Hydrogen Delivery Scenario Analysis Model (HDSAM)

(Argonne National Laboratory)

Objectives

Provide platform for comparing the cost of alternative hydrogen delivery and refueling options. Identify cost drivers of current hydrogen delivery and refueling technologies for various market penetrations of fuel cell electric vehicles (FCEVs).

Key Attributes & Strengths

The tool is highly flexible, allowing end users the ability to change many detailed input assumptions and to perform sensitivity analyses. HDSAM evaluates the cost of hydrogen delivery and refueling for various fuel cell vehicle market penetrations

in U.S. cities with population of 50,000 or greater. The model incorporate optimization algorithms to identify least cost delivery and refueling

configurations. All assumptions and calculations are transparent and key components and drivers of cost are easily identified.

Platform, Requirements & Availability

HDSAM model uses an Excel-based platform with graphical user interface, and is freely available to the public from the Systems Analysis program's

website: http://hydrogen.energy.gov/h2a analysis.html

INPUTS Market demand parameters.

- Cost and performance data of delivery and refueling components as a function of throughput and manufacturing volume.
- Economic and financial parameters.

ASSUMPTIONS & DATA

- Cost of capital from vendors, industry and literature, and other economic parameters from H2A model.
- Depreciation and labor rates based on industry input.
- Land requirements based on NFPA codes and standards.
- Process and equipment technical information based on industry input and basic engineering calculations.
- Cost of energy from the U.S. EIA.

OUTPUTS

- Levelized cost (\$/kg) of hydrogen delivery, including refueling.
- Contribution of delivery components to levelized cost of hydrogen.
- Capital, operating and maintenance costs of delivery components.
- Annual and cumulative cash flows by delivery components and total.
- Land area, energy use, efficiency, leakage, boiloff and emissions.



