
ZERØ EMISSIONS. ZERØ COMPROMISE.

FUEL CELL VEHICLES:

CLEAN WITHOUT COMPROMISE

Cars and trucks account for nearly one-fifth of all U.S. carbon emissions, releasing 24 pounds of carbon dioxide and other global-warming gases for every gallon of gasoline used.

Fuel cell vehicles (FCVs) can play a critical role in lessening the environmental impact of the vehicles on our roads. FCVs are being driven and refueled by consumers today, and produce no carbon emissions or other greenhouse gases (GHGs). FCVs are zero-emission cars as their only tailpipe emission is water.

FCVs CAN GREATLY REDUCE GREENHOUSE GAS EMISSIONS

In addition to tailpipe emissions, production and delivery of fuels can produce carbon emissions as well, be it gasoline, diesel, hydrogen, or electricity.

Academic “well-to-wheel” assessments look at GHG emissions for a fuel’s full lifecycle from “well,” or production of the fuel, to “wheel,” the tailpipe emission from the car.

These well-to-wheel studies have determined that FCVs are among the cleanest vehicles on the road today, comparable to battery electric vehicles, and twice as efficient as traditional gasoline cars.

In fact, each conventional gasoline vehicle replaced by an FCV can reduce the amount of carbon emissions on our roads by approximately 12,600 pounds a year.

On the next page, learn more about FCVs and reduced GHGs.

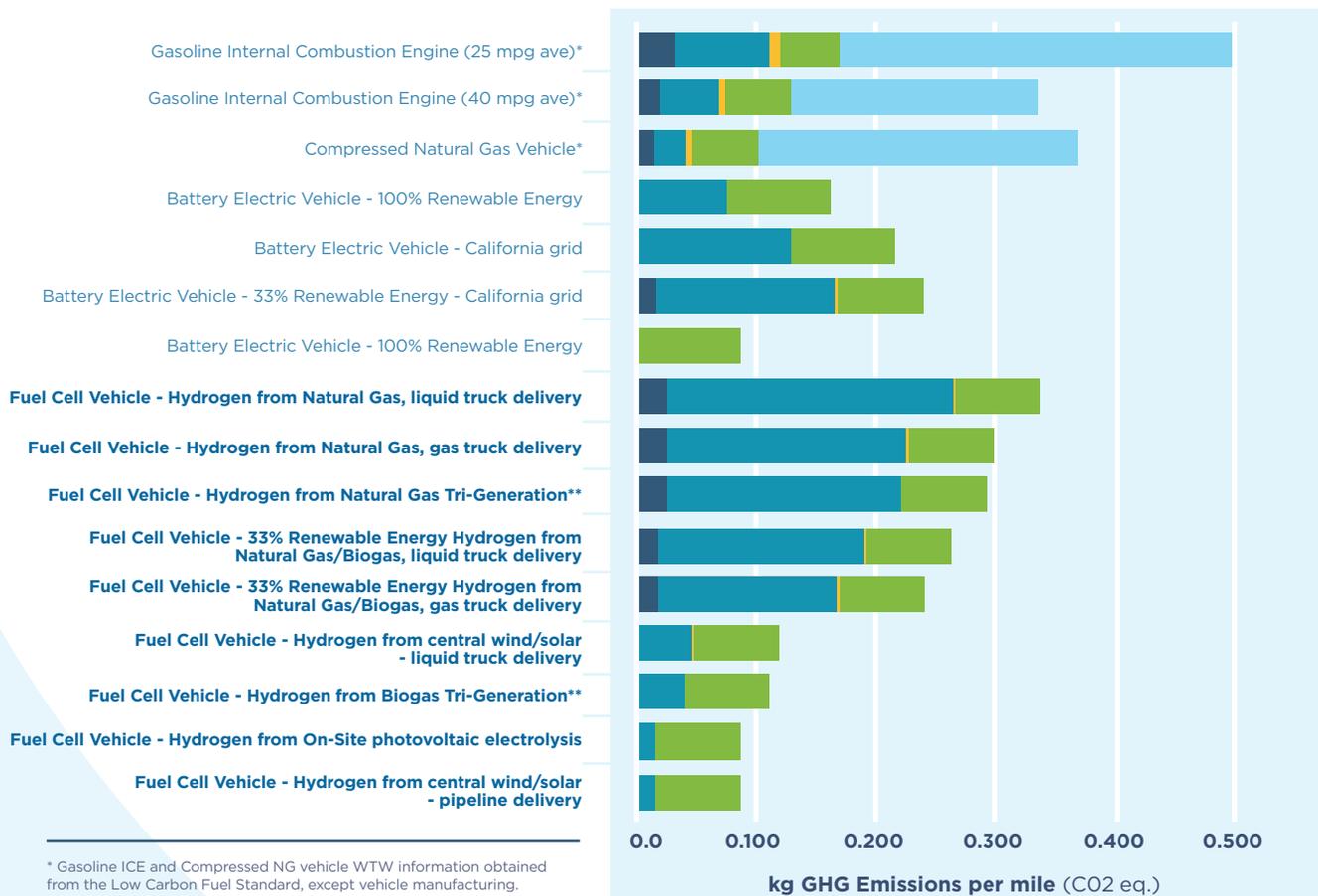
FCVs CAN HELP MEET BINDING GHG REDUCTION TARGETS

Leading states such as California, Connecticut, and Massachusetts have passed binding state-wide GHG emission reduction targets. FCVs are zero emission vehicles that can help local, state, and national governments reach these GHG reduction goals.

FCVs: THE VERSATILE LOW CARBON CHOICE

FCVs are particularly versatile because of their long drive ranges of 300-400 miles and ability to fuel in just 3-5 minutes.

GHG EMISSIONS BY VEHICLE TYPE



* Gasoline ICE and Compressed NG vehicle WTW information obtained from the Low Carbon Fuel Standard, except vehicle manufacturing.

**Tri-Generation is a novel technology that was conceived by the National Fuel Cell Research Center in 2001 to simultaneously generate electricity, hydrogen, and heat. It was developed into the first prototype in collaboration with FuelCell Energy, Inc., and Air Products and Chemicals, Inc. The first demonstration of this technology in the world is currently being demonstrated at the Orange County Sanitation District while operated on renewable biogas derived from the wastewater treatment process.

For more information on Tri-Generation please visit:

http://www.apep.uci.edu/3/research/partnership_TRI-GEN.aspx

***Fleet-wide average fuel economy is the representative fuel economy of the average vehicle in the light-duty vehicle fleet. This is a weighted average of the fuel economy of different size vehicles. Each vehicle class is weighted by their contribution to the total light-duty vehicle fleet according to the CARB EMFAC model.

****Vehicle manufacturing emissions obtained from automaker data input.

■ Fuel Source ■ Fuel Production & Treatment ■ Fuel Distribution
■ Vehicle Manufacturing**** ■ Vehicle Tailpipe

Vehicle Fleet Average Fuel Economy***

BEV: 0.345 kWh/mi | FCV: 56.8mi/kg H2

Source: Advanced Power and Energy Program, June 2014

http://www.apep.uci.edu/3/ResearchSummaries/pdf/SustainableTransportation/WTW_vehicle_greenhouse_gases_Public.pdf