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In their element

By [Kevin Ueda](#) | Published 06/16/2006

City unveils hydrogen fueling station

By Kevin Ueda

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**CITY YARDS** — While the term “hydrogen-powered” may still conjure up images of disastrous dirigible voyages for some, residents today have something a tad more positive with which to associate the alternative fuel.

On Thursday afternoon, Santa Monica Mayor Bob Holbrook cut the ribbon to the city’s new hydrogen-vehicle fueling station, which will serve as home base to five hydrogen-fueled cars to be used for city services.

Santa Monica is one of five Southern California testing facilities, according to Naveen Berry, program supervisor of science and technology advancement for the South Coast Air Quality Management District (SCAQMD). Engineers at each of the five facilities will test the emission levels, durability, cost-efficiency and overall performance of the hydrogen-fueled cars over the next five years.

The fueling facility at 2500 Michigan Ave. cost about \$1 million, 90 percent of which was funded by the SCAQMD, said Berry. The city and Department of Energy picked up the remaining 10 percent.

In addition to Santa Monica, the SCAQMD has similar hydrogen-testing facilities in Santa Ana, Riverside, Ontario and Burbank — with a total of about 30 hydrogen-powered Prius cars in total, said James Provenzano, president of Clean Air Now, a nonprofit organization that advocates renewable energy projects.

Elsewhere, there are fueling facilities at Los Angeles International Airport, the SCAQMD headquarters in Diamond Bar, and the Sunline Transit Agency in Thousand Palms, said Berry.

Santa Monica was chosen as home to the hydrogen-testing facility on the strength that

more than 70 percent of the city's vehicles are alternatively fueled, said Provenzano, alluding to vehicles such as street sweepers, garbage trucks, city vehicles and transfer trucks — which are CNG and diesel powered.

“Moving to hydrogen fuel was the next logical step in the alternative fuel program,” Provenzano said.

Each car costs \$105,000, according to Berry. About \$25,000 covers the costs of the Toyota Prius, and \$80,000 goes towards the conversion technology.

On the exterior, each of the hydrogen cars looks like a regular Toyota Prius, but the cars contain hydrogen conversion technology from Quantum Technologies, Inc., which result in lower emissions.

As for the fueling stations, they too look like regular gas station pumps, but instead of liquid gas flowing through the hose to the car, hydrogen is being transferred via pressure differential, said Dan Rabun, of hydrogen-energy technology partner Air Products, Inc. One benefit being there are no spills or smells, things associated with regular gasoline.

“We like to call hydrogen ‘the forever fuel’ — the fuel of the future,” Rabun said.

While some might think of history's retelling of the Hindenburg disaster when they think hydrogen, it is a safe fuel source, Provenzano said.

“All fuels require special handling, special preparation,” Provenzano said. “Hydrogen has its own safety precautions, just as gas, just as diesel has.”

Gasoline that leaks following vehicle collisions and sets cars ablaze accounts for 4,500 car-related deaths a year, beyond the initial impact, Provenzano said. Hydrogen does not share those risks.

“In many ways, hydrogen is safer than gas, because when it's released into the atmosphere it dissipates quickly,” Provenzano said.

The hydrogen gas tanks in the cars are made of carbon fiber, a space-age material which is “extremely durable,” lightweight and is used in race cars and space shuttles, said John Williams, senior business development manager for Quantum Technology Inc., a partner in the hydrogen energy development. The engines in the hydrogen cars undergo 20 tests for tank certification.

Another benefit of hydrogen vehicles, proponents say, is that they are carbon-free, which means that their emissions contain no greenhouse gases. As for drawbacks, the current hydrogen cars can carry only a maximum 1.6 kilograms of hydrogen — which gives the cars about 80 miles per fill-up.

According to Berry, the hydrogen capacity is small on the Prius-model cars because a

larger storage would require altering the entire look of the vehicle.

“We didn’t want it to look any different, feel any different,” Berry said.

One kilogram of hydrogen costs \$9 at the Santa Monica facility, which is cheaper than at other locations because of an electrolyzer, which extracts the hydrogen from water. It takes roughly three minutes to fill a tank.

Some of the other drawbacks with hydrogen cars include both the high costs and low number of refueling centers throughout Southern California, Berry acknowledged.

In Southern California, there are 16 operational stations in Southern California, with nine more planned for production, according to the California Fuel Cell Partnership Web site. In Northern California, there are seven operational facilities, with four more planned.

While critics of alternatively fueled vehicles contend they are underpowered on the road, Berry countered that a hydrogen-powered Prius drives just like its gas-powered counterpart, with the same acceleration and fuel economy.

As to when, or if, hydrogen cars will be made available to the public in mass quantities remains a mystery.

Terry Tamminen, special adviser to Gov. Schwarzenegger, said that some vehicles will always be dependent on petroleum-based energy, but that the future lies in alternative fuels.

“We won’t break this addiction overnight ... but we will take the first step,” Tamminen said.