



U.S. DEPARTMENT
of ENERGY

Office of Critical Minerals
and Energy Innovation

Hydrogen Vehicles and Fueling Infrastructure

**Find research-based information
on the Alternative Fuels Data
Center website**

Learn about the technology behind hydrogen vehicles and their fueling infrastructure, explore the benefits and considerations of using hydrogen to power vehicles, and access tools and datasets.



AFDC.ENERGY.GOV/FUELS/HYDROGEN

Considering a Hydrogen Vehicle?

Hydrogen is an alternative fuel that can be produced from a variety of domestic resources including water, hydrocarbon fuel (e.g., natural gas, renewable liquid fuels, gasified coal, and gasified biomass), and organic matter. In the United States, most hydrogen is produced either on or close to the sites where it is used, typically at large industrial sites. Because hydrogen can be produced from a variety of resources, regional hydrogen

production can maximize local resources and minimize distribution challenges.

As a vehicle fuel, hydrogen is stored as a compressed gas in high-pressure tanks. Hydrogen fuel cell electric vehicles (FCEVs) are two to three times more efficient than a comparable internal combustion engine running on gasoline. Drivers can fuel their FCEVs in less than five minutes at a dispenser that looks and

feels like a gasoline dispenser except for the high-pressure gaseous connection. Because they are propelled by an electric motor, FCEVs are quiet, have very few moving parts and fewer fluids to change, and have minimal maintenance requirements overall. Some organizations are also exploring the potential for hydrogen internal combustion engines for vehicles.

Dive Into the Details: What You'll Find on the AFDC

- Basics of hydrogen fuel production and distribution, and research and development
- Considerations such as cost, fuel storage, and energy security
- Hydrogen fueling station locations and infrastructure development
- Fundamentals about FCEVs and their availability
- Laws and incentives related to hydrogen in your area



U.S. DEPARTMENT
of ENERGY | Office of Critical Minerals
and Energy Innovation

For more information, visit: afdc.energy.gov
DOE/GO-102025-6806 • December 2025