DOE Hydrogen and Fuel Cells Program Record	
Record #: 8020	**Date:** December 29, 2008
Title: Reduction in Fuel Consumption with Fuel Cell Vehicles	
Update to: 5018	
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Approved by: Sunita Satyapal	**Date:** December 29, 2008

Item:

A hydrogen-powered fuel cell vehicle (FCV) can reduce fuel consumption by at least 50% compared to a conventional vehicle with a gasoline internal combustion engine (ICEV).

Reference and Calculations:

In 2020, the projected fuel economy for a FCV is 65 miles per gasoline-equivalent gallon (mpgge)[1], vs. the projected 28 mpgge for a gasoline ICEV[2]. Each fuel economy number is a weighted average assuming that new light-duty vehicle sales will be 49% cars and 51% light trucks. The fuel economy estimates (65 and 28) correspond to adjusted EPA-rated mpgge numbers, i.e., EPA test numbers adjusted further to reflect on-road driving.

65 and 28 mpgge correspond to 0.0154 and 0.0357 gge per mile, respectively.

The fuel consumption reduction is:

[(0.0357-0.0154)/0.0357]*100 = 56.9%

The example shows that the reduction in fuel consumption will be greater than 50%.

[1] General information on Argonne National Laboratory's Powertrain Systems Analysis Toolkit (PSAT) is at www.transportation.anl.gov/modeling_simulation/PSAT/index.html. The May 2008 version was used in the above analysis.

[2] U.S. Department of Energy, Energy Information Administration, *Supplemental Tables to the Annual Energy Outlook 2008* "Transportation Demand Sector," Table 49: "Light-Duty Vehicle Miles per Gallon by Technology Type," (February 2008), retrieved on August 28, 2008 from http://www.eia.doe.gov/oiaf/aeo/supplement/supref.html