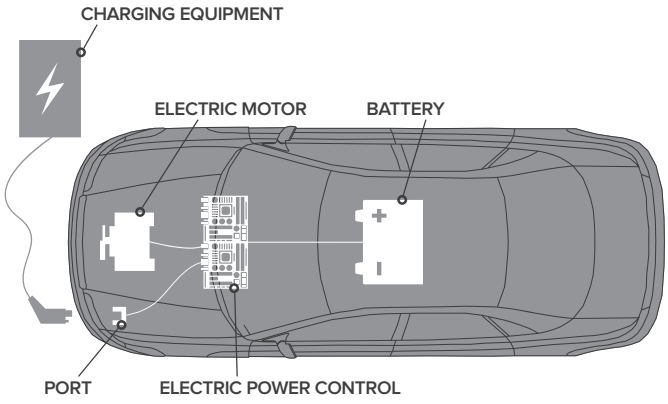
ELECTRIC VEHICLES AND CHARGING STATIONS

Electric vehicles (EVs) are fueled by electricity from the grid. EV drivers plug their cars into either an outlet or a charging station to charge the battery. Depending on the type of electric vehicle, they either use electricity as their only fuel or in conjunction with gasoline. The two types of electric vehicles are all-electric, which are powered solely by electric energy stored in the battery, and plug-in hybrids, which are powered by a combination of battery power and a gasoline engine.

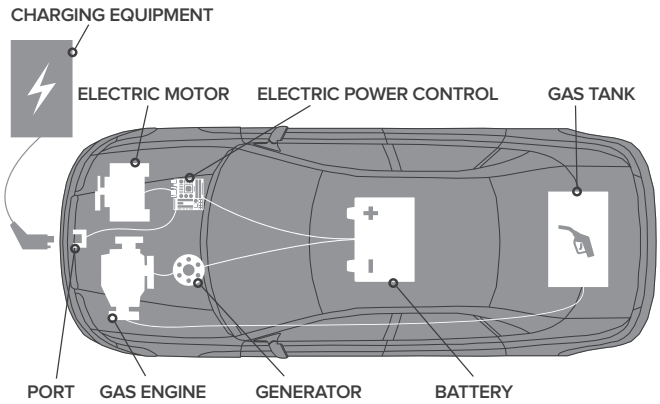
Benefits of Electric Vehicles and Charging Stations:

- Save money on gasoline and maintenance costs
- Enjoy great vehicle performance with a smooth, quite ride and quick acceleration
- Strengthen sustainability efforts by reducing vehicle emissions
- Support energy independence by purchasing domestically produced electricity
- Prepare for future needs and support local economic development
- Show leadership and embrace advanced technologies

All-Electric Vehicle



Plug-in Hybrid Electric Vehicle



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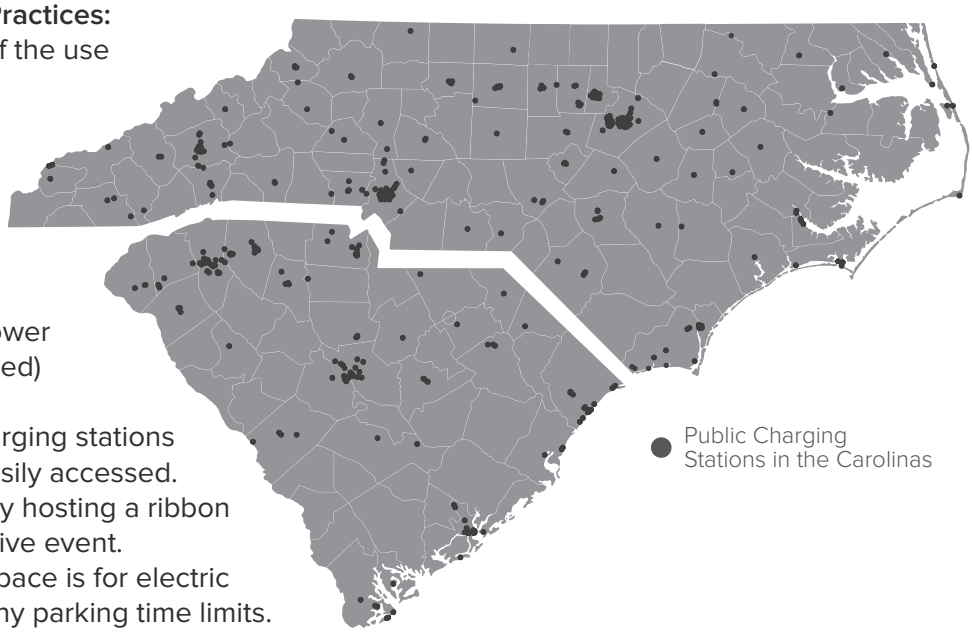
Electric Vehicle Charging Station Levels

Charging stations can be classified into three levels. Every electric vehicle comes with a Level 1 station charging cord; however, Level 2 and DC Fast Charge stations must be purchased and installed by an electrician.

Level 1 Station	Level 2 Station	DC Fast Charge
VOLTAGE *120V 1-Phase AC*	VOLTAGE *208-240V 1-Phase AC*	VOLTAGE *208-480V 3-Phase AC*
AMPS *12-16 Amps*	AMPS *<80 Amps (Typ. 30 Amps)*	AMPS *<125 Amps (Typ. 60 Amps)*
CHARGING LOADS *1.4 - 1.9 kW*	CHARGING LOADS *2.5 - 19.2 kW (Typ. 7 kW)*	CHARGING LOADS *<90 kW (Typ. 50 kW)*
CHARGE TIME *3-5 miles per hour*	CHARGE TIME *10-20 miles per hour*	CHARGE TIME *80% charge in 20-30 mins*

Charging Station Installation Best Practices:

- Create a plan for enforcement of the use of the charging stations.
- Identify a project champion to oversee the charging station installation process and program development.
- To save money in the future, plan for charging expansion by installing conduit (and pulling power or communications wires if desired) for additional stations.
- Maximize the visibility of the charging stations by choosing a location that is easily accessed.
- Promote your charging station by hosting a ribbon cutting or electric vehicle test drive event.
- Install signs to specify that the space is for electric vehicle drivers only and share any parking time limits.



Charging Station Costs

Costs to install and operate a charging station may include the purchase of the unit, installation, network fees, maintenance and electricity. Most EVs have a 6.6 kilowatt charger, while Tesla has a 10 kilowatt charger. If a charging station is used 8 hours per day and electricity costs around 11 cents per kilowatt hour, then electricity would cost about $2,000 per year.

Charging Station Level	Unit Cost Range *(single port)*	Installation Cost Range *(per unit)*
Level 1	$300 - $1,800	$0 - $3,000
Level 2	$400 - $6,500	$600 - $12,700
DC Fast Charge	$10,000 - $40,000	$4,000 - $51,000

Source: Clean Cities, US DOE, Non-Residential Electric Vehicle Supply Equipment Costs

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