Electromobility FAQ

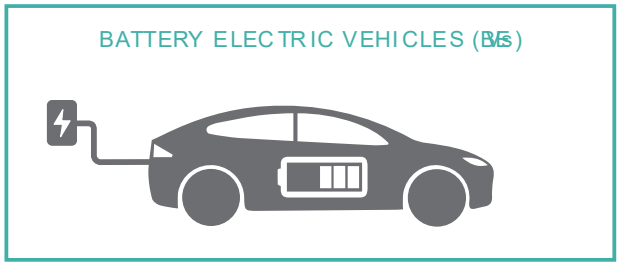
What is electromobility?

Electromobility refers to the ecosystem of electric vehicles and the electric grid that supplies their power.

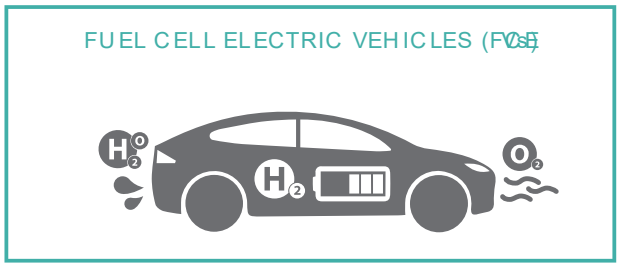
What are Electric Vehicles (EVs)?

EVs are fully or partly driven electrically and have a means of storing energy on board and are usually powered via the grid and benefit from regenerative breaking.

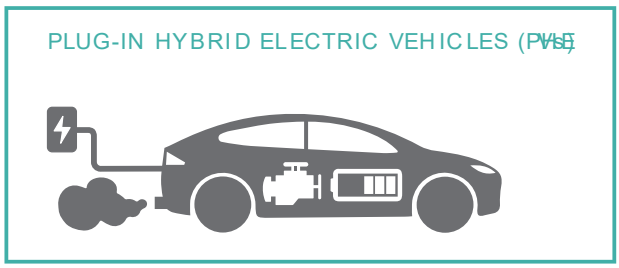
What are the different types of electric vehicles?



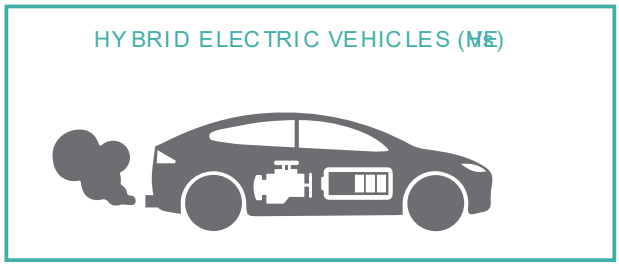
Battery Electric Vehicles (BEVs): Vehicles that are powered by an electric motor supplied by a large bank of batteries, instead of an internal combustion engine. BEVs run entirely on electricity and do not produce any exhaust from the burning of fuel.



Fuel Cell Electric Vehicles (FCEVs): Like BEVs, FCEVs are full zero emissions vehicles like BEVs except energy is stored in the form of hydrogen in a tank instead of electricity in a battery. FCEVs are fueled at hydrogen fueling stations, rather than charged at EV chargers.



Plug-in Hybrid Electric Vehicles (PHEVs): PHEVs are fossil fuel-powered vehicles driven by an internal combustion engine that also have an electric motor. PHEVs operate on electricity until the battery is nearly depleted, then the gasoline-powered engine activates to provide power. Like Battery Electric Vehicles, PHEVs must be plugged in to an EV charger to charge the battery.



Hybrid Electric Vehicles (HEVs): HEVs are fossil fuel powered vehicles that have a small electric motor and battery to provide supplemental power. HEVs use electric propulsion and regenerative breaking to improve their fuel efficiency but still burn fossil fuel and produce carbon emissions.

What environmental impact is related to an electric vehicle?

Electric vehicles have reduced environmental impacts compared to diesel and gas-powered vehicles. Electric drivelines are more energy efficient and emit no exhaust. EVs have lower environmental impacts when using electricity from renewable sources.

What is the driving force behind electromobility?

Stricter carbon emission regulations and CO_2 reduction targets coupled with desire for greater energy efficiency, lower fuel and vehicle maintenance costs and reduced noise are other key drivers.

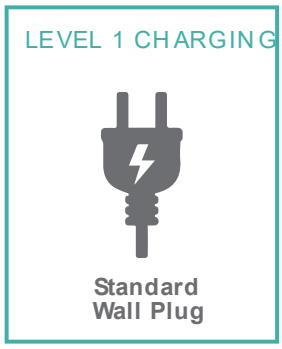
Aren't EVs just for wealthy people?

Early model EVs typically had higher purchase costs than internal combustion engine (ICE) powered equivalents but on a total cost of ownership basis, EVs are often less expensive due to their lower fuel and maintenance costs coupled with typically higher resale value. As EVs become more popular and more common, battery technology improves and EV production increases, EV prices are expected to fall. In addition, more second-hand EVs will enter the market, expanding opportunities for lower income buyers.

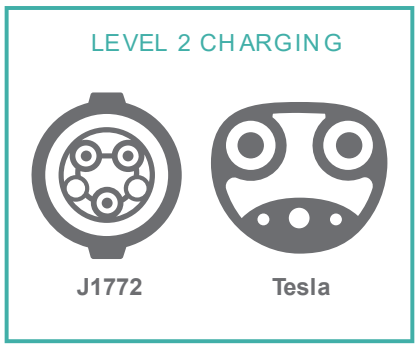
What is the average electric vehicle milage range?

