

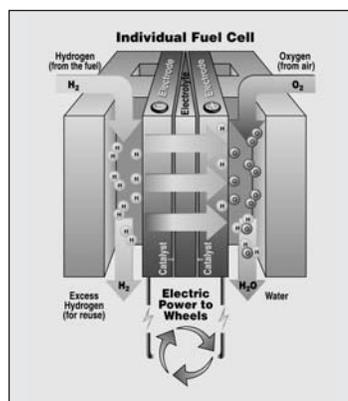
## Evaluating Alternative Fuels

Alternative fuels and the vehicles that use them can help our nation to reduce its use of imported petroleum products. They can also contribute to achieving clean air goals. Although federal and state laws are calling for increased use of alternative fuel vehicles (AFVs) in fleets, obstacles to full implementation remain. The use of alternative fuels such as compressed natural gas (CNG), hydrogen, methanol, and ethanol is currently limited by lack of adequate fueling infrastructure. Argonne National Laboratory is exploring ways to make alternative fuels more viable.

### Producing Hydrogen for Fuel Cell Vehicles

As interest in fuel cells builds, scientists are looking for ways to produce, store, and dispense the most appropriate fuels to power fuel cell vehicles. Hydrogen is an especially promising energy carrier because it (1) can be made from water or renewable resources, and (2) produces only water when used to generate power. Argonne researchers are working with several collaborators to develop an economical thermochemical process that uses next-generation, non-polluting nuclear reactors to produce hydrogen. This system offers passive safety and higher temperatures than earlier nuclear processes, greater protection against nuclear proliferation, and the capability to process water directly into hydrogen.

For more information, contact Richard Doctor at (630) 252-5913.



Hydrogen-powered fuel cells can reduce our nation's dependence on petroleum for transportation. Argonne's hydrogen production and infrastructure research is contributing toward widespread realization of hydrogen-powered transportation by mid-century.

### Examining Alternative Hydrogen Infrastructures

Argonne researchers have developed comprehensive analysis techniques to project the effects of advanced transportation technologies on society and to examine alternative hydrogen infrastructures. Because numerous technical and economic hurdles must be overcome before hydrogen can become a major transportation fuel, these tools look at the entire system or fuel cycle

from resource to delivery into a vehicle — and permit analysts to compare the merits of various alternatives. Scientists are also using these tools to evaluate accelerated scenarios for producing, storing, and delivering hydrogen within a 10-, 20-, and 40-year timeframes, to determine realistic strategies for infrastructure deployment.

For more information, contact Marianne Mintz at (630) 252-5627.

### Putting CNG Refueling Technologies to the Test

Argonne operates its own commercial-scale CNG fueling station to support a fleet of CNG vehicles that is used in a variety of site-support and research activities at the Laboratory. This CNG facility allows Argonne researchers to identify operational issues, evaluate technology needs, develop new technologies, test results, and support cooperative research with other R&D organizations. Compressors are the largest single component of station capital cost and the principal source of maintenance cost. To reduce the cost of compressor technology, Argonne researchers are working with an industrial partner to develop, test, and implement a new design for an improved CNG compressor that may be 25-50% less expensive, quieter, and easier to maintain in the field than existing systems.



Argonne's commercial-scale compressed natural gas (CNG) fueling station allows researchers to test new approaches to CNG compression, storage, and delivery.

For more information, go to [www.transportation.anl.gov/ttrdc/fuels/](http://www.transportation.anl.gov/ttrdc/fuels/) or contact Dave Livengood at (630) 252-3737.