

# Get the *FACTS* about *HYDROGEN FUEL*

## *Hydrogen (H<sub>2</sub>) energy already makes economic sense. Here's why:*

- 1) One kilogram of H<sub>2</sub> provides the same amount of energy as one gallon of gasoline. To cover the same driving distance, a hydrogen fuel cell vehicle needs to hold only 40 percent of the energy versus a gasoline-powered vehicle does.
- 2) The current generation of automotive hydrogen fuel cells is approximately two and a half times more efficient than gasoline/electric hybrid engines—and the only emission from a hydrogen fuel cell vehicle is water!
- 3) When you pay \$4 a gallon for gas at the pump, the price includes an average of \$0.50/gallon for gasoline taxes, so the real price at the pump is \$3.50/gallon.
- 4) H<sub>2</sub> can be produced and delivered, in large quantities, at prices that are competitive with today's gasoline prices. H<sub>2</sub> currently can be supplied by several methods and the two most cost effective ways are:
  - a) as liquid hydrogen, delivered by truck to a gas station at about \$3.00 (untaxed) for the equivalent of a gallon of gasoline, or
  - b) as gaseous hydrogen, delivered by pipeline to a gas station at about \$2.70 (untaxed) for the equivalent of a gallon of gasoline.
- 5) The supply of hydrogen is virtually unlimited when renewable hydrogen is converted back to power in a fuel cell. Right now, the United States could power 1 million cars with H<sub>2</sub> from natural gas using the excess capacity of the steam methane reformers (SMRs) in operation today.
- 6) The United States produces 55 billion standard cubic feet per day of natural gas. If we used one-third of this production for fueling H<sub>2</sub> vehicles, we could support **all** the cars in the country.
- 7) In addition, a changing portfolio of feedstocks will emerge in the future. Unconventional oils, biomass and biogas, as well as nuclear, solar, geothermal and wind power all have the potential to produce electricity and hydrogen—the energy carriers of the future.
- 8) What's more, hydrogen generation is clean. From “well to wheel” (that is, through the entire product life cycle), generating H<sub>2</sub> from natural gas reduces greenhouse gas emissions 50 percent compared to gasoline. Half of the hydrogen produced by an SMR comes from water.
- 9) Hydrogen energy makes good sense from the perspectives of economics, the environment and national security.
- 10) With sufficient demand for hydrogen fuel, the hydrogen fueling infrastructure can be built at a price that's competitive with the gasoline infrastructure.

Meet HydroJen™ . . . She's your guide to the amazing world of hydrogen energy. Look for her wherever Air Products is advancing the hydrogen fueling infrastructure and technology.





Air Products hydrogen  
fueling station located  
at Penn State University,  
State College, PA

### ***For More Information***

If you'd like to know more about hydrogen energy and how Air Products is creating the infrastructure that will deliver hydrogen safely and abundantly, contact us today.

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***The fuel of the future – today.***

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