



# CaH2Net Update

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## SPECIAL POINTS OF INTEREST:

- Fuel cell cars and buses shuttle visitors and VIPs during governor's inauguration.
- Stakeholders see need for more stations in southern California that can deliver hydrogen at 70 mega Pascal (10,000 pounds per square inch)
- CaH2Net and partners working to streamline the station development and permitting process.

## UC IRVINE INSTALLS FIRST 70 MPA STATION IN CALIFORNIA

On February 27, 2007, the University of California, Irvine (UCI) National Fuel Cell Research Center (NFCRC) celebrated the grand opening of the state's first 70 mega Pascal (MPa) (or 10,000 psi) hydrogen refueling station. Fuel cell vehicles from Daimler Chrysler, General Motors, Honda, Toyota and others will be using the station to demonstrate this new high pressure dispensing technology. The station will provide opportunities to learn more about high pressure fueling efficiencies, hydrogen demand, fill times, supply and storage logistics and operator experiences and patterns.

NFCRC and Air Products designed, engineered and installed the station with funding

from the U.S. Department of Energy and the South Coast Air Quality Management District. The station is unique in that it can dispense gaseous fuel cell grade hydrogen at both 35 MPa and 70 MPa, and soon, it will begin dispensing cryogenic liquid hydrogen for use in BMW's 7 series bi-fuel internal combustion engine vehicles.

The NFCRC station has a clean uncluttered "retail" like appearance. An electronic screen provides customers with step-by-step fueling instructions, much like a modern self serve gasoline station. The station can complete a single fill in three to six minutes and has enough hydrogen for up to ten refuelings

per day. Congratulations to UCI and Air Products for adding another station to the California Hydrogen Highway Network!

For more information, contact Mike Kashuba at (916) 323-5123.



## HONDA'S YOUNGEST DRIVER

In March, Honda handed the keys to their second and youngest retail customer, 17 year old Q'orianka Kilcher, star of the 2005 film "The New World." It was Kilcher's dream to have a ZEV for her first car. That's when Santa Barbara-based Energy Independence Now paired

Kilcher with Honda to make her dream a reality.

For Honda, putting next generation drivers behind the wheel of next generation vehicles is a win-win for hydrogen. Contact Daniel Emmett (805) 899-3399.



Q'orianka Kilcher with her first car.

## RECENT AND UPCOMING EVENTS

### Car Shows, Car Shows, Car Shows

The CaH2Net has been busy lately appearing at many of the State's premier car events. Showing off new Fuel Cell Vehicles at events such as the San Francisco International Auto Show, the San Jose International Auto Show, and the Coronado Classic Speed Festival has raised public awareness and interest in the future of Hydrogen technologies. At these events, the Hydrogen Highway booths were flooded with individuals wanting to get a glimpse at the future and to learn more about the hydrogen infrastructure.

Interaction between the CaH2Net members and the general public was both educational and exhilarating. "How much does it cost?" and "When can I get one?" was on the minds of most everyone that stopped by. Most of the feedback we received from the general public was upbeat and encouraging. Most people realize that we need to break our addiction to fossil fuels and all embrace

the idea of using a renewal energy source, such as hydrogen, that creates no tailpipe pollution.

From high school students to senior citizens, the interest in a hydrogen highway was not confined to one social sector. People of every gender, age and ethnicity were stopping by and spending 20-30 minutes at a time discussing and learning about the benefits of a hydrogen economy, gaining better understanding about hydrogen safety, and walking away with a new outlook on hydrogen programs like the Hydrogen Highway. All in all, the CaH2Net outreach activities continue to have a positive impact on public education and awareness.

