PROJECT REPORT

Of

ELECTRIC VEHICLE CHARGING STATION

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding **ELECTRIC VEHICLE CHARGING STATION** .

The objective of the pre-feasibility report is primarily to facilitate potential entrepreneurs in project identification for investment and in order to serve his objective; the document covers various aspects of the project concept development, start-up, marketing, finance and management.

[We can modify the project capacity and project cost as per your requirement. We can also prepare project report on any subject as per your requirement.]

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ELECTRIC VEHICLE CHARGING STATION

Introduction

An electric vehicle, also called an EV, uses one or more electric motors or traction motors for propulsion. An electric vehicle may be powered through a collector system by electricity from off-vehicle sources, or may be self-contained with a battery, solar panels or an electric generator to convert fuel to electricity.

An **electric vehicle charging station**, also called EV charging station, electric recharging point, charging point, charge point and electronic charging station (ECS) is an element in an infrastructure that supplies electric energy for the recharging of plug-in electric vehicles—including electric cars, neighbourhood electric Vehicles and plug-in hybrids.

Nowadays, energy efficiency is a top priority, boosted by a major concern with climatic changes and by the soaring oil prices in countries that have a large dependency on imported fossil fuels, which leads to the demand of EV charging station in the country.

Benefits of E-vehicle Charging Station

- Increase in number of charging stations will boost the selling of EV's as their will be reduced range anxiety.
- It is always great for environment.
- It will boost direct and indirect employment in country.
- Good Opportunity for young entrepreneur to install charging sttsaion in their locality.

EV Charging station Market Analysis

In the first phase of Electric Vehicles (EV) rollout plan, the power ministry is targetting 4 billion-plus population cities under the EV policy initiative. It plans to cover all the state capitals, union territories, major highways and key cities under the second phase.

The electric vehicle charging infrastructure market in India is anticipated to grow at a CAGR of over 40% during the forecast period 2019-2025.

Increasing government support is one of the major factors driving the electric vehicle charging infrastructure market in India.

Based on component, the electric vehicle charging infrastructure market in India is segmented into hardware and software & services. Hardware comprises sockets, cables, and charging units. Software & services include installation and maintenance of charging units, platform as a service, and other services. Other services include battery delivery service and towing service, which are in a very nascent stage in India.

Working of EV Charging station

The electric vehicle charging station is composed of several electrical vehicle charging machines, each electric vehicle charging machine is composed of transformer, capacitor, control unit having a good quality processor with inbuilt memory for software to operate the station.

The charging station has a charging cord and plug which connects to the vehicle via an appropriate plug, it is designed with stand dimensions to fit the charging port of the vehicle.

The electrical power received from grid is transferred to an electrical vehicle charging machine via an appropriate distribution and control panel which essentially has various safety and fail safe devices required to handle appropriate electric load.

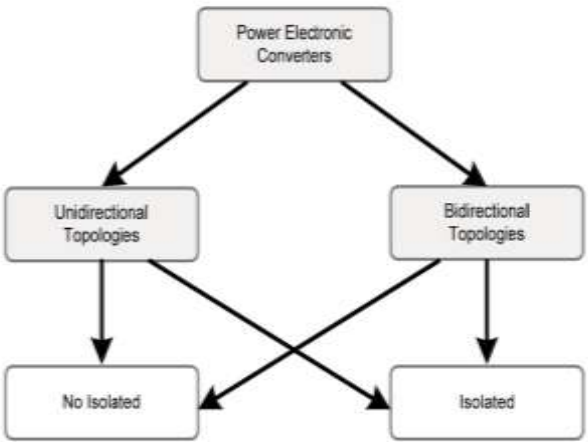
The electrical power is supplied to electric vehicle charging machine which utilizes its transformer set to vary the input AC voltage to required value, this value is decided based on level of charging selected by the user.

Level 1 Charging option provides 110-120V AC alternating current at charger point, Level 2 Charging option provides 220 to 240V AC at charging point, while Level 3 charging requires 3 phase input AC supply which is then passed through transformer and then rectifier, followed by the ripple factor reducing circuit so as to obtain the DC power supply which is supplied to charging point.

