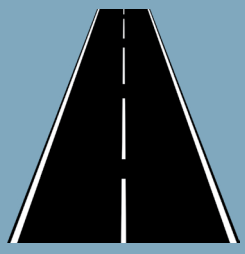
EV TERMINOLOGY AND RESOURCES

CHUGACH
POWERING ALASKA'S FUTURE

EV (ELECTRIC VEHICLES)

"EV" is a general term for vehicles with electric drivetrains that charge from the grid. Two primary categories are Battery Electric (**BEV**) and Plug-In Hybrid (**PHEV**) vehicles. BEVs are fully electric with only a battery and electric motor. PHEVs have both an internal combustion engine and an electric drivetrain with a battery and electric motor. PHEVs typically can drive electric-only for 20-40 miles and then switch to hybrid mode. Most PHEVs cannot use Level 3 chargers.

CHARGING LEVELS



Level 1

Is slow charging usually at home from a standard 120-volt outlet. Typical power is 1-1.8 kW. 2-5 miles of range per hour.

Level 2

Is faster charging at home, commercial, or public locations with a 208/240-volt outlet or hardwired EV charger. Typical power is 5-19 kW. 10-30 miles of range per hour.

Level 3

Is DC fast charging at public locations, typically at 50-250 kW or more. 150-350+ miles of range per hour.

CHARGING TYPES

There are three primary types of charging connectors in North America. Non-Tesla EVs use a J1772 port for Level 2 charging integrated within a CCS port for Level 3 charging. Tesla vehicles use a single port for all charging, referred to as the NACS port. Most EV manufacturers will transition to the NACS port by 2025. Adapters allow conversion between CCS/J1772 and NACS. CHAdeMO is a legacy port type found on the Nissan Leaf and available on some fast chargers.

J1772

CCS Combo

Tesla

DC VS. AC

Level 1 and Level 2 charging use AC electricity which is converted to DC by the EV at the battery. Level 3 charging uses DC electricity and typically requires three-phase electric service at the charging site.

CALCULATING POWER

Residential electric service is 240 volts when charging at home from a level 2 charger (208 volts for some commercial locations). Multiply voltage by the amperage of an electric circuit to calculate power. EV Supply Equipment (EVSE) typically operates at 80% of the circuit rating. For example, 240 volts x (40 amps x 80%) = 7.7 kW

Volts x Amps = Power	Power x Time = Energy	Calculating Charging Time
Level 2 example 240 volts x 32 amps = 7.7 kW	Level 2 example 7.7 kW x 2 hours = 15.4 kWh	7.7 kW = 10% per hour or 82% in 8 hours @ 25.6 miles/hour
Level 3 example 400 volts x 350 amps = 140 kW	Level 3 example 140 kW x ½ hour = 70 kWh	140 kW = 82% in 26 minutes @ 467 miles per hour

Assuming an EV with 75 kWh battery and 250-mile range

POWER VS. ENERGY

Power is displayed in kilowatts (**kW**) and is the rate electricity is delivered to an EV. Energy is displayed in kilowatt-hours (**kWh**) and can be determined by multiplying power by time to represent the amount of energy stored in a battery.

CHUGACH ELECTRIC RATES

Cost of residential electricity (Approximate retail rate, Q4, 2023). Example: Driving 1,000 miles in an EV with an efficiency of 3 miles per kWh would cost $60 to $70.

South District	North District
$0.21/kWh	$0.18/kWh

WEB RESOURCES

Chugach Website

chugachelectric.com/energy-solutions/electric-vehicles

ACEP EV Calculator

tinyurl.com/AKEVCalc

PlugShare Charger Map/App

plugshare.com