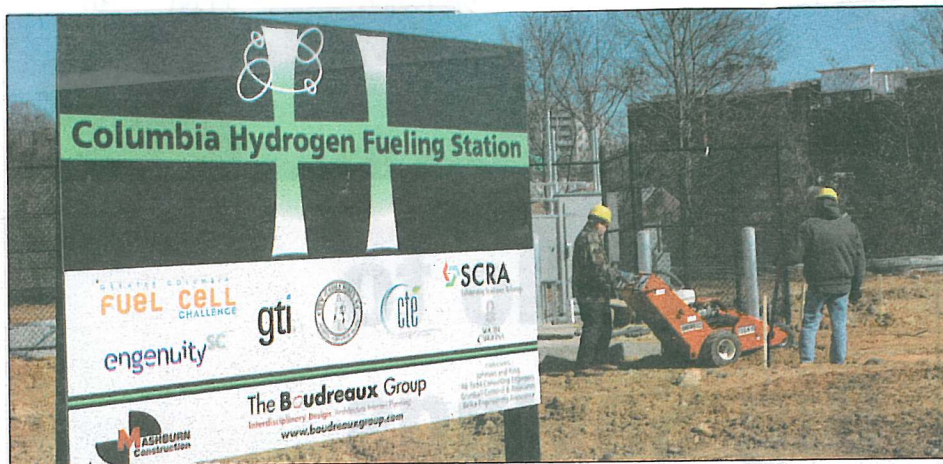


# Hydrogen could power S.C. knowledge economy



Construction workers prepare a hydrogen fueling station in Columbia. (Photo/James T. Hammond)

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Seven years ago, during the dot-com frenzy, a group of business and community leaders met in Columbia to discuss their concerns that the state was being left behind.

They watched while cities like Austin, Texas, and Raleigh, N.C., surpassed Columbia in innovation and per capita income. But knowing that Columbia, and South Carolina, could compete, the group set out to make South Carolina the best in the world. The question was, at what?

Looking around, they realized that the state already had a presence in hydrogen research with the Savannah River National Laboratory, near Aiken, and the University of South Carolina's Center for Fuel Cells program.

Being the best in hydrogen research was a natural fit and the state is well on its way to achieving its goal, said Neil McLean, executive director of EngenuitySC, a public/private partnership focused on the knowledge-based economy in the Columbia region.

Columbia, and the state, will be showing off its prowess as it hosts the 20th annual National Hydrogen Association's conference and expo in Columbia from March 30-April 3.

Approximately 1,500 people from

some of the world's largest companies, including Chevron, Shell, Toyota, General Motors, BMW and Linde, are expected to attend and have a \$1.5 million economic impact in those five days.

The conference will include more than 150 speakers, more than 100 exhibitors and nearly 50 conference sessions.

Perhaps the highlight of the conference, at least for showing off what South Carolina has to offer, will be a road trip to the Savannah River National Laboratory's Center for Hydrogen Research in Aiken for dinner and a tour. Along the way, participants will visit a new hydrogen refueling station off Interstate 20 in Aiken County, and upon reaching SRNL, tour the public areas of the Center for Hydrogen Research and the Hydrogen Technology Research Laboratory. Sam Bhattacharyya, director of the SRNL, will speak during the dinner, offering information on the hydrogen/energy programs and missions at SRNL.

In addition to the \$1.5 million impact of the conference itself, Lee Bussell, chairman and CEO of Chernoff Newman advertising and marketing firm, said a lot of value comes out of each conference as companies typically use it as a platform to make major announcements. Columbia attracted Trulite, a hydrogen fuel cell manufacturer, to locate in Columbia during a recent NHA conference.

Bussell expects five to seven companies to make announcements during this year's conference.

"This is an opportunity to bring in 1,500 people from the top companies and to validate our reputation as a top state in the country in hydrogen research," McLean said. These companies will see that Columbia and South Carolina can provide them the support they need in developing hydrogen fuel cells.

"When people see the assets we have and talk to the mayor (of the city of Columbia) and (University of South Carolina) President (Harris) Pastides, it really makes an impression."

How does South Carolina support the hydrogen industry?

South Carolina supports innovation through legislative support including:

- Innovation Centers Act – Targeted financial support for alternative energy and other knowledge-based company formation, relocation or collaboration.

- Industry Partners Act – Creation of a target program of excellence in hydrogen and fuel cells in South Carolina with funding allocated to commercialization.

- Hydrogen Infrastructure Development Act – \$15 million in state funding to support hydrogen and fuel cell commercialization in South Carolina.

- Venture Capital Investment Act – \$50 million fund for venture capital backing of technology-based start-up companies in South Carolina.

- SC Launch! – A statewide seed capital program to support the growth of technology-based companies in South Carolina.

### Research concentration

Research is also going strong in the state beginning with the Savannah River National Laboratory, which has been involved in hydrogen research since 1951. Today, it has one of the largest concentrations of hydrogen scientists in the country.

The University of South Carolina developed the nation's first Center for Fuel Cells funded by the National Science Foundation. The university is one of the leading hydrogen and fuel cells research institutions in the nation.

The Clemson University-International Center for Automotive Research is working with BMW and several other vehicle manufacturers on hydrogen use.

Hydrogen research and development are in three areas, transportation, stationary fuel cells and portable fuel cells, McLean said.

"When people think of hydrogen, they think of cars," McLean said. And rightly so, since General Motors invests about half of its research and development money in hydrogen research.

But in reality, hydrogen-fueled transportation in the near future includes specialty vehicles, such as Segway Scooters and forklifts; and in fleet-type vehicles, buses and airport shuttles that make local runs. The use of hydrogen in automobiles is a longer-term solution. There are many financial and technical issues that need to be resolved first. One is the fueling infrastructure.

Stationary fuel cells are being used for back up energy suppliers and for supplying power in remote locations like cell phone towers. Fort Jackson in Columbia has ordered 10 units through the South Carolina Research Authority.

"Stationary fuel cells are sort of boring to look at. They look like air conditioning units," McLean said.

### Orders from India

The largest order to date for stationary fuel cells recently came from the Acme Group in India, which ordered 20,000 units from Ballard Power System in Burnaby, British Columbia, McLean said. The units will be used to power telecommunication towers throughout India.

Portable fuel cells, however, are the hottest application because the cost per kilowatt is much lower. Trulite, a fuel cell manufacturer, is producing portable cells at Midland Technical College's Northeast campus. These types of fuel cells are being used by the U.S. Department of Defense and has unique applications for first responders in emergency situations, McLean said.

As this industry grows, opportunities for other businesses will grow with it, he said.

"In the longer term, we want everybody in the business community to view our ability to grow the hydrogen industry as an opportunity to grow their businesses too," McLean said.

65

## Fuel Cell Alliance

*Founded in January 2006, the South Carolina Hydrogen and Fuel Cell Alliance was created by six core institutions and organizations. Together, this public-private collaboration is pushing South Carolina to the forefront of hydrogen research and advancement.*

The Center for Hydrogen Research

[www.scch2r.org](http://www.scch2r.org)

Clemson University

[www.clemson.edu](http://www.clemson.edu)

Savannah River National Laboratory

[srnl.doe.gov](http://srnl.doe.gov)

The South Carolina Department of Commerce

[www.sccommerce.com](http://www.sccommerce.com)

South Carolina State University

[www.scsu.edu](http://www.scsu.edu)

The University of South Carolina

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