The various interface and control actions are governed by the control system as per the software feed in the machine based on which its classified into smart or dumb charging machine. The processor present in the control unit processes the data algorithm built in the software as per which the input are requested from the user, based on these input charging of vehicle takes place.

EV batteries charging system

This charging system is an AC-DC power circuit that must be controlled in order to respect the vehicles' batteries nominal characteristics to preserve their lifespan. Additionally, it should monitor the batteries during their operation to prevent damages during the charging or discharging processes. The ACDC power circuit can be implemented with different topologies according to the characteristics desired for the system.



Land &Building required:

Land required minimum 1000-1500 square feet

Approximate rent for the same is Rs. 30,000 per month.

Machinery & Equipment's required:

Name	Quantity	Cost (Rs.)
AC (7.2 -.5 KW) Type-2 (Rs. 65000)	4	260000
DC (15 KW)GB/T	1	215000
Software Cost	1	600000
Sub total		**10,75,000**
GST @ 18%		1,93,500
Total Machine cost		**12,68,500**

- Cost of the machine is other than transportation & Packaging cost.

Service charges and Revenue charges

In electric vehicle charging station Rs. 30 per hour Service charges are charged for the charging of vehicles.

Other than that clients are charged based upon their vehicle on the% basis of hours. Averagely machine took approx. 4 hours to charge a vehicles with the help of AC Machine and approx. Half With the help of DC Machine.

Note: It's good to open these Charging Station in Mall etc. because there electricity charges are also very nominal (like: 4.5 per unit instead of 8 per unit at a normal place)

Revenue Charges Of AC machine

S.N.	Particular	Charges
1.	For Normal cars	Rs. 50 per hour
2.	For Large size cars	Rs. 100 Per Hour
Average charges Per Hour		Rs. 75
Total Charges per vehicle (Rs. 75 *4Hours)		Rs. 300

Revenue Charges Of DC machine

S.N.	Particular	Charges
1.	For cars (Rs. 2.5-3Per minute)	Rs. 150-175 per hour
Average charges Per Hour		Rs. 150-175
Total Charges per vehicle (Rs. 175 * 2 Hours)		Rs. 350

Staff Requirement:

3 Manpower are required for the EV Charging station Unit.

Includes:

1 Skilled

2 Unskilled

EV Charging station License & registration

For Proprietor:

- Obtain the GST registration.
- Additionally, obtain the Udyog Aadhar registration Number.
- Choice of a Brand Name of the product and secure the name with Trademark if required.

Implementation Schedule

S.N.	Activity	Time Required (in Months)
1	Acquisition Of premises	1
2	Procurement & installation of Plant & Machinery	1
3	Arrangement of Finance	1-2
4	Requirement of required Manpower	1
	Total time Required (some activities shall run concurrently)	2-3 Months

FINANCIAL ASSISTANCE REQUIRED

Term Loan of Rs. 12.60 Lacs and working capital Limit of Rs. 3 Lacs

COST OF PROJECT

PARTICULARS	AMOUNT	AMOUNT	AMOUNT
		10.00%	90.00%
Building Civil Work		-	-
Plant & Machinery	12.69	1.27	11.42
Furniture & Fixtures and Other Assets	1.31	0.13	1.18
Working capital	3.33	0.33	3.00
Total	**17.33**	**1.73**	**15.60**

MEANS OF FINANCE

PARTICULARS	AMOUNT
Own Contribution	1.73
Bank Loan	12.60
Working capital Limit	3.00
Total	**17.33**

COMPUTATION OF PROCESS OF EV CHARGING STATION

Service to be provided

Electric vehicle Charging

AC Machine	4	
DC Machine	1	
AC Machine Running Time Per day	12	Hours
Total AC machine running time Per day	48	Hours
DC Machine Running Time Per day	12	Hours
AC Service hours Per annum	14400	Hours
DC Service hours Per annum	3600	Hours
Average charging time per vehicle in AC	4	Hours
Total Vehicle charged per annum Through AC	3600	Vehicles
Average charging time per vehicle in DC	2	Hours
Total Vehicle charged per annum Through DC	1,800	Vehicles

Vehicle Service through AC Machine

Production	Capacity	Vehicles
1st year	75%	2,700
2nd year	78%	2,808
3rd year	80%	2,880
4th year	85%	3,060
5th year	90%	3,240

