

FUEL CELL ELECTRIC VEHICLES



FUEL-CELL ELECTRIC VEHICLES (FCEV) are in the early stages of deployment. Many members of the public may be unfamiliar with the concept of fueling a vehicle with hydrogen and curious to learn more. This fact sheet provides answers to common questions, to aid in informed decision making about FCEVs.

What Powers FCEVs?

Electricity generated on-board using pure hydrogen gas (H²) and oxygen from the air.

How are FCEVs different than Battery Electric Vehicles?

Both use electricity to power an electric motor. However, the electricity in FCEVs does not come from an external charger or battery, but is generated onboard. When hydrogen and oxygen combine in the vehicle's fuel cell, an electrochemical reaction generates electricity, powering the motor.

How is an FCEV refilled with hydrogen?

It is dispensed at hydrogen fueling stations, stations, very similarly to standard gasoline fueling. It takes approximately the same amount of time, ~3-5 minutes for light-duty vehicles, and ~15 minutes for the larger tanks of medium- and heavy-duty vehicles. FCEVs can be refueled much faster than BEVs can be charged. Using the fastest chargers, a light-duty BEV may take up to 30-40 minutes to charge, and heavy-duty vehicles may take over an hour.

Pure hydrogen gas is stored in a carbon-fiber high-pressure tank onboard an FCEV. The tanks are designed to withstand the highest speed crashes.¹

Are FCEVs available for purchase?

Currently, light-duty FCEVs are only sold and operated in a few states. Only California and Hawaii have publicly accessible hydrogen fueling stations as of Fall 2025.

Medium- and heavy-duty vehicles are experiencing a boom in pilot programs nationwide, but are generally restricted to fleets with access to dedicated fueling stations.

Do FCEVs generate air pollution?

No. The only by-products of FCEV operation are water vapor and heat. Water does constitute an emission from the tailpipe, however, unlike the emissions associated with internal combustion engines, it does not contribute to or worsen air pollution. FCEVs are considered zero-emission vehicles.

¹<https://www.caranddriver.com/features/a41103863/hydrogen-cars-fcev/>

HOW DO YOU REFUEL AN FCEV?



REFUELING PROCESS

Refueled at hydrogen stations, similar to gasoline fueling.



REFUELING TIME

Light-duty FCEVs: 3-5 minutes. Larger vehicles: ~15 minutes.



SAFETY AND STORAGE

Hydrogen stored in high-pressure carbon-fiber tanks designed for crash safety.