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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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 ICEV². 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%.

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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