Vehicle Service through DC Machine		
Production	**Capacity**	**Vehicles**
1st year	75%	1,350
2nd year	78%	1,404
3rd year	80%	1,440
4th year	85%	1,530
5th year	90%	1,620

COMPUTATION OF REVENUE (AC)

Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Vehicle Charged	2,700	2,808	2,880	3,060	3,240
Net Sale	**2,700**	**2,808**	**2,880**	**3,060**	**3,240**
Charges per Vehicle	300.00	309.00	318.00	328.00	338.00
Sales (in Lacs)	8.10	8.68	9.16	10.04	10.95

COMPUTATION OF REVENUE (DC)

Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Vehicle Charged	1,350	1,404	1,440	1,530	1,620
Net Sale	**1,350**	**1,404**	**1,440**	**1,530**	**1,620**
Charges per Vehicle	350.00	361.00	372.00	383.00	394.00
Sales (in Lacs)	4.73	5.07	5.36	5.86	6.38

Service charges Collection			
Year	**Capacity Utilisation**	**Per Hour Charges**	**Amount (Rs. in lacs)**
1st year	75%	30	5.40
2nd year	78%	31	5.58
3rd year	80%	32	5.76
4th year	85%	33	5.94
5th year	90%	34	6.12

BREAK UP OF STAFF CHARGES

Particulars	**Wages Per Month**	**No of Employees**	**Total Salary**
Skilled	10000	1	10000
Unskilled	7000	2	14000
Total Salary Per Month			24000
Total Annual Labour Charges	**(in Lacs)**		**2.88**

Utility Charges at 100% capacity (per month)		
Particulars	**value**	**Description**
Per AC connection	7.5	KW
DC machine	15	KW
Total AC machine	4	
Total DC Machine	1	
Total connection required	45	KW
Cos per Unit	**4.5**	Rs.
Charges per month	**60750**	Rs.

PROJECTED PROFITABILITY STATEMENT **(in lacs)**

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Capacity Utilisation %	**75%**	**78%**	**80%**	**85%**	**90%**
Revenue					
AC	8.10	8.68	9.16	10.04	10.95
DC	4.73	5.07	5.36	5.86	6.38
Service charges	5.40	5.58	5.76	5.94	6.12
Total	**18.23**	**19.33**	**20.28**	**21.84**	**23.45**
Expenses					
Electricity Expenses	5.47	5.74	6.03	6.33	6.65
Depreciation	2.03	1.74	1.48	1.26	1.08
Consumables	0.16	0.17	0.18	0.20	0.22
Repair & maintenance	0.20	0.22	0.23	0.25	0.27
Labour	2.88	3.02	3.18	3.33	3.50
Operating cost	10.75	10.89	11.10	11.38	11.72
GROSS PROFIT	**7.48**	**8.43**	**9.18**	**10.46**	**11.74**
Interest on Term Loan	1.13	0.99	0.71	0.43	0.13
Interest on working Capital	0.30	0.30	0.30	0.30	0.30
Rent	2.40	2.52	2.65	2.78	2.92
TOTAL	**3.83**	**3.81**	**3.66**	**3.51**	**3.35**
NET PROFIT	3.65	4.62	5.52	6.95	8.39
Taxation			0.06	0.21	0.36
PROFIT (After Tax)	3.65	4.62	5.47	6.74	8.03

PROJECTED BALANCE SHEET

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Liabilities					
Capital					
opening balance		2.39	3.01	3.48	4.72
Add:- Own Capital	1.73				
Add:- Retained Profit	3.65	4.62	5.47	6.74	8.03
Less:- Drawings	3.00	4.00	5.00	5.50	6.00
Closing Blance	2.39	3.01	3.48	4.72	6.75
Term Loan	11.20	8.40	5.60	2.80	0.23
Working Capital Limit	3.00	3.00	3.00	3.00	3.00
TOTAL :	**16.58**	**14.41**	**12.07**	**10.52**	**9.98**
Assets					
Fixed Assets (Gross)	14.00	14.00	14.00	14.00	14.00
Gross Dep.	2.03	3.77	5.25	6.51	7.59
Net Fixed Assets	**11.96**	**10.23**	**8.75**	**7.48**	**6.40**
Current Assets					
Sundry Debtors	2.43	2.58	2.70	2.91	3.13
Cash and Bank	2.19	1.60	0.63	0.12	0.45
TOTAL :	**16.58**	**14.41**	**12.07**	**10.52**	**9.98**

