

On 3-4 June 2010, the U.S. Hydrogen and Fuel Cell Technical Advisory Committee (HTAC) held its summer meeting in Washington, DC. HTAC was organized within the U.S. Department of Energy (DOE) as part of the Energy Policy Act of 2005 to provide technical and programmatic advice to the Secretary of Energy on DOE's hydrogen research, development, and demonstration efforts. It is Chaired by Robert Walker, former Congressman and Chair of the U.S. House Science Committee and Co-Chaired by Robert Shaw, a longtime hydrogen advocate and leader in hydrogen technology development. ([http://www.hydrogen.energy.gov/advisory\\_htac.html](http://www.hydrogen.energy.gov/advisory_htac.html)). A copy of the meeting agenda is enclosed with this summary as **Attachment A**

PATH General Manager Jeff Serfass was invited by Chairman Walker to provide a statement for the record on behalf of the U.S. National Hydrogen Association. Mr. Serfass reports that his comments were well received by the Committee and served as the basis for much of the remainder of the discussion that followed. His statement is attached to this summary as **Attachment B**.

The following list highlights the key topics that were covered during this two-day meeting:

- U.S. Department of Energy's position on hydrogen and fuel cells
  - The DOE is having budget cuts due to the national debt of \$11.9 Trillion
    - Due to limited funds, DOE is currently focusing on more current solutions for its energy agendas.
    - DOE FY11 Budget Request for FC and H<sub>2</sub>: ~\$256 Million
  - Henry Kelly, Principal Deputy Assistant Secretary for EERE, stated that the DOE supports FC as a way to increase energy efficiency, diversify energy resources, reduce Greenhouse Gas Emissions, and Air Pollution.
- GM Fuel Cell Vehicle Program Overview by Charles Freese, Executive Director, Global Fuel Cell Activities
  - GM believes that the peak of petroleum age is here and change to a new energy source is coming. GM is now preparing for that transition and is investing in multiple solutions that allow energy diversity and improve vehicle fuel economy and emissions.
  - Goal: get through the first few learning cycles of H<sub>2</sub>FCV as soon as possible
  - Released the GM Fuel Cell Equinox-Hydrogen 4
    - Successful operation through 3 winters (down to -20° C)
    - Fleet deployment to post office and military
    - Range: 320 km, Power 73 kW, Top speed: 160 km/h
  - GM will partner with Hawaii's gas energy company, The Gas Co., to build a network of H<sub>2</sub> fueling stations on Oahu to power FCV by 2015.
- Germany H<sub>2</sub> Mobility Update by Ian Stuart Williamson, Air Products on behalf of the H<sub>2</sub>Mobility Consortium
  - Companies come together and have an option of working on any commercialization plan projects. McKinsey was used as consulting firm to construct 'white room'.
  - *1<sup>st</sup> project* Evaluation along the value chain
  - *2<sup>nd</sup> project* H<sub>2</sub> Mobility: setting Germany as a first market
    - Clean Energy Partnership provides demonstration projects to provide technical viability for end customer usage
    - H<sub>2</sub> Mobility Initiative: 9 stakeholders and NOW signed a Memorandum of Understanding for the purpose of building up hydrogen fueling infrastructure
    - Letter of Understanding: commitment of automakers to develop and introduce market of FCV

- 3<sup>rd</sup> project Planning a roll out across Europe (if German model is successful)
- California Fuel Cell Partnership (CAFCP) Infrastructure Workshop Update by Catherine Dunwoody, Executive Director
  - Focus group of 14; included fuel retailers and convenience store operators
  - Found: respondents did not know much about hydrogen; once informed they were open to incentives like tax credits, co-funding, and first market advantage; owners of fueling stations worry about regulation compliances
  - Most gas station owners make money off of attached convenient stores not gasoline
- Japanese Hydrogen Infrastructure Update from New Energy and Industrial Technology Development Organization (NEDO) and Research Association of Hydrogen Supply/Utilization Technology (HySUT)
  - Framework for R&D of H<sub>2</sub> and FCs are under Minister of Economy, Trade and Industry (METI) and NEDO
    - Includes Policy planning; R&D program planning, funding and managing; implementation of R&D projects
    - NEDO's FY2010 budget for H<sub>2</sub> and FC: 10.68 million Yen
    - Commercialization scenario
      - Phase1- technology demonstration-2010
      - Phase 2-technology & market demonstration now-2015
        - Verify utility of FCVs and H<sub>2</sub> stations from socio-economic viewpoint
      - Phase 3-early commercialization 2016-2025
        - Expand production and sales of FCV
        - Reduce costs of H<sub>2</sub> stations and H<sub>2</sub> Fuels
        - Continue development and review of regulation
      - Phase 4- full commercialization when period is profitable
  - Fuel Cell Commercialization Conference of Japan (FCCJ)
    - 95 nongovernmental companies
    - Agreed on scenarios toward commercialization of FCV and H<sub>2</sub> stations
  - HySUT
    - Prepare circumstances toward FCV deployment by Demonstration Test
    - Members comprised of Energy Suppliers and Industrial Gas, Engineering and Device Companies
    - Hydrogen Highway (Tokyo)
      - Regular long-distance service of FCV and buses on expressway between central Tokyo and Haneda/Narita Airport
    - Hydrogen Town Project (Fukuoka)
      - Hydrogen supply to households through ~2 km long city gas pipelines
- Analysis of a "Cluster" Strategy for introducing H<sub>2</sub> Vehicles and Stations in S. California by Prof. Joan Ogden, University of California
  - Station placement within the LA Basin
  - Vehicles and stations placed in 4-12 clusters where it's been identified as early market sites
    - Connector stations are added to facilitate travel throughout the Basin
    - As more vehicles are introduced so are stations
  - As few as 8-16 stations can yield average travel time of <4 minutes (home to station) and average diversion time of <6 minutes.
  - Destination Stations in San Diego, Santa Barbara, and Las Vegas will increase attractiveness of vehicles