### Conferences and Earth Day Events

CaH2Net also made a showing at several environmental-themed events in March and April:

- REXPO III, Stockton
- Green California Summit, Sacramento
- Alternative Fuels and Vehicles Conference, Anaheim



*Ford Focus FCV getting local media coverage at AAA's Greenlight Rally, San Francisco International Auto show.*

- Hewlett Parkard Earth Day Fair, Roseville
- DMV/DGS Earth Day Awareness Fair, Sacramento
- CSU Sacramento Earth Day, Sacramento
- UC Davis Airport Open House, Davis

### Upcoming Events

*CalEPA Environmental Cross Media Enforcement Symposium in Napa*

*May 29 – June 1, 2007*

Keep in touch with the latest news on the CaH2Net by signing up for our list serve at <http://www.hydrogenhighway.ca.gov/sub2hwy.html>

## FUEL CELL VEHICLES - THE RIDE OF CHOICE AT INAUGURATION

The Governor's inaugural activities started with a public event "Kick-Off at Capitol Park: Leading the Green Dream." Children of all ages enjoyed organic treats, environmental activities, and learned about what government agencies, non-profit organizations, and green technology companies are doing to further California's comprehensive environmental vision. Guests were also treated to rides in hydrogen fuel cell buses.

Hydrogen was also the transportation

fuel of choice for "invitation only" inaugural festivities. California Fuel Cell Partnership members provided VIP inaugural shuttle service using hydrogen fuel cell vehicles provided by DaimlerChrysler, Ford, GM, Honda, Hyundai, Nissan, Toyota, and Volkswagen. Other guests were transported via fuel cell bus provided by Alameda Contra Costa Transit Agency and Santa Clara Valley Transit Authority.



California's first lady, Maria Shriver learns about fuel cell technology from CaFCP Executive Director, Catherine Dunwoody.

## STAKEHOLDERS STRATEGIZE ON CAH2NET STATION DEVELOPMENT

In February ARB staff convened a meeting with industry stakeholders to assess implementation priorities for the California Hydrogen Highway Network (CAH2Net) for 2007 and beyond. Representatives from automakers, energy providers, government, and academia provided updates on hydrogen station and vehicle deployments in California, then offered suggestions for future fueling station funding, placement and timing.

Presenters gave updates on a variety of topics, all of which play a part in hydrogen vehicle and station deployment:

- State funding for fuel cell buses and hydrogen stations;
- Zero emission vehicle (ZEV) regulation and ZEV technology expert review panel findings;
- Development of national codes and

standards for hydrogen quality, 70 MPa fueling, and fuel nozzles and dispensers;

- Current plans for 70 MPa stations in California (today's norm is 35 MPa);
- Permitting templates; and
- Emergency responder training.

Following the presentations, participants engaged in open discussion focused on identifying the next steps to meeting the fueling needs of the hydrogen vehicle fleets planned for deployment within the next few years. Most of the OEMs will be using 70MPa on-board storage to increase vehicle range and, therefore, will need stations capable of delivering fuel at this pressure. OEMs also indicated their preference for more stations in the greater Los Angeles area where they are planning to deploy most of their vehicles, preferably in close proximity to major freeways. These recommendations were later factored into

ARB's next hydrogen station bid solicitation, due to be released in May 2007.

Participants also expressed the need for more communication and collaboration between government agencies, fueling providers and vehicle OEMs on the development of a California fueling network, and the need to support these stakeholders on public accessibility and liability issues. Interested participants agreed to meet regularly to continue the dialog and collaboration that was established at this meeting. For more information, contact Ben Deal (916) 322-8449.



Chevy's Sequel FCV, set for release this Fall, will have 70MPa fueling capability.

## CALIFORNIA'S LOW CARBON FUEL STANDARD: GOOD FOR HYDROGEN

Governor Schwarzenegger, in his January ninth State-of-the-State address, announced Executive Order S-01-07 establishing a Low Carbon Fuels Standard (LCFS) with the goal of reducing the carbon intensity of transportation fuels sold in California.

The Governor emphasized that the LCFS is the world's first greenhouse gas standard for transportation fuels and will spark research in alternatives to oil, boost clean technology industry in California and reduce greenhouse gas emissions.

of the Hydrogen Highway and boosts prospects for hydrogen to compete in a market that favors reduced carbon intensity.