PROJECTED CASH FLOW STATEMENT

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
SOURCES OF FUND					
Own Margin	1.73				
Net Profit	3.65	4.62	5.52	6.95	8.39
Depreciation & Exp. W/off	2.03	1.74	1.48	1.26	1.08
Increase in Cash Credit	3.00	-	-	-	-
Increase In Term Loan	12.60	-	-	-	-
TOTAL :	**23.02**	**6.36**	**7.00**	**8.21**	**9.47**
APPLICATION OF FUND					
Increase in Fixed Assets	14.00				
Increase in Debtors	2.43	0.15	0.13	0.21	0.22
Repayment of Term Loan	1.40	2.80	2.80	2.80	2.57
Drawings	3.00	4.00	5.00	5.50	6.00
Taxation	-	-	0.06	0.21	0.36
TOTAL :	**20.82**	**6.95**	**7.98**	**8.71**	**9.14**
Opening Cash & Bank Balance	-	2.19	1.60	0.63	0.12
Add : Surplus	2.19	(0.59)	(0.98)	(0.50)	0.33
Closing Cash & Bank Balance	**2.19**	**1.60**	**0.63**	**0.12**	**0.45**

COMPUTATION OF WORKING CAPITAL	
Turnover Method	(In Lacs)
(i) Projected Sales	18.23
(ii) Working Capital Requirement 25% of Projected Sales	4.56
(iii) Margin 5% of Projected Sales	0.91
(iv) MPBF	3.65
Working Capital Limit Required	3.00

COMPUTATION OF DEPRECIATION

Description	**Plant & Machinery**	**Furniture**	**TOTAL**
Rate of Depreciation	**15.00%**	**10.00%**	
Opening Balance	-	-	-
Addition	12.69	1.31	14.00
Total	12.69	1.31	14.00
Less : Depreciation	1.90	0.13	2.03
WDV at end of Year	**10.78**	**1.18**	**11.96**
Additions During The Year	-	-	-
Total	10.78	1.18	11.96
Less : Depreciation	1.62	0.12	1.74
WDV at end of Year	**9.16**	**1.06**	**10.23**
Additions During The Year	-	-	-
Total	9.16	1.06	10.23
Less : Depreciation	1.37	0.11	1.48
WDV at end of Year	**7.79**	**0.95**	**8.75**
Additions During The Year	-	-	-
Total	7.79	0.95	8.75
Less : Depreciation	1.17	0.10	1.26
WDV at end of Year	**6.62**	**0.86**	**7.48**
Additions During The Year	-	-	-
Total	6.62	0.86	7.48
Less : Depreciation	0.99	0.09	1.08
WDV at end of Year	**5.63**	**0.77**	**6.40**

CALCULATION OF D.S.C.R

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
CASH ACCRUALS	5.69	6.36	6.95	8.01	9.11
Interest on Term Loan	1.13	0.99	0.71	0.43	0.13
Total	6.81	7.35	7.66	8.44	9.24
REPAYMENT					
Instalment of Term Loan	1.40	2.80	2.80	2.80	2.57
Interest on Term Loan	1.13	0.99	0.71	0.43	0.13
Total	2.52	3.79	3.51	3.23	2.69
DEBT SERVICE COVERAGE RATIO	**2.70**	**1.94**	**2.18**	**2.61**	**3.43**
AVERAGE D.S.C.R.	**2.57**				

