

- **Active Grille Shutters**

Active grill shutters open and close some air openings in the front of the vehicle automatically. Closed grill shutters reduce the aerodynamic drag.

- **All-electric Vehicle**

All-electric vehicles have no gasoline internal-combustion engine and are powered entirely by a high-voltage battery. An electric motor is used to transfer the electrical power from the battery to the wheels. The battery is recharged by plugging the vehicle in to an external electric power outlet. Note: Can also be referred to in the industry as Fully Electric Vehicle (FEV) or Battery Electric Vehicle (BEV). All-electric is the Ford term.

- **Alternating Current (AC)**

AC power is the power that comes from the typical electric grid. Alternating current (AC) periodically reverses direction unlike direct current (DC) that flows only in one direction. Electric vehicles store electrical energy in batteries, which operate using DC power. When charging electric vehicles, AC from the grid is converted to DC power by the onboard charger in the vehicle.

- **Amps**

Amperes (Amps) are the units of measurement for electric current. Current is the measure of how fast an electric charge is flowing through a conductor. Specifically, amperage measures the number of electrons in motion per second that moves through the circuit. You may see amps referred to in relation to charging. The higher the amperage, the faster the vehicle will charge. For example, in Level 1 charging, the vehicle may charge at 8 or 12 amps. The 12 amps will charge faster than the 8. The most common Level 2 chargers are 16 and 30 amps, but can go up to 48 amps.

- **Battery Electric Vehicle (BEV)**

See All-electric vehicle. BEV should not be used in customer-facing materials.

- **Bidirectional Power**

During charging, power flows from the electric outlet into the vehicle. Bidirectional power involves using the electrical energy stored in the vehicle and transferring it to power an external device. During bidirectional power transfer, the battery power is not used to propel the vehicle but rather to power external devices.

- **Charge Point**

Any location where an all-electric vehicle or plug-in hybrid electric vehicle (PHEV) can be charged — 120-volt, 240-volt or, if vehicle is equipped, DC Fast Charge outlet. These locations can be public or private. Not to be confused with a public charging company named ChargePoint.

- **Charge Port**

Receptacle on an all-electric vehicle or plug-in hybrid electric vehicle (PHEV), where the charge cord coupler is plugged in to charge the vehicle's high-voltage battery. Comparable to the fuel-fill port on a vehicle with an internal combustion engine (ICE).



- **Charge Port Door**

Covers and protects the charge port and operates similarly to a fuel-filler door to help keep debris out of the area.

- **Charge Port Light Ring (See also Charge Status Indicator.)**

The charge port light ring is located around the charge port and can indicate the status of the high-voltage battery's charge as the vehicle is charging (Fusion Plug-in Hybrid).

- **Charge Station**

Generally used to refer to a public charger that can be used to charge plug-in hybrids and all-electric vehicles. Could be free, require a subscription or pay at the station. Some stations are specific to a particular brand (Tesla).

- **Charge Status Indicator (See also Charge Port Light Ring.)**

These are LED lights located somewhere on the vehicle to visually indicate the charge status of the vehicle. They can be small lights or a light ring.

- **Charge Times**

There are several different ways that charge times are communicated. Charge time means the length of time it takes a plug-in electric vehicle to charge per minute/hour. Charge times vary, please see owner's manual for details.

- For Direct Current Fast Charge (DCFC), a 10% – 80% State of Charge (SoC) time is generally used and is explained as 10% – 80% SoC obtained in XX minutes using a particular power of charger

- An AC charger, Level 1 or Level 2, charges at a rate slower than a DCFC and is generally expressed in XX miles or XX kilometers per hour of charging time

- A Level 2 charger could potentially fully charge an all-electric overnight, but charging times depend on battery size, amperage of the charger and the on-board charging capability of the vehicle. A larger battery generally takes longer to fully recharge. As an example, a 75 kilowatt-hour (kWh) battery will fully charge sooner than a 98 kWh battery using a Level 2 charger when starting from the same SoC

- **Charging**

All-electric vehicles and plug-in hybrid electric vehicles (PHEV) feature a charge port (similar to a fuel-fill port in a conventional vehicle) that allows the vehicle to be plugged into an external source of power to charge the high-voltage battery. This external source of power can come from three different levels of chargers that are classified by the amount of power they can provide, progressing from the least amount of power to the greatest:

- Level 1 charging: Utilizes alternating current (AC) and refers to using a household-style electrical outlet, usually 120-volt, to charge an electric vehicle. This type of charging will recharge the electric vehicle's high-voltage battery, but it is typically the slowest way to charge

