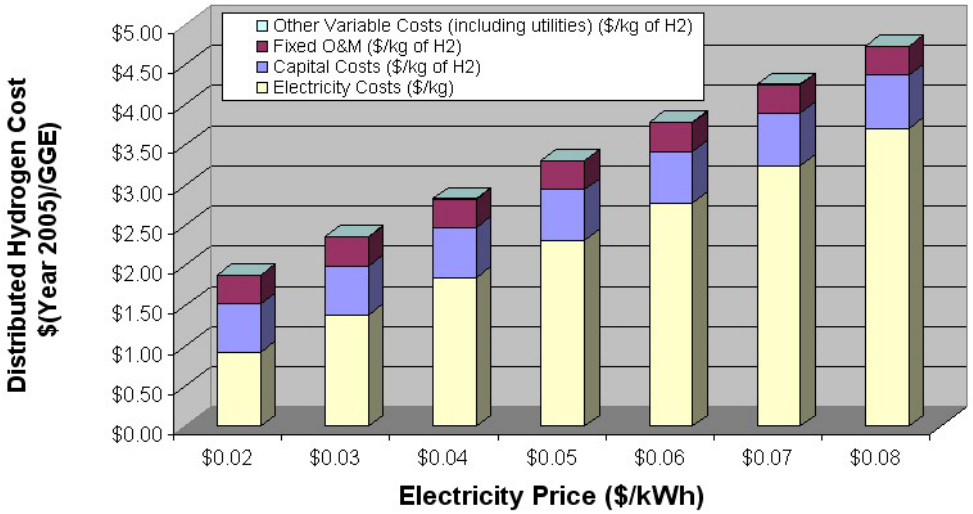
DOE Hydrogen and Fuel Cells Program Record	
Record #: 5014	**Date:** December 15, 2005
Title: Electricity Price Effect on Electrolysis Cost	
Originator: Roxanne Garland	
Approved by: JoAnn Milliken	**Date:** January 2, 2006

Item:

Effect of Electricity Price on Distributed Hydrogen Production Cost



(Assumes: 1500 GGE/day, electrolyzer at 76% efficiency, and capital cost of $250/kW)

Reference:

The graph is based on the 2010 target of a 1500 kg/day water electrolysis refueling station described on page 3-12 of the Hydrogen, Fuel Cells and Infrastructure Technologies Program Multi-Year Research, Development and Demonstration Plan, February 2005. The graph uses all the same assumptions associated with the target, except for electricity price:

- 76% efficient electrolyzer
- 75% system efficiency
- 20 year analysis period
- 10% IRR after taxes
- 100% equity financing
- 1.9% inflation
- 38.9% total tax rate
- MACRS 7-year deprecation
- 70% capacity factor
- $250/kW system capital costs

The data in the graph was determined using the H2A model, with the electricity price varied by one cent from $0.02/kWh to $0.08/kWh. The results for each run are shown below:

Cost of Electricity ($/kWh)	0.02	0.03	0.04	0.05	0.06	0.07	0.08
Distributed Hydrogen Cost ($(Year 2005)/GGE of H2)	1.89	2.36	2.84	3.31	3.79	4.26	4.74
Capital Costs ($/kg of H2)	0.60	0.61	0.62	0.63	0.65	0.66	0.67
Fixed O&M ($/kg of H2)	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Electricity Costs ($/kg of H2)	0.93	1.39	1.85	2.32	2.78	3.24	3.71
Other Variable Costs (including utilities) ($/kg of H2)	0.005	0.005	0.005	0.005	0.005	0.005	0.005

Information Sources:
Hydrogen, Fuel Cells and Infrastructure Technologies Program Multi-Year Research, Development and Demonstration Plan, "Table 3.1.4. Technical Targets: Water Electrolysis," February 2005, pg 3-12.

For details on the H2A model, see:
http://www.hydrogen.energy.gov/h2a_analysis.html

The standard H2A economic assumptions can be found at http://www.hydrogen.energy.gov/h2a_analysis.html under the title DOE H2A Standard Economic Assumptions.