Electric cars typically have a shorter maximum range on a charge than fossil-fueled cars. Most current EV models have a range of 200-300 miles per charge, with some models reaching more than 300 miles per charge.

What are the types of EV chargers?

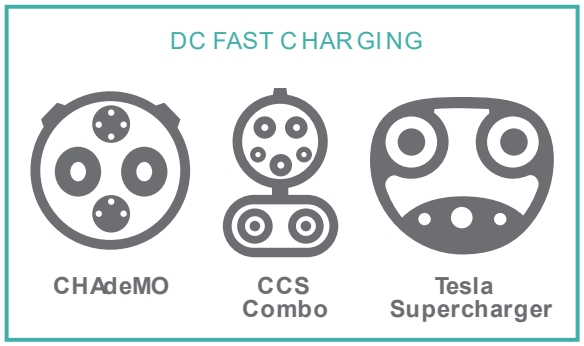


Level 1 Charging: Level 1 chargers plug directly into a standard 120 volt (V) AC outlet supplying an average power output of 1.3 kW to 2.4 kW. This power output is equivalent to 3-5 miles of EV range per hour. Level 1 charging uses standard NEMA 5-15 or NEMA 5-20 plugs. On average, full charging time varies and can take up to 20 hours, but times vary by model and state of charge.



Level 2 Charging: Charging a vehicle at "Level 2" means plugging an EV into a 240 volt AC charger. The most common applications for Level 2 charging are at home or work and Level 2 chargers are also common in public areas such as public parking lots, hotels, restaurants and retail areas where EV drivers charge while engaged in other activities. On average, full charging time varies from 2 to 6 hours, but times vary by model and state of charge. Level 2 chargers use J1772, NEMA 14-50 (RV plug), Tesla HPWC, J3608 or J3608 Type 2 plugs.

High Power Chargers: DC Fast Chargers above 150kW are considered "high power" chargers due to their ability to charge EVs at much faster rates than typical 50kW chargers commonly used for public EV charging. High power chargers have charging speeds ranging from 150 - 350kW, which allows a typical light-duty EV to charge to 80% in 35 minutes or less, depending on the EV's acceptance rate and charger's capability. With such rapid charging speeds, high power chargers are especially suitable for interregional travelers in need of a quick charge as well as for trucks and other heavy-duty EVs needing to charge large capacity batteries. Because of their much higher purchase and installation costs and power demands, it is generally more cost-effective to cluster high power chargers convenient to major transportation corridors.



DC Fast Charging: The fastest form of charging commonly in use for light duty EVs. These types of chargers provide about 80 percent of a vehicle's potential battery power in 15 minutes for high power DC Fast Charger to an hour for a lower power DCFC. As with Level 2 chargers, charging times also vary by EV model and battery state of charge. Three charging protocols existing in the US consisting of CHAdeMO (for older Nisan and Mitsubishi EVs), CCS Combo plug for all newer EVs except Tesla EVs or a Tesla Supercharger for any Tesla model. These allow EV drivers to plug into "DC Fast Charge" networks where they are available to the public.

Where should charging occur?

Residential – By providing the convenience of charging an EV while parked overnight, residential charging is the most popular form of EV charging in the US for those with charger-equipped private parking. For EV drivers living in single family homes with garages or at least private driveways, EVs can be charged at slow speeds using Level 1 charging from a standard wall outlet or medium speeds using level 2 charging if 240V power is available.

Workplace – The second most popular location for charging is at work, especially for EV drivers without residential charging with employer-provided charging access. Worksite charging typically uses level 2 chargers shared by multiple employees.

Public – Chargers provided for charging at public locations such as grocery stores, shopping centers, restaurants and other frequently-visited areas are used by EV drivers without access to residential or workplace charging as well as travelers while away from home or work. Due to shorter vehicle dwell times, DCFC is preferred for most public charging applications though longer dwell opportunities like hotels, transit centers, airports, etc. may be suitable for Level 2 or even level 1 chargers. Public charging is sometimes provided for free as an amenity to attract customers but typically requires payments on a per kWh basis.

Fleet – Vehicle fleets typically charge at depots using banks of dedicated or shared level 2 chargers where fleet EVs are parked overnight. High Powered DC fast chargers are also used for fleet charging, especially for fleet EVs with short dwell times and for medium and heavy duty EVs.

Where are public EV chargers currently located?

The Social Pinpoint site shows all the current charging locations and this is also a tool used for the public to provide input regarding preferred locations for charging infrastructure.

Click here: https://dks.mysocialpinpoint.com/encinitas-ev-plan#/

The app PlugShare also has all the current charging stations throughout the country: https://www.plugshare.com/.

Where should additional public EV chargers be located?

Ideal locations for new public chargers include easy-to-access sites along key corridors, especially near their intersections that have amenities for EV drivers to visit while charging. Examples of popular amenities include restrooms, popular retail venues, restaurants, libraries, community centers, tourist attractions, beaches and parks, etc.

Another important consideration for locating public charging is convenient proximity to areas of concentrated high-density housing as multi-unit housing typically lacks EV charging.

Questions? Contact:

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