Visualization tool for Electric Vehicle charge and Range Analysis.

I. Introduction:-

This section provides an overview of light duty electric vehicles. It then summarizes those areas of most concern to public officials and business Managers. It draws from the Electric vehicles pages at the US Department of Energy and other sources. DVRPC anticipates providing information on Medium - and heavy - duty electric vehicles as they enter the market. In many ways refuelling an electric car is even simpler than filling up a gasoline vehicle. There is no odor 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. They typically use a 240-Volt outlet and can charge an EV in as little as 4 hours. These charging stations are often found in public locations such as parking garages and shoping centers.

OVERVIEW :-

Imagine never having to stop at a gas station again - and instead, having an unlimited supply of fuel available at home or wherever you normally park. For many electric vechicle (EV) drivers, this is a reality Battery electric vehicles never need gas, and for short trips, plug-in hybrids might use no gas

- EV charging is simple, cost-effective, clean and convenient, particularly when you are plugged in at home - filling up your car, even while you're sleep.

There are three categories of electric vehicle (EV) charging : level 1, level 2 and DC fast charging. level 1 and 2 charging use a universal connector that can be plugged into any EV DC fast charging uses three different connector systems called CHAdeMO, CCS combo and Tesla Supercharger.

Level 1 charging :-

Level 1 is the slowest method of charging but is sufficient for drivers who charge overnight and travel 30-40 miles per day. charging cables usually come with a vehicle and plug into a standard 120-volt AC outlet with no equipment installation required.

Level 2 charging :-

Level 2 charging is considerably faster, but requires installing a charging station, also known as electric vehicle supply equipment. It usually requires a dedicated 240-volt or 208-volt electrical circuit, similar to what is required for a clothes dryer or electric charge range.

DC fast charging :-

DC fast charging, also called quick charging or supercharging, provides the fastest available fill-up. It requires a 480-volt connection, making DC fast charging unsuitable for home use, and not every EV model is equipped for it.

Electric Vehicle Terminology :-

Electric vehicle terminology can be confusing, and it not always consistent in its usage.

AEV :- All-electric vehicle. Run only on electricity, either from a battery (BEV) or a fuel cell (FCEV).

BEV :- Battery electric vehicle. A PEV that uses only a battery and electric motor to power the EV. current examples include the Nissan LEAF, the Chevrolet Bolt, or any of the Tesla Models.

EV :- A generic term for a vehicle that gets some or all of its power from an electric motor. Sometimes used to mean PEV, BEV, AEV, FCEV, and occasionally HEV.

FCEV :- fuel cell electric vehicle. An AEV that is powered by a fuel cell rather than a battery. These are not covered in this resource kit.

HEV :- Hybrid electric vehicle. These vehicles do not plug in, but have a large battery on board that is charged by the vehicle's braking.

ICE:- Internal combustion engine. Traditional gasoline and diesel cars and trucks use an internal combustion engine to convert fuel to the motion that moves the vehicle.

PEV:- plug in electric vehicle. An EV that plugs in to an external source to charge an on-board battery that provides the electricity for the electric motor.

PHEV:- plug in Hybrid electric vehicle. PHEVs use both an ICE and an electric motor with a battery that recharges by plugging into an external source.

Current examples include the Toyota prius prime and the chrysler pacifica Hybrid.

purpose :-

Electric vehicles use electricity to charge their batteries instead of using fossil fuels like petrol or diesel. Electric vehicles are more efficient and that combined with the electricity cost means that charging an electric vehicle.

Importance of Electric Vehicle charge :-

Transport of is a fundamental requirement of Modern life, but the traditional combustion engine is quickly becoming out dated. petrol or diesel vehicles are highly polluting and are being quickly replaced by fully electric vehicles. fully electric vehicles have zero tailpipe emissions and are much better for the environment.

The electric vehicle revolution is here, and you can be part of it. understanding the charging curve of your EV allows you to optimize charging times at public charging stations.