- Level 2 charging: Also utilizes AC and refers to power provided from a more specialized charging station, usually 240-volt, and can provide a full charge to an electric vehicle much faster than a 120-volt charging

- Level 3 charging: Called DC Fast Charge (DCFC) and utilizes direct current (DC) power. The very high-voltage and current means the vehicle's high-voltage battery charges quickly, but it may shorten battery life if charged more frequently than what is recommended. Not all plug-in hybrid and all-electric vehicles are able to receive Level 3 charging, so please consult the vehicle owner's manual to determine its capability. DC charging at very high power levels is also referred to as High Power Charging

- **Charging Circuit Interrupt Device (CCID)**

This device is an electrical box that interrupts charging when a current leakage is detected.

- **Combined Charging System (CCS)**

Combined Charging System is a DC Fast Charge protocol that follows industry standards and is used on vehicles produced by several OEMs.

- **DC Fast Charging (Direct Current Fast Charging or DCFC)**

Also known as Level 3 charging, DC Fast Charging is the quickest way to recharge your vehicle's battery. Only all-electric vehicles and a few PHEVs are able to be charged through DC Fast Charging.

- **Direct Current (DC)**

Electric current which flows in one constant direction, compared to alternating current (AC) which periodically reverses direction.

- **Electric Traction Motor (Also known as eMotor/eMachine.)**

An electric traction motor is an energy conversion device that transfers the electrical energy stored in the high-voltage battery to mechanical energy to drive the wheels. It is a bidirectional device capable of taking the mechanical energy from the wheels and converting it to electrical energy that can be stored in the battery during regenerative braking.

- **Electric Vehicle Charging Station (EVCS)**

This is not a common reference. More frequently referred to as the "charger" or Electric Vehicle Supply Equipment (EVSE). Defines the equipment that manages the delivery of electrical energy to the vehicle, i.e., Level 1 EVCS, Level 2 EVCS.

- **Electric Vehicle Supply Equipment (EVSE)**

Commonly referred to as the "charger", but more accurately defines the equipment that safely manages the delivery of electrical energy to the vehicle, i.e., Level 1 EVSE, Level 2 EVSE.

- **Electrified Vehicle (EV)**

At Ford, we define an electrified vehicle as a vehicle with a rechargeable high-voltage battery, unlike internal combustion engine (ICE) vehicles, which have only a low-voltage battery. The high-voltage battery supplies electricity as a partial or primary source of power. EVs include hybrids, plug-in hybrids and all-electric vehicles.

- **eMotor/eMachine (See Electric Traction Motor.)**

- **E-Transaxle (for HEVs and PHEVs)**

Any transaxle that combines power from an internal combustion engine (ICE) as well as an electric motor.

- **EV Miles**

Generically refers to the number of miles traveled in all-electric mode.

- **EV Mode**

Operating mode for a hybrid electric vehicle (HEV) or plug-in hybrid electric vehicle (PHEV), in which the vehicle is powered by electric energy alone (not using the internal combustion engine). EV operation is limited for hybrid vehicles, but can be significant for plug-in hybrid vehicles.

- **Exportable Power**

Any system where the energy from the vehicle is used to power external devices.

- **FordPass Wallet**

The virtual wallet in FordPass that contains the credit/debit cards for customers. The Wallet is used to pay for EV charging or other incidental charges⁽¹⁾.

(1) FordPass Connect (optional on select vehicles), the Ford Pass App., and Complimentary Connected Services are required for remote features (see FordPass Terms for details). Connected Service and features depend on compatible AT&T network availability. Evolving technology/cellular networks/vehicle capability may limit functionality and prevent operation of connected features. Connected services excludes Wi-Fi hotspot.

- **Front Trunk**

Available in some all-electric vehicles, a secured space under the front hood that serves as an additional storage space.

- **High Power Charging**

Generally a term referring to DC Fast Charge conducted at power levels of 150 kW or greater.

- **High-Voltage Battery**

A high-voltage battery in an electrified vehicle is typically a 250 to 350V DC battery that provides power to propel the vehicle. Also referred to as a traction battery. Lithium-ion technology is currently commonly used.

- **High-Voltage/Low-Voltage Transfer**

Transfer of energy from the high-voltage traction battery to the 12V (low-voltage) battery to help prevent the 12V battery from completely discharging. If the 12V (low-voltage) battery gets depleted, the high-voltage battery will automatically recharge it. If there is a fault in the system that resulted in the depleted battery, a notification will be displayed to the customer.

