California Hydrogen Highway Coming to Realization
by Patrick Stelmach, PATH intern

California is taking a big step forward with plans to build a "hydrogen highway" across the state. The plan calls for creating a network of hydrogen fueling stations for clean-air vehicles.
One of the stations will be built at the San Francisco International Airport. It will have the first public access fueling complex offering both pure hydrogen and Hythane, a blend of 20% hydrogen and compressed natural gas.

The station also will service a new fleet of 27 Hythane-powered shuttle buses which SFO expects to purchase by the end of the year. Funding for the $3.7 million dollar station includes a $1.7 million grant from the California EPA's Air Resources Board. The Board is supplying a total of $14.4 million statewide to help build seven hydrogen fueling sites including SFO and a station in Emeryville. The SFO hydrogen fueling station is expected to open in six months, with full completion sometime in 2010.

The question is will consumers buy into the new technology? Hydrogen powered vehicles have zero emissions and some models can reach speeds up to 100 miles an hour with a range of 500 miles. Most have electric motors that are powered by hydrogen fuel cells.

To promote the vehicles and demonstrate their improved range as well as the variety that could soon be on the market, a coalition of eight automakers took their models on the road this month on a 1,700 mile Hydrogen Tour along the West Coast from Chula Vista, Calif. to Vancouver, B.C stopping at SFO and Livermore. The Hydrogen Tour featured eleven hydrogen-fuel vehicles from automakers General Motors, Honda, Hyundai, Kia, Mercedes-Benz, Nissan, Toyota, and Volkswagen.
"These are efficient, clean vehicles that have zero emissions and use hydrogen to make electricity that drives the electric motors of these vehicles," said Patrick Serfass, Vice-President of the National Hydrogen Association.

There is still w ork to do to make this zero emission hydrogen dream a reality, and so far there are a limited number of vehicles being leased and loaned in California, New York, and Washington, D.C. In Livermore, residents could take the vehicles out on test drives, and many people were surprised by how quiet, powerful and fuel efficient the vehicles were. The California Fuel Cell Partnership is working hard to implement a hydrogen highway by addressing the questions surrounding fuel cell vehicles: hydrogen sources, storage, vehicle refueling time, locating fueling stations, and the prospect of bringing prices down to acceptable levels.

While fuel cell vehicles using natural gas-produced hydrogen are 55% more efficient than conventional gasoline vehicles when measured well to wheels, there is still much room for improvement in developing renewable resources as an affordable way to make hydrogen. Nevertheless, some of the fueling stations in California are already producing their own fuel on site by using electricity from solar or wind energy in electrolysis, and there are plans for a station at a sewage treatment plant that will utilize biomethane. It takes about 5 minutes to fill a tank at a cost of between $12-20. In California, there are 26 fueling stations with plans for 10 more.
As for the cost, the vehicles that are currently being leased are becoming more affordable. The Honda FCX Clarity, for example, costs $600/month including maintenance and insurance. The real issue, however, is the availability of vehicles and fueling stations. Fuel cell vehicles are on the road in many countries including Canada, Japan, Germany, and China. There are currently 300 fuel cell passenger vehicles and transit buses operating in California, and automakers plan on releasing 4300 early market vehicles between 2012 and 2014 with tens of thousands on the road by 2017. In the meantime, California's budget crisis could put the brakes on future spending for the Hydrogen Highway. The state has spent $24.4 million so far to help with construction and development of fueling stations and vehicles, but much more investment will be necessary to create the statewide network of stations that would allow drivers to travel from point to point without worrying about refueling. State officials say the funds are being used to match private funding sources, which encourages investment and is intended to help the technologies get to the point of market readiness.

Increased customer demand and rising gasoline prices could also spur an increase in allocated research and development dollars. And with developing nations like China and India demanding more oil each year, hydrogen fuel cells could become an even more important part of the global energy solution.

Sources:

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