

HTAC POLICY & PLANNING SUBCOMMITTEE

*Talking Points and Annual Report
Discussion*

*Presented at HTAC Meeting
November 6, 2008*

TALKING POINTS

- The Policy and Planning Subcommittee (PPC) has been working for several meetings on a brief paper presenting Talking Points on Hydrogen
 - » In July we had an excellent discussion around the original draft (see Pages 27-35 of the minutes)
 - » Based on this discussion a second draft was prepared and refined by the PPC
 - » You all received a copy of this brief