- **Human Machine Interface (HMI)**

HMI is defined by the collection of driver/occupant exposed input/output/interaction methods (screens, buttons, switches, dials, microphone, speakers, etc.) Note: HMI is not a customer-facing term.

- **Hybrid Electric Vehicle (HEV)**

A hybrid vehicle is any vehicle that uses multiple sources of energy to propel the vehicle. A hybrid electric vehicle is any vehicle that uses electrical energy as one of the sources to propel the vehicle, e.g., a vehicle that combines an internal combustion gasoline engine with one or more electric motors, plus an energy storage device such as a battery. An HEV can drive on electric battery power alone, on power from a gasoline engine or on power from both at the same time. Regenerative braking or the engine running recharges the high-voltage battery. A hybrid vehicle cannot be plugged in. Note: HEV is not a customer-facing term.

- **In-Vehicle Marketplace**

Integrated catalog supporting the discovery, information, selection, commerce, installation and management of digital experiences (apps, services, content, etc.).

- **Inverter Systems Controller (ISC)**

A system that regulates the amount of power from the high-voltage battery that goes in to the electric traction motor and vice versa.

- **Kilowatt (kW)**

A unit for the measurement of power. A kilowatt is one thousand watts of power. The higher the kW, the greater the power, and the faster the charging.

- **Kilowatt-Hour (kWh)**

A unit for the measurement of energy. Electric vehicle high-voltage batteries are typically rated in kWh, which represents the amount of energy the battery can hold when fully charged. Battery kWh can be thought of as the amount of energy that can be stored in the battery. Electricity is also sold per kWh — the July 2019 average residential cost in the U.S. is \$0.1327 per kWh. <https://www.eia.gov/electricity/monthly>

- **Low-Voltage Battery**

Along with the high-voltage battery, hybrid, plug-in hybrid and all-electric vehicles all have a 12V low-voltage battery to power the system prior to the high-voltage battery coming online.

- **Mild Hybrid**

A vehicle with an entry-level electrification system that typically utilizes a 48V battery at relatively low electrical power levels. Improves fuel economy over conventional vehicle and has enhanced start/stop capability.

- **Miles Per Gallon Gasoline Equivalent (MPGe)**

The EPA has mandated that a typical gallon of gasoline contains 33.7 kWh of energy. In a conventional vehicle, miles per gallon (MPG) is the distance traveled while using 1 gallon of gasoline. In vehicles that use the high-voltage battery to propel the vehicle, the electric energy used is converted to equivalent gallons of gasoline using the 33.7 factor. MPGe represents the miles traveled using electrical energy converted to equivalent gallons of gasoline.

- **Modular Hybrid Technology (MHT)**

The Modular Hybrid Technology adds a self-contained electric motor “module” to the proven Ford 10-speed transmission, while reusing 90 percent of the same parts as the ICE transmission. This modularity is the reason behind the name Modular Hybrid Technology. MHT integrates an electric motor and engine disconnect clutch inside the transmission assembly for improved package efficiency while leveraging our 10-speed transmission that’s designed for towing 5,000 pounds and greater depending on the vehicle. It also features smart idle technology to help reduce fuel consumption (targeting an EPA-estimated driving range of over 500 miles in Explorer) and smart regenerative braking to utilize the battery in the most efficient manner. MHT architecture is not dependent on an Atkinson cycle⁽¹⁾ and is aimed at full-size SUV and truck customers who want to tow trailers and have the benefits of a hybrid.

- **On-Board Charger**

On-board charger sometimes called a charger that can be confused with a wall box or charge point is a vehicle-integrated device that receives electrical energy from the electric outlet and charges the high-voltage battery.

- **One-Pedal Driving (1PD)**

A feature where the accelerator pedal is calibrated to act both as an accelerator as well as a brake pedal. Full acceleration is achieved when the pedal is fully depressed. When the pedal is fully released, braking is applied. In some vehicles with 1PD, full braking capability can be achieved by lifting off the accelerator pedal; in others pressing the brake pedal will still be required to achieve a full stop. Different manufacturers have different implementations of one-pedal driving. Note: Accelerate with accelerator pedal and vehicle will self-brake/slow down when there is less pressure on the accelerator. Always be prepared to use the brake pedal, do not rely on 1PD to stop the vehicle.

- **Over-the-Air (OTA)**

Wireless channel (LTE, WiFi) delivery of vehicle health updates (optimizations, fixes, new versions, etc.), vehicle settings, new features and “Marketplace” content.

