

analyst view

Hydrogen Infrastructure Developments in the USA

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SunHydro water electrolysis hydrogen station in Connecticut (Credit: Proton OnSite)

The USA has a long history in trying to encourage the adoption of hydrogen as a transportation fuel. Its automakers led early attempts at introducing hydrogen fuel cell electric vehicles (FCEV) and attempts have been made to develop the necessary infrastructure on both the East and West Coasts.

One of the earliest initiatives resulted in the formation of the California Fuel Cell Partnership (CaFCP), which was formed in 1999 by the California Air Resources Board, California Energy Commission and six private sector companies. The CaFCP is now in its fourth phase and its focus has shifted from vehicles to hydrogen refuelling stations (HRS) as it attempts to support the rollout of FCEV across California from 2015. Back in 2005, California's then Governor Arnold Schwarzenegger signed a law providing \$6.5 million to build the California Hydrogen Highway, a proposed network of hundreds of HRS at 20 mile (32 km) intervals along the state's major highways. According to the CaFCP, in 2012 there were eight publicly accessible hydrogen stations in the State, with an additional fourteen stations under development.

Across the other side of the country in 2010, SunHydro announced its plans to roll out an East Coast hydrogen highway which was to extend from Portland, Maine all the way down the coast to Florida and include eleven strategically located HRS. The stations were to be based upon water electrolysis technology sourced from the sister business of SunHydro, now known as Proton OnSite, and the cost was estimated to be in the region of \$2–\$3 million per station.

Neither of these plans became as successful as originally planned however, due to a combination of high costs and the lack of FCEV. New approaches at both a state and nationwide level are now underway. In September 2013 Governor Jerry Brown signed into law a bill, AB 8, which includes a provision to fund at least 100 Californian hydrogen stations with up to \$20 million a year available for that purpose from the Alternative and Renewable Fuel and Vehicle Technology Program. Nationally, H₂USA was launched by the [Department of Energy on May 13th 2013](#) and is a jointly funded programme by the Federal Government and the private sector. The US Fuel Cell and Hydrogen

Energy Association (FCHEA) was heavily involved in coordinating the formation of the group along with support from the US Department of Energy and seven automotive manufacturers.



FCHEA is currently acting as secretariat to H₂USA, coordinating its meetings and facilitating the efforts of the Working Groups, which are discussed later. Fuel Cell Today spoke to Morry Markowitz, President and Executive Director of FCHEA, to find out the latest on the USA's hydrogen infrastructure strategy.

The mission of H₂USA is to promote the commercial introduction and widespread adoption of FCEV across America through the creation of a public-private collaboration to overcome the hurdles of establishing a hydrogen infrastructure. The group has more than doubled in size since its original launch with just twelve members, to now include 27 participants from an incredibly diverse range of industries including Federal Government, automakers, fuel cell and hydrogen suppliers and component manufacturers, energy companies, hydrogen producers, associations, and national laboratories. The current participants are:

- US Department of Energy
- California Fuel Cell Partnership
- Toyota Motor North America
- Nissan North America R&D
- American Gas Association
- Mercedes-Benz USA, LLC
- Chrysler Group LLC
- PDC Machines Inc.
- Hydrogenics Corp.
- Nuvera Fuel Cells
- Proton OnSite
- Plug Power
- ITM Power
- SCRA
- Fuel Cell and Hydrogen Energy Association
- Electric Drive Transportation Association
- National Renewable Energy Laboratory
- Savannah River National Laboratory
- Massachusetts Hydrogen Coalition
- Association of Global Automakers
- American Honda Motor Company
- Center for Hydrogen Research
- Argonne National Laboratory
- General Motors Holding LLC
- Sandia National Laboratory
- Hyundai Motor America
- Air Liquide Industrial US

Six months on the project is still in its early stages but, since its launch, the participants have held initial meetings and have set up four working groups (WG), the Market Support and Acceleration WG, Hydrogen Station WG, Locations Roadmap WG, and Investment and Finance WG. The direction and oversight of these working groups is provided by H₂USA's Operational Steering Committee. H₂USA has also had several discussions with the national hydrogen infrastructure groups from other countries, including Germany, the United Kingdom, and Japan.

Morry Markowitz, President and Executive Director of FCHEA said: "This year has seen great progress in the United States and around the world in the development of Fuel Cell Electric Vehicles. Starting with the establishment of H₂USA, the announced collaborations of the OEM manufacturers, to the passage of legislation in California to financially support the building of infrastructure, and the recent announcement in Germany of a partnership to build hydrogen fuelling stations in that country".

If you are interested in finding out more about H₂USA and would like to contribute to the efforts to bring hydrogen refuelling to the USA contact Morry Markowitz by email at mmarkowitz@fchea.org.

Dan Carter Manager
dancarter@fuelcelltoday.com
www.fuelcelltoday.com