

Zero Emissions, Zero Compromise

What are Fuel Cell Vehicles (FCVs)

Fuel cell electric vehicles (FCVs) are electric vehicles that operate using compressed hydrogen gas as fuel and whose only tailpipe emission is water vapor. In these vehicles, fuel cells utilize a chemical process of hydrogen to produce electricity without combustion. The fuel cell-generated electricity then powers an electric motor, just as a battery does in a battery electric vehicle.

Many of the world's leading automotive companies are developing and commercializing FCVs today. Hyundai's Tucson FCV and Toyota's Mirai FCV are available today in California, and Honda's new fuel cell vehicle will be available later this year.

What are the Benefits of Fuel Cell Electric Vehicles?

Replicating Today's Driving Experience

Fuel cell vehicles, or FCVs, present a sustainable alternative to today's gasoline powered cars. With zero emissions from the tailpipe, fast fill up, and long range travel, FCVs provide a choice that's clean without compromise. Now is the time to follow California's lead and support FCVs as alternative energy vehicles by enabling the additional development of hydrogen fueling stations. With refueling times of just three to five minutes and range of 300 – 400 miles, FCVs are a proven option to take zero-emissions further.

Zero Emission Driving

FCVs use hydrogen to provide emission-free driving in that they only emit water from the tailpipe, greatly reducing greenhouse gas emissions compared to gas vehicles.

Most hydrogen in the United States is generated from natural gas reformation, which does produce some emissions. However, when using hydrogen generated from renewable sources such as solar or wind, total lifecycle greenhouse gas emissions can be eliminated completely. Efforts are underway to expand renewable hydrogen generation, and California already has a 33% renewable hydrogen mandate for vehicle fueling.

The Highest Safety Standards

FCVs and hydrogen fuel are as safe, if not safer, than conventional gasoline vehicles. FCVs meet the National Highway Safety Transportation Administration's (NHTSA) strictest safety and quality standards. FCV manufacturers have developed and tested carbon-fiber hydrogen storage tanks, which have withstood crash, fire, and ballistic testing. Hydrogen has been safely produced, stored, transported, and used in the American industrial sector for more than 50 years. Hydrogen tanks and the vehicle systems are designed with multiple safety enhancements to prevent leaks in both routine use and extreme circumstances.

What are Industry and Government Doing to Bring Fuel Cell Electric Vehicles to Market?

Automotive Collaborations, Brining Affordable FCVs for Consumers

Hyundai and Toyota are leasing their FCVs to the public now, and Honda's Clarity Fuel Cell will be available later this year. Nearly every major automaker recognizes the need to develop its own FCV platform, and many are forming collaborations with other automakers to reduce development time and cost to bring these vehicles to market as quickly as possible.

Ford, Nissan-Renault, and Daimler are jointly developing a fuel cell system to produce an affordable, mass-market FCV as early as 2017. General Motors and Honda are collaborating on a next-generation fuel cell system and hydrogen storage technologies for the 2020 timeframe. BMW and Toyota are jointly developing fuel cell stacks, systems, hydrogen tanks, motors, and batteries with the goal of completion by 2020. Volkswagen has also demonstrated both a fuel cell concept Passat and a fuel cell powered concept Audi A7.

H₂USA, a Public-Private Collaboration for U.S. Hydrogen Infrastructure

Co-launched by the U.S. Department of Energy (DOE) and industry, H₂USA is the public-private collaboration helping to bring FCVs to the market by developing America's hydrogen infrastructure. In addition to DOE, participants include the state of California, the Northeast States for coordinated Air Use Management, automotive companies, fuel cell and hydrogen technology suppliers, energy companies, trade associations, national laboratories, nonprofit organizations, and others.

Need for Renewed Federal Tax Credits

Unfortunately, just as these first vehicles are coming to market, the federal tax credits for FCV purchases expired on December 31st, 2016. The lack of a federal tax credit to reduce the cost of vehicle purchases puts the FCV market at a great disadvantage compared to other alternative vehicles, such as battery electric vehicles (BEV), which have a federal tax credit of up to \$7,500 per vehicle purchase. This is an issue that the fuel cell and hydrogen industry is striving to overcome through advocacy efforts with the administration and Congress.