- **Pedestrian Alert Sounder**

An artificial noise maker installed on electric vehicles to help alert pedestrians to approaching EVs. Regulations dictate pedestrian alert sounders below certain speeds (for parking lots, neighborhoods, etc.).

- **Plug & Charge**

Automatically pay for charging just by plugging in. Owners simply need to plug in to charge at participating stations. The Plug & Charge feature is part of the Ford charging subscription and eliminates the need for owners to get out their smartphone or wallet in order to charge at participating stations. Plug & Charge is available at specific chargers as noted in FordPass and the vehicle navigation system. The feature is managed via FordPass, but once it is set up, opening FordPass or swiping a credit card is not required to start a charging event.⁽²⁾

(1) The Atkinson-cycle engine, used in hybrid vehicle applications, is a gasoline engine with an unconventional “5-stroke” cycle designed specifically to operate at peak efficiency at all times.

(2) FordPass Connect (optional on select vehicles), the Ford Pass App., and Complimentary Connected Services are required for remote features (see FordPass Terms for details). Connected Service and features depend on compatible AT&T network availability. Evolving technology/cellular networks/vehicle capability may limit functionality and prevent operation of connected features. Connected services excludes Wi-Fi hotspot.

- **Plug-in Hybrid Electric Vehicle (PHEV)**

A plug-in hybrid (PHEV) has a gasoline-powered engine plus a larger rechargeable high-voltage battery than a hybrid electric vehicle (HEV). Owners can fully recharge the high-voltage battery by connecting to a 120-volt outlet or an available 240-volt outlet or charging station. The high-voltage battery also stores energy regained from regenerative braking or the engine running. Plug-in hybrid electric vehicles operate in both gasoline and electric modes, switching between power sources as needed. PHEVs typically operate in two modes:

- Charge Depletion Mode: Operation of the vehicle while depleting the high-voltage battery

- Charge Sustain Mode: Operation of the vehicle primarily using the energy from the internal combustion engine so the charge in the battery is maintained

Note: PHEV is not a customer-facing term.

- **Power**

One of the three basic measurements of electricity — power is the rate of energy transfer. In a regular combustion engine, this measurement would be the engine power reading, but with an electric vehicle can also refer to the rate at which the vehicle charges. The higher the power, the faster it can potentially charge.

- **Power Split Hybrid**

The Electronically Controlled Continuously Variable PowerSplit Transmission (eCVT) used for the 2020 Escape Hybrid, represents an advancement in hybrid innovation with two traction motors. The power output from the 2.5-liter Atkinson-cycle engine is split into an electrical path and a mechanical path in the transmission, which ties to the “power split” name.

- **Preconditioning**

Plug-in hybrid and all-electric vehicles have a feature allowing the customer to set up preferred times to precondition⁽³⁾ the vehicle using power from the grid to set “departure times.” The vehicle will use grid electricity to heat/cool the cabin so that the high-voltage battery can use energy to support the drive route vs. heating/cooling the cabin.

- **Preferred Charge Times**

Plug-in hybrid and all-electric vehicles have a feature allowing the customer to set up preferred times to charge the vehicle. Customizable charge times are set using FordPass or MyFord Mobile and may be used to take advantage of lower electricity rates depending on the utility’s offer strategy and based on the local utility’s participation.⁽⁴⁾

- **Public Charging**

Owners can activate a charger that is part of Ford’s virtual charging network using FordPass and bill the event to their charging subscription. Owners find a nearby charging location on a map and select the port number they are trying to activate. The charger is then activated and billed to their charging subscription after charging is complete. Idle fees may apply if the customer does not unplug their vehicle within a grace period after charging is complete. Public charging via FordPass is available at specific chargers in the Ford charging network as noted in FordPass and the vehicle navigation system.

- **Radio-Frequency Identification Card (RFID Card)**

RFID Cards are credit card sized (or smaller) cards that have a circuit and antenna encased in the plastic card. These circuits are tags that are typically powered by the RFID reader on the EVSE to identify the customer’s account in order to authenticate and turn on the charger. The customer holds the card near the reader on the charger. These cards are often used by EV charging networks as a method to identify the customer attempting to charge their vehicle.

(3) Effectiveness of cabin conditioning may be reduced by extreme outside temperatures or when using 120-volt charging.

(4) Not all utilities participate.

- **Range Degradation**

Refers to reductions in range from the published label range that all-electric drivers could see under certain conditions (towing, driving at high speeds, driving in cold or extreme heat, battery age, etc.).

