



Vehicles

EV: All vehicles powered by an electric motor.

BEV: Battery EV that runs on an all-electric motor using a rechargeable battery. It is plugged into an external electricity source (Level 2 and DC Fast Charging) to recharge. BEVs cannot use gas.

FCEV: Fuel-cell EV. These vehicles power an electric motor using a hydrogen fuel cell.

ICE: Internal combustion engine. The gas- or diesel-powered engine currently used in most cars and trucks.

PHEV: Plug-in hybrid vehicle with Level 1 or Level 2 charging. These have an ICE and an electric motor (typically with a smaller battery) that can charge or use gas.

ZEV: Zero-emission vehicle. Produces zero exhaust emissions of greenhouse gases, particulates, or any criteria pollutants.

Hybrid: A vehicle with an electric motor and ICE that uses regenerative braking to charge the battery.

Regenerative braking: Braking system in a PHEV or BEV that transfers energy from the brakes to the vehicle battery.

Battery range: Distance an EV can travel using stored electricity.

Electrical and EV Charging Terms

AC and DC: Alternating current and direct current. The U.S. electricity grid operates on AC. Typical household outlets are 110 to 120 volts AC. Large home appliances like clothes dryers and air conditioning units use 240 v. Electric car batteries operate on DC.

kW: Kilowatt. The rate of electricity usage—a measurement of power. Either AC or DC power delivery. The higher the power, the faster the charging speed.

kWh: Kilowatt hour. The amount of electric power used to run a 1,000-watt application for one hour.

EVSE: EV supply equipment that delivers electricity to the vehicle. Also EV charging station.

Load management: Proactively planning to take advantage of lower electricity rates using software to shift where energy is used, such as by EV chargers, to times when there is less demand, typically at night or midday. More power can go to fewer charging ports or less power to more ports.

OBC: On-board charger in the vehicle that converts AC from the grid to DC when charging the vehicle battery. The OBC determines the rate at which the vehicle can accept the electric charge. Different OBC units can handle power from 3.3 to 22 kW.

OCPP: Open Charge Point Protocol is how EV charging station management systems communicate with connected EV charge points to manage charging sessions and enable remote diagnostics while ensuring secure data exchange.

Duty cycle: Hours per day or proportion of time that a vehicle is operated per day, week, or month.

Dwell time or charging window: Hours in the duty cycle when vehicles are idle or parked so they can charge.

V2G: Vehicle to grid. This technology enables energy stored in the EV battery to be pushed back to the power grid.

Utility Terms

Electricity rates: Amount charged for energy consumption per kWh. These rates can vary throughout the day depending on when the demand on the grid is highest.

Electric load profile: Electricity consumption over time, typically on a daily basis. With EV charging, a load profile is used to calculate the amount of power required each hour per day. Knowing when vehicles consume energy helps fleet managers plan for anticipated electricity rates.

Demand charge: Additional fee charged by utilities to maintain a constant supply of electricity. Utilities apply demand charges based on the maximum amount of power used in an interval (typically 15 minutes) during the billing cycle, outside their normal electricity rates. Load management can help reduce demand charges.





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Terms to Know

Time of use (TOU) rates. Electric rates based on when electricity is used. TOU rates discourage electricity use during peak periods of consumption and encourage electricity use during times of excess grid capacity. Incentivized periods may change as more EVs are charging and more renewable energy is added to the grid.

In front of the meter: The transmission wire, substations, transformers and other equipment on the utility provider's side of the electric meter.

Behind the meter: The equipment and uses of electricity on the consumer's side of the electric meter.

DER: Distributed energy resource. An opportunity to provide on-site clean power to supply electricity for vehicle charging. Battery storage for clean power is often included in a DER project.

Future proofing: Planning for growth in EVs and EV charging infrastructure anticipated in 5 to 7 years.

EV Charging: Speeds and Levels

Charging speed: How fast energy is transferred from the electrical supply to the vehicle's battery. This speed varies within each charging level, depending on factors such as ambient temperature, electrical supply, OBC size, battery capacity and state of charge (charge rates taper as the battery nears a full charge), and battery temperature.

Level 1 (L1): 110 V or 120 V, such as a common indoor or outdoor wall outlet. Safe L1 charging requires a dedicated circuit, typically 20 A, and is the slowest charging option.

Level 2 (L2): 208 V to 240 V. These charging stations use a 40 A circuit often found in residential, workplace, and public locations.

DC Fast Charge (DCFC): 480 V or higher. DCFC uses commercial three-phase power and can deliver power at various speeds.

CCS Combo: Combined charging system, also known as Combo. This charging plug supports AC and DC charging power levels up to 350 kW. In practice, the charging ranges from 50 to 150 kWh.

CHAdEMO: Charging plug used in DCFC systems. Currently available in fewer models and is the only DC standard able to offer vehicle-to-grid (V2G) connectivity.

J1772: Plug/port style used for L2 (AC) charging. Part of the CCS configuration (not the same as L2 for Tesla for "destination" charging).

Tesla Superchargers: Proprietary charging system and port (250 to 400kWh) that can only be used for Tesla vehicles. The port also includes the AC L2 plug in.

SAE: Society of Automotive Engineers, the governing body that sets vehicle charging standards for the connectors AC-J1772, DC-CCS/Combo, and CHAdEMO.

Funding

TCO: Total cost of ownership. The total cost of buying and owning a vehicle, including incentives, upfront costs, and operations and maintenance. EVs typically have a lower TCO than ICE vehicles due to lower operation cost and less maintenance required.

Incentives: Money available through federal, state, utility, or air quality districts to fund the transition to ZEV. This can include funding for vehicles, charging infrastructure, electricity rates, or lower carbon fuel usage.

Low Carbon Fuel Standard (LCFS) or Clean Fuel Standard (CFS): Market-based policies in some states to reduce carbon intensity in fuels. Organizations that deploy EVSE can benefit from LCFS or CFS programs with credits for switching from high-carbon intensive fuel (e.g., diesel or gasoline) to less carbon-intensive fuel (e.g., electricity).



WASHINGTON STATE UNIVERSITY
Energy Program

905 Plum Street SE
P.O. Box 43165
Olympia, WA 98504-3165

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