



# HYDROGEN



Hydrogen vehicles, or hydrogen fuel cell vehicles, use hydrogen to power an electric propulsion system. Yes, hydrogen vehicles are electric vehicles!

## HOW HYDROGEN WORKS:

Fuel cells combine hydrogen gas and oxygen to create electricity which is then stored in the battery to be used by an electric motor.

The most common method to produce hydrogen is through a process called “steam reforming” which creates hydrogen from natural gas. Hydrogen can also be made through electrolysis, which is a process that can create hydrogen from water.

## BENEFITS:

**Clean:** Hydrogen has the potential for near-zero greenhouse emissions. Once it is produced, it generates electrical power in the fuel cell and only emits warm air and water vapor. Today’s fuel cell vehicles cut emissions by over 30% compared to gasoline-powered vehicles.

**Efficient:** Fuel cell vehicles are 2-3 times more efficient than an internal combustion engine. They are extremely quiet, limiting noise pollution, and they also have regenerative braking.

**Refuels Quickly:** They can refuel in about 5 minutes at retail stations like at gas stations, and the fuel range is about 300 miles.

## CURRENT STATE:

There are 43 public retail Hydrogen fueling stations in the United States and at least 30 in planning or construction. None of these are in Michigan, however, fleets can invest in their own private refueling station if they are interested in hydrogen fuel cell vehicles.

Sources:

[WHA International, Inc.](#)

[U.S. Department of Energy: Alternative Fuels Data Center](#)

Image Credit: [Cummins](#)



## APPLICATIONS:

- Hydrogen is often better suited for large-scale commercial applications such as heavy-duty trucking. Some uses include warehouse logistics, global distribution, buses, trains, planes, unmanned aerial vehicles, and boats.
- **Flint Mass Transportation Authority:** The Flint MTA has been using hydrogen buses since 2012. The buses are refueled at an alternative fueling station in Grand Blanc, Michigan, and can go 250 miles without needing to refuel.

For more information, visit [cleanfuelsmi.org](http://cleanfuelsmi.org) or reach out to us at [info@cleanfuelsmi.org](mailto:info@cleanfuelsmi.org).