY	AMOUNT(INR)
01	Li-ion Storage Batteries	25 MWh	12,00,000
02	Solar Panels	12	5,00,000
03	LEVEL-1 Chargers	10	2,50,000
04	LEVEL-2 Fast Chargers	10	3,25,000
05	LEVEL-3 Hyper Chargers	10	4,75,000
	TOTAL		27,60,000

6.2 OTHER FIXED ASSETS

S.NO	OTHER FIXED ASSETS	AMOUNT (INR)
1	Erection and installation	1,66,100
2	Office furniture	25,000
3	Pre-operative expenses	20,000
	Total	2,11,100

6.3 LAND AND BUILDING

S.NO	BUILDING AREA		COST
1	Station	1800 sq. mt.	11700000
2	Store (Raw material)	100 sq. mt	650000
3	Office etc.	50 sq. mt	325000
4	Solar plant	50 sq. mt	325000
5	Total covered area	2000 sq. mt.	1.3 Crores

- Machinery and Equipment+ Other Fixed Assets + Land and Building

$$27,60,000 + 2,11,100 + 1,30,00,000 = \mathbf{1,59,71,100}$$

Chapter 7

RECURRING EXPENDITURE

RECURRING EXPENDITURE (PER MONTH)

7.1 SALARIES PER MONTH

SL NO.	DESIGNATION	NO.	SALARY	AMOUNT (IN INR)
01	Station Manager	01	1,20,000	1,20,000
02	Station Assistant	01	75,000	75,000
03	Station Engineer	01	80,000	80,000
04	Bartender	01	40,000	40,000
			TOTAL(A)	3,15,000

7.2 OPERATIONAL COST (PER MONTH)

SL NO.	DESCRIPTION	AMOUNT (IN INR)
01	Charger Maintenance	40,000
02	Electricity	6,00,000
03	Internet and Connectivity	20,000
04	Lounge service replenishment	35,000
	TOTAL(B)	6,95,000

7.3 OTHER EXPENSE (PER MONTH)

SL NO.	DESCRIPTION	AMOUNT (IN INR)
01	Repairs and Upgrades	20,000
02	Software updates	1,500
03	Solar Panels Maintenance	2,000
04	Lounge and site maintenance	10,000
	TOTAL(C)	33,500

RECURRING EXPENDITURE PER MONTH:

$$A + B + C = \text{Rs. } 10,43,500/-$$

Recurring Expenditure for three months = **Rs. 31,30,500/-**

Chapter 8

FINANCIAL ASPECTS

8A. Total Project Cost

Plant & Machinery		1,59,71,100
Working capital		10,43,500
	Total	1,70,14,600

8B. Means of Finance

Total Project cost		1,70,14,600
Promoter contribution 30%		51,04,380
	Total	2,21,18,980

Finance required from the Bank 2,00,00,000/-

8C. Cost of Production Per Annum:

S.NO	DESCRIPTION	AMOUNT(RS)
1	Recurring expenses	1,25,22,000
2	Depreciation on machinery @ 10%	1,66,100
3	Depreciation on office furniture and equipment @20%	29,000
4	Interest on total investment @14%	8,07,500
	TOTAL	1,35,24,600

Chapter 9

OTHER FINANCIAL ASPECTS

9A. Turnover Per Annum:

	Quantity	Rate (Rs)	Amount (Rs)
Energy	4555000KhW	5	2,27,75,000

9B. Profit Per Annum:

Turnover - Cost of Production
2,27,75,000– 1,35,24,600
= 92,50,400/-

$$\begin{aligned}
 \% \text{ of profit on sales} &= \frac{\text{Profit/annum} \times 100}{\text{Turnover}} \\
 &= \frac{92,50,400 \times 100}{2,27,75,000} \\
 &= 40.62\%
 \end{aligned}$$

9C. Rate of Return

$$\begin{aligned}
 &= \frac{\text{Profit/annum} \times 100}{\text{Total Capital investment}} \\
 &= \frac{92,50,400 \times 100}{1,35,24,600} \\
 &= 68.8\%
 \end{aligned}$$

Chapter 10

PROFITABILITY STATEMENT

	Year	1	2	3	4	5	6
S.NO	Capacity Utilization	40%	45%	60%	70%	75%	80%
1	Turnover(crores)	2.3	2.6	3.0	3.95	4.45	6.2
2	Raw materials(lakhs)	30.00	32.30	34.61	36.92	39.23	41.53
3	Manpower(lakhs)	16.37	17.62	18.88	20.14	21.40	22.66
4	Utilities(lakhs)	7.20	7.75	8.30	8.86	9.41	9.96
5	Other expenses(lakhs)	23.88	25.71	27.55	29.39	31.22	33.06
6	Depreciation(lakhs)	0.94	0.83	0.73	0.64	0.57	0.51
7	Total Interest(lakhs)	6.75	5.48	4.16	3.86	2.54	1.51
8	Repayment of Loan(lakhs)	1.24	2.48	2.48	2.48	2.48	2.56
9	Profit before tax(lakhs)	8.59	8.22	9.19	9.16	10.15	10.80
10	Provision for tax(lakhs)	1.50	2.00	2.50	3.00	3.50	4.00
11	Profit after tax(lakhs)	7.09	6.22	6.69	6.16	6.65	6.80
12	Less depreciation(lakhs)	2.94	2.83	2.73	3.64	3.57	3.51

Chapter 11

CONCLUSION

Electric vehicles (EV) represent a fundamental factor for the success of e-mobility, thanks to their reduced environmental impact and lower operating costs compared to traditional internal combustion engine vehicles. While waiting for the EV charging network to reach a capillarity similar to that of common gas stations, electric vehicles must be equipped with on-board charging circuits that ensure high efficiency and long-range. The recharging of electric batteries requires, first of all, a conversion of the electric power source from alternating current (available on the electricity distribution network) to direct current.