REPAYMENT SCHEDULE OF TERM LOAN

					Interest	10.00%
Year	**Particulars**	**Amount**	**Addition**	**Total**	**Interest**	**Repayment**	**Closing Balance**
ist	Opening Balance						
	1st month	-	12.60	12.60	-	-	12.60
	2nd month	12.60	-	12.60	0.10	-	12.60
	3rd month	12.60	-	12.60	0.10	-	12.60
	4th month	12.60	-	12.60	0.10		12.60
	5th month	12.60	-	12.60	0.10		12.60
	6th month	12.60	-	12.60	0.10		12.60
	7th month	12.60	-	12.60	0.10	0.233	12.36
	8th month	12.36	-	12.36	0.10	0.233	12.13
	9th month	12.13	-	12.13	0.10	0.233	11.90
	10th month	11.90	-	11.90	0.10	0.233	11.66
	11th month	11.66	-	11.66	0.10	0.233	11.43
	12th month	11.43	-	11.43	0.10	0.233	11.20
					1.13	1.400	
2nd	Opening Balance						
	1st month	11.20	-	11.20	0.09	0.233	10.96
	2nd month	10.96	-	10.96	0.09	0.233	10.73
	3rd month	10.73	-	10.73	0.09	0.233	10.50
	4th month	10.50	-	10.50	0.09	0.233	10.26
	5th month	10.26	-	10.26	0.09	0.233	10.03
	6th month	10.03	-	10.03	0.08	0.233	9.80
	7th month	9.80	-	9.80	0.08	0.233	9.56
	8th month	9.56	-	9.56	0.08	0.233	9.33
	9th month	9.33	-	9.33	0.08	0.233	9.10
	10th month	9.10	-	9.10	0.08	0.233	8.86
	11th month	8.86	-	8.86	0.07	0.233	8.63
	12th month	8.63	-	8.63	0.07	0.233	8.40
					0.99	**2.799**	
3rd	Opening Balance						
	1st month	8.40	-	8.40	0.07	0.233	8.16
	2nd month	8.16	-	8.16	0.07	0.233	7.93
	3rd month	7.93	-	7.93	0.07	0.233	7.70
	4th month	7.70	-	7.70	0.06	0.233	7.46
	5th month	7.46	-	7.46	0.06	0.233	7.23
	6th month	7.23	-	7.23	0.06	0.233	7.00
	7th month	7.00	-	7.00	0.06	0.233	6.76
	8th month	6.76	-	6.76	0.06	0.233	6.53
	9th month	6.53	-	6.53	0.05	0.233	6.30
	10th month	6.30	-	6.30	0.05	0.233	6.06
	11th month	6.06	-	6.06	0.05	0.233	5.83
	12th month	5.83	-	5.83	0.05	0.233	5.60
					0.71	**2.799**	
4th	Opening Balance						
	1st month	5.60	-	5.60	0.05	0.233	5.36

	2nd month	5.36	-	5.36	0.04	0.233	5.13
	3rd month	5.13	-	5.13	0.04	0.233	4.90
	4th month	4.90	-	4.90	0.04	0.233	4.67
	5th month	4.67	-	4.67	0.04	0.233	4.43
	6th month	4.43	-	4.43	0.04	0.233	4.20
	7th month	4.20	-	4.20	0.03	0.233	3.97
	8th month	3.97	-	3.97	0.03	0.233	3.73
	9th month	3.73	-	3.73	0.03	0.233	3.50
	10th month	3.50	-	3.50	0.03	0.233	3.27
	11th month	3.27	-	3.27	0.03	0.233	3.03
	12th month	3.03	-	3.03	0.03	0.233	2.80
					0.43	**2.799**	
5th	Opening Balance						
	1st month	2.80	-	2.80	0.02	0.233	2.57
	2nd month	2.57	-	2.57	0.02	0.233	2.33
	3rd month	2.33	-	2.33	0.02	0.233	2.10
	4th month	2.10	-	2.10	0.02	0.233	1.87
	5th month	1.87	-	1.87	0.02	0.233	1.63
	6th month	1.63	-	1.63	0.01	0.233	1.40
	7th month	1.40	-	1.40	0.01	0.233	1.17
	8th month	1.17	-	1.17	0.01	0.233	0.93
	9th month	0.93	-	0.93	0.01	0.233	0.70
	10th month	0.70	-	0.70	0.01	0.233	0.47
	11th month	0.47	-	0.47	0.00	0.233	0.23
	12th month	0.23	-	0.23	0.00	0.233	-
					0.13	**2.57**	

DOOR TO DOOR	60	MONTHS
MORATORIUM PERIOD	6	MONTHS
REPAYMENT PERIOD	54	MONTHS

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