- **Rate of Charge**

Speed at which battery system can recharge, measured in distance units (e.g., miles or km) per unit of time (hour or minute), e.g., 44 miles in 10 minutes.

- **Regenerative Braking System**

Regenerative braking is the system wherein the kinetic energy from the vehicle is captured and stored in the battery during braking. In conventional vehicles, energy during braking is dissipated as heat in the brake pads and rotors and lost. In EVs, the braking energy can be captured via the electrified drive system thereby helping to increase efficiency. Not only is the regenerative braking efficient, but it helps minimize wear on the brake pads, potentially lowering replacement cost.⁽⁵⁾

- **SAE J1772 Coupler**

This is the name of the “nozzle” that plugs into an all-electric or plug-in hybrid vehicle’s charge port. J1772 is an industry standard that is found on alternating current (AC) chargers in the U.S. and some other countries. The charger that comes with the vehicle includes a J1772 connector to plug into the vehicle.

- **Single Speed Transmission**

Found on most all-electric vehicles, a single speed transmission consists of a single gear set that couples the motor to the wheels. There is no shifting of gears in EVs with a single speed transmission.

- **SmartGauge with EcoGuide**

A configurable dual-LCD instrument cluster display that provides real-time information to help coach drivers to operate their vehicle in an efficient manner on a day-to-day and long-term basis. Note: Refer to Fusion Hybrid and Fusion Plug-in Hybrid sections on eSourceBook for detailed information on SmartGauge with EcoGuide.

- **Smart Wallbox**

An OEM-specified electric vehicle charger designed specifically for the Ford customer and their all-electric vehicle. The Ford Smart Wallbox is connected to the internet to provide remote access and control.

- **State of Charge (SoC)**

A term that specifically refers to the charge level of the high-voltage battery in hybrid electric (HEV), plug-in hybrid electric (PHEV) or all-electric vehicles. Charge level is shown graphically or numerically as a percentage.

- **Switchable Cord (also known as TurboCord™ Dual)**

A charging cord that can plug into either a 120V outlet (normal household outlet) or 240V outlet (standard outlet for utilities such as washer/dryer). This cord comes standard in the all-electric vehicles and some PHEVs. Other PHEVs receive a charging cord that can only be plugged into a 120V outlet.. Please check the owner’s manual for details.

- **Tethered**

Word used to describe when a plug-in hybrid or all-electric vehicle is plugged into a charger/charge point/charge station. A piece of charging equipment with an integrated cable is known as a “tether.”

- **Total Cost of Ownership**

Term for describing the estimated total cost of ownership of a vehicle and can include: depreciation, fuel/electricity costs, maintenance costs, and in some cases, will include average repair costs for a collision and insurance.

(5) Customers could also see this online and in printed materials: Regenerative braking is capable of capturing and reusing more than 90 percent of the braking energy normally lost during the braking process and recharges the high-voltage battery. Regenerative braking helps minimize wear on the brake pads, lowering maintenance costs over time.

- **Trip Planner**

Feature that allows a customer to plan a trip in their vehicle's navigation system or FordPass mobile app. Charging stations will automatically be added to the route if it is necessary for the customer to charge their vehicle to reach the destination. Trips can be planned and saved in the app and will be loaded automatically in the vehicle. Trips automatically update as vehicle conditions or traffic change.

- **Vehicle-to-Grid (V2G) technology**

This technology provides power from electric vehicles (EVs) to the grid in response to peak load demands. Depending on the demand, an EV could charge or discharge power. Therefore, EVs can be seen as moving storage devices.

- **Vehicle-to-Home (V2H) Technology**

In a Vehicle-to-Home (V2H) scenario, the all-electric vehicle acts as a residential battery storage system and/or a backup generator.

- **Volts**

Units of measurement of electrical voltage. Electrical voltage measures the ability of the electrical source to do work. High-voltage chargers are capable of faster charging.

- **Wall Box (See Charging Level 2)**

A wall box is a type of Level 2 charging station that produces 240V of electricity. These can be purchased and installed (by an electrician) anywhere, with most common places including dealerships, at-home, at-work, parking garages, etc.

- **Watts**

The standard unit of measurement of power. See Kilowatt.

- **Whole-Vehicle Inductive or Wireless Charging**

This technology is based on inductive charging, which involves electricity being transferred via an air gap between two magnetic coils. It is similar to how wireless phone chargers work, but in an all-electric vehicle, the scale is significantly larger. This is not currently offered on Ford products.