The Governor said, "Petroleum dependency contributes to climate change and leaves workers, businesses and consumers vulnerable to price shocks from an unstable global energy market. As a world leader in energy efficiency, alternative energy and reducing greenhouse gases, California's new low carbon standard is an innovative action that will diversify our fuel supplies and establish a vibrant market for cleaner-burning fuels."

The LCFS requires fuel providers to ensure that the mix of fuel they sell in the California market meets, on average, a declining standard for GHG emissions measured in CO2-equivalent gram per unit of fuel energy sold. By 2020, the LCFS will produce a 10

percent reduction in the carbon content of all vehicle fuels sold in California. This is expected to replace 20 percent of our on-road gasoline consumption with lower-carbon fuels, more than triple the size of the state's renewable fuels market, and place more than 7 million alternative fuel or hybrid vehicles on California's roads (20 times more than on our roads today).

Because the LCFS will use market-based mechanisms that allow providers to choose how they reduce emissions while responding to consumer demand, hydrogen can be expected to play an important role in achieving this standard. It is expected that ARB will complete the regulatory process to implement the new standard no later than December 2008.

For more information, contact Daniel Emmitt (805) 899-3399.



Because hydrogen is the ultimate low carbon fuel, this standard supports development

[www.HydrogenHighway.ca.gov](http://www.HydrogenHighway.ca.gov)

**CALIFORNIA AIR  
RESOURCES BOARD**

Mobile Source Control Division-North  
1001 I Street  
Sacramento, California 95814  
Phone: 916-323-8966  
Fax: 916-323-1337  
E-mail: [abevan@arb.ca.gov](mailto:abevan@arb.ca.gov)



**TACKLING THE CHALLENGE OF SITING, PERMITTING, AND BUILDING A HYDROGEN FUELING STATION**

As numerous hydrogen station developers and permitting and enforcement officials will attest, installing a hydrogen station is no slam dunk. In most cases, this is a first-time experience for the local agencies who must approve plans and be prepared to respond to emergencies once the station is built. Fortunately, enough stations have been built (approximately 50 throughout the United States) such that local jurisdictions do not have to keep reinventing the wheel.

Last February, National Renewable Energy Laboratory (NREL) and ARB hosted a workshop to share experiences, pool resources, and determine how to streamline the process of taking a hydrogen station from idea to reality. Hydrogen fueling station project developers and local permitting officials shared

challenges, successes and recommendations they garnered from hydrogen station projects that they were involved with in Washington, D.C., Detroit, MI, and Oakland, CA. Workshop proceedings can be downloaded from: <http://www.hydrogenandfuelcellsafety.info/resources/workshops.asp>.

Riding on the momentum created from this workshop, CaH2Net and NREL are developing tools to help station developers and local officials during the planning and development process.

CaH2Net will build on NREL's work done at the national level by incorporating codes, standards, and other requirements and nuances specific to California, including information on how and when to seek out additional requirements specific to local jurisdictions.

CaH2Net is currently develop-

ing three different templates to address the unique needs of station developers, permitting authorities, public officials and community groups. The first template will guide the station developer through the process from start to finish, directing them and local authorities to the second template on permitting for specific codes and standards requirements. The third template will provide tools for educating public officials and community groups about hydrogen as a transportation fuel and how to get involved in the public process.

By collaborating with NREL, the California Fuel Cell Partnership, and entities with hydrogen station development experience, the CaH2Net team will produce tools that will streamline the process for establishing future hydrogen fueling stations. For more information, contact: Leslie Goodbody at (916) 323-2961

*The California Hydrogen Highway Network is an initiative to establish hydrogen infrastructure to support commercialization of sustainable, zero and near zero emission hydrogen vehicles.*

*The CaH2Net is a key part of California's strategy to achieve the State's vision of a secure energy future that simultaneously addresses our environmental, public health and economic challenges working in partnership with other components of the State's programs to advance energy efficiency and renewable energy.*