



# Technical Highlights

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## EPA Fuel Cell Vehicle Testing

- In November 2002, the U.S. Environmental Protection Agency (EPA) for the first time certified a hydrogen fuel cell vehicle (the 2003 Honda FCX) and completed fuel economy testing of the vehicle at its National Vehicle and Fuel Emissions Laboratory (NVFEL).
- All motor vehicles sold in the United States must be certified by the EPA for emissions. The Agency also conducts fuel economy testing of new vehicles at NVFEL in Ann Arbor, Michigan. The results of the testing are published yearly in the Fuel Economy Guide.
- Because the Honda FCX is emissions-free, NVFEL conducted only fuel economy tests. Honda agreed that, as a condition of certification, a vehicle would be supplied for testing at NVFEL.
- Prior to testing, EPA modified its laboratory in order to comply with strict federal and local safety regulations governing the safe handling of hydrogen, which fuels the vehicle.



- The EPA laboratory is the first U.S. federal facility to receive safety approval for official testing of fuel cell vehicles.
- Because compressed hydrogen is currently sold on the basis of a unit of mass (the kilogram) instead of by volume (the gallon), EPA measured the number of kilograms of hydrogen used during the fuel economy testing.
- As part of the testing, EPA established the official hydrogen fuel economy estimates for the Honda FCX vehicle, which are 51 miles per kilogram in the city, and 48 miles per kilogram on the highway. On an energy basis, this would translate into about 52 and 49 mpg of gasoline, respectively. Fuel efficiency can be expected to improve as this new technology is developed toward actual consumer use. Today's cost of compressed hydrogen is about \$5.00 per kilogram.
- The Honda FCX has no exhaust and only produces a small amount of water vapor in its operation. The fuel cell operates on compressed gaseous hydrogen contained in a crash-protected high-pressure cylinder at the rear of the vehicle. The fuel cell uses hydrogen to generate electricity on demand to power the electric motor.
- Honda has introduced a limited number of fuel cell vehicles through a pilot leasing program in the Los Angeles, California, area. There are no immediate plans to mass-market these vehicles.
- EPA looks forward to providing manufacturers with the technical support needed to broaden this upcoming technology. EPA is a member of the California Fuel Cell Partnership, a member of the Society of Automotive Engineers (SAE) Fuel Cell Committee, and closely coordinates with the national FreedomCAR program.

### **For More Information**

For more information on NVFEL, visit our Web page at:

[www.epa.gov/otaq/01-nvfel.htm](http://www.epa.gov/otaq/01-nvfel.htm)

Information on fuel cells is available at:

[www.epa.gov/fuelcell](http://www.epa.gov/fuelcell)