

Electrical requirements for Vehicle Charging Stations

Background

Currently, electric vehicles and hybrid electric vehicles comprise of 2% of new car sales. They are predicted to reach 50% of new car sales by 2030. Most electric vehicles have a range of 200 to 250 miles and high-end model EV's are in the mid 300-mile range.

There are three levels of car charging:

Level one charging charges the battery for 3-5 miles in one hour.

Electric requirements: 120 volts 20 amperes or less. Most residential car chargers are 120 volts and plug into standard receptacles. The residential models are meant to charge car overnight. The National Electric Code has identified the potential car charging need and requires a dedicated circuit for garage receptacles.

Level two charging charges the battery for 12-80 miles in one hour. These can be residential or commercial and charge EV's faster, but still require many hours.

Electric requirements: 208/ 240 volts 20 amperes.

Level three charging charges the battery for 3-20 miles per minute. These chargers are best for higher usage areas.

Special electrical infrastructure is needed for this type of equipment.

Costs for charging stations

L1 can cost under \$1,000.

L2 can cost \$2,000 to \$4,000

L3 can be \$35,000 - \$50,000

Part of the high cost of the L3 charger is due to the amount of electricity it may use requires a dedicated electrical service. The electric should provide 50 amperes per charger that equates to about 20 kilowatts for continuous duty.