Benefits of Electric Vehicles -

1. Lower running costs
2. Low Maintenance cost
3. Zero Tailpipe Emissions
4. Tax and financial benefits
5. Electric Vehicles are easy to drive and quiet
6. No Noise pollution

⇒ Lower running costs :-

The running cost of an electric vehicle is much lower than an equivalent petrol or diesel vehicle. Electric vehicles use electricity to charge their batteries instead of using fossil fuels like petrol or diesel.

⇒ Low Maintenance cost :-

Electric vehicles have very low Maintenance costs because they don't have as many moving parts as an internal combustion vehicle.

→ Zero Tailpipe Emissions :-

Driving an Electric vehicle can help you reduce your carbon foot print because there will be zero tailpipe Emissions.

→ Tax and financial benefits :-

Registration fees and road tax on purchasing electric vehicles are lesser than petrol or diesel vehicles. There are multiple policies and incentives offered by the government depending on which state you are in.

→ Electric vehicles are easy to drive and quiet :-

Electric vehicles don't have gears and are very convenient to drive. There are no complicated controls, just accelerate, brake and steer.

Electric vehicles are also quiet, so they reduce noise pollution that traditional vehicles contribute to.

→ No noise pollution :-

Electric vehicles have the silent functioning capability as there is no engine under the hood. No engine means no noise. The electric motor functions so silently that you need to peek into your instrument panel to check if it is ON.

Literature survey:-

1. Literature review and Method:-

The analysis of charging behavior is of fundamental importance for the correct planning of infrastructures, the selection of optimal charge Management strategies, and the application of policies centered on improving the penetration of electric Mobility and demand integration with the electricity distribution network.

2. Results:-

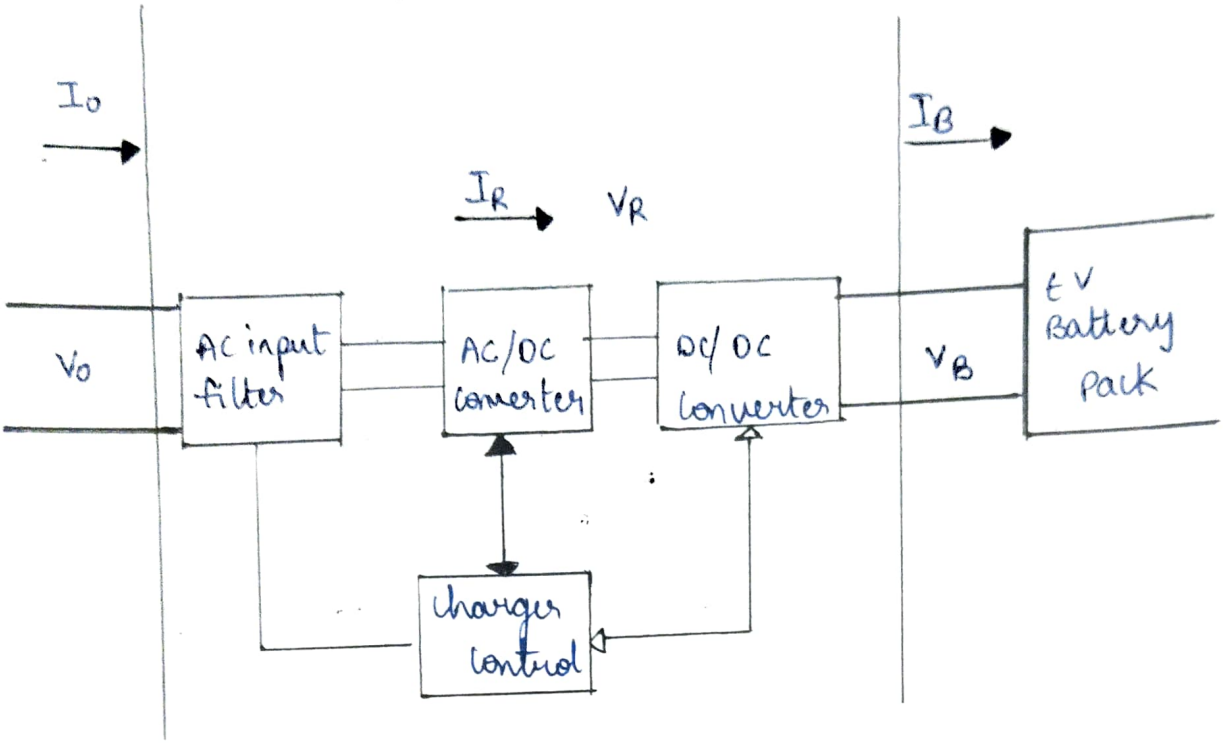
The literature presents a diverse overview of private charging behavior, which can be attributed to various factors. one such factor is the early stages of electric mobility in certain countries, resulting in limited data for analysis.

3. Discussion:-

Transport contributes largely to noxious emissions, both greenhouse gases and local pollutans. The electrification of vehicles is leading to a significant reduction in these impacts.

Theoritical Analysis:-

Block diagram:-

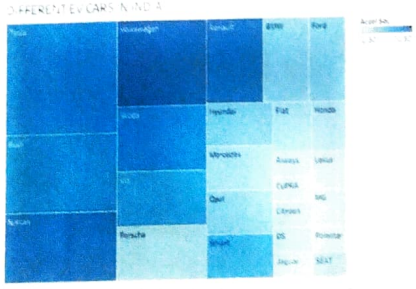


EV Battery charger

visualization tool for electric vehicle charge:-

Currently, there are 39 electric cars on sale in india. of these, the MG comet EV is the cheapest EV while the BMW i7 is the most expensive electric car in india. upcoming electric cars in India include Mercedes - Benz EQA, Hyundai Kona electric 2024 and Mercedes - Benz EQS SUV among others.

Different EV cars in India

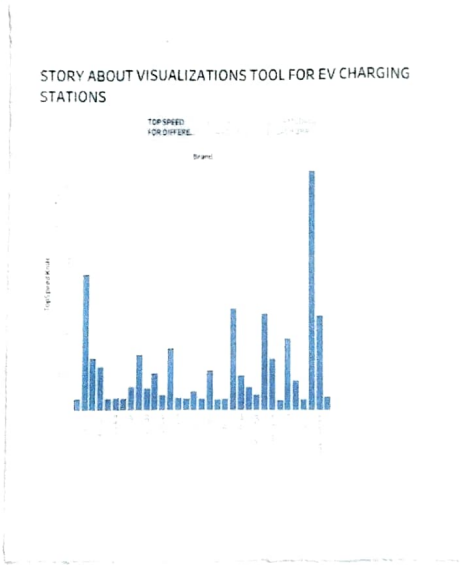


One of the significant benefits of EV cars is a reduced dependence on traditional fuel sources such as petrol or diesel.

Story About visualizations Tool for ev charging:

-Early electric cars were not widely used, so commercial charging stations were not developed. In addition, many homes were not connected to electricity until the early 20th century, so charging an electric car at home was impossible

In the early days of the United States, 38% of cars were powered by electricity.

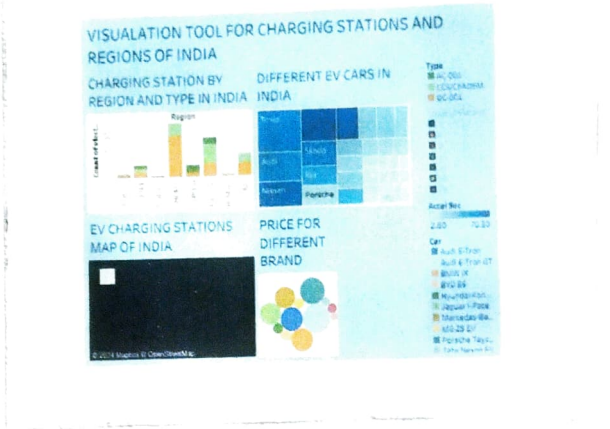


In the early days of the United states, 38% of cars were powered by electricity. At that time, like today, electric cars were initially toys for the rich and famous, only among the upper class.

Dash Board :-

The public EV charger Dash board is one of the tools government and organisations can use to help plan and build out the public charging network.

It's also used to report on our progress. It is updated quarterly.

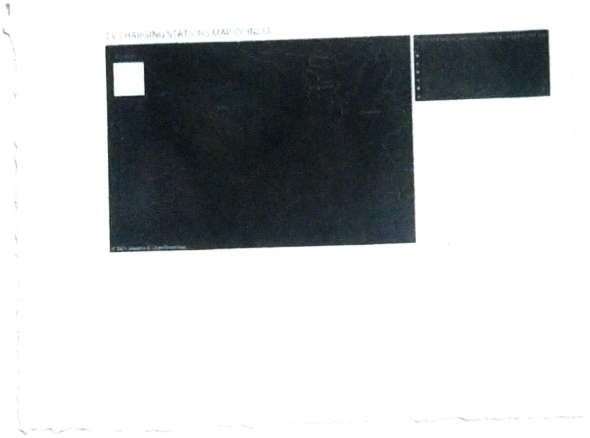


This dashboard provides a national view of current and planned EV charging infrastructure, and EV charging metrics.

EV charging stations Map of India :-

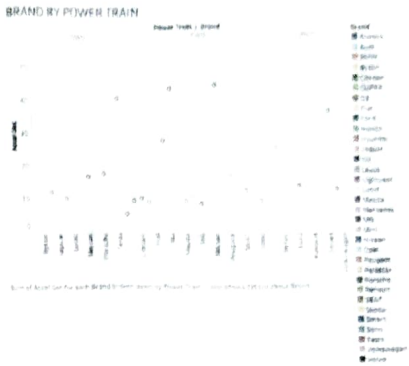
Apart from Bengaluru (4,281), Dakshina Kannada (743), Mysuru (541), and Belagavi (530) districts have the highest number of EV charging stations in Karnataka.

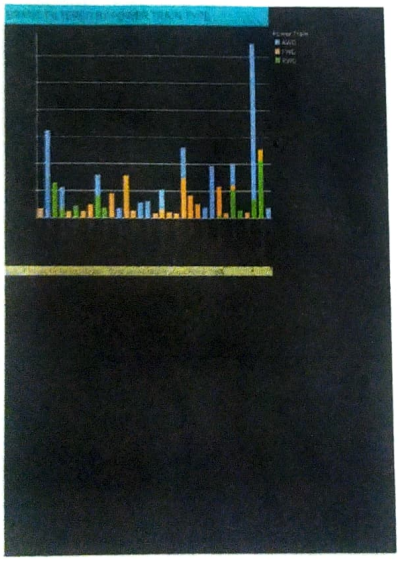
Karnataka recently took pride in the fact that it has the highest number of public electric vehicle (EV) charging stations (5,054) in India.



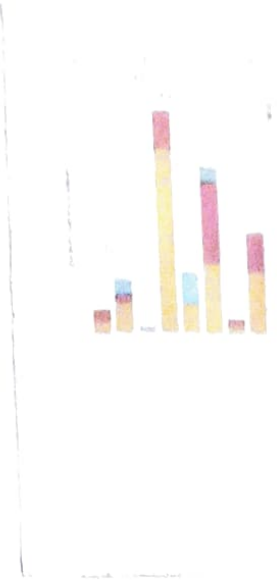
India has an active network of 934 active public charging stations. Here's a tool to locate how close a charging station is based on your location.

Brand by power train:-





charging station by region and type in India



As of June 21, 2023. Los Angeles was the city recording the highest volume of electric charging stations 22 Jun 2023.

Delhi - 1845 stations: The capity city, Delhi, leads the charge with a whopping 1845 operational EV charging stations.

price for different brands :-

As india strides towards a more sustain-able future in transportation, we can hope electric vehicles to offer hope for a greener tomorrow. Currently, there are 34 electric cars on sale in india. of these, the MG comet EV is the cheapest EV while the BMW i4 is the most expensive electric car in india.

upcoming electric cars in india include Mercedes-Benz, EQA, Hyundai Kona electric 2024 and Mercedes-Benz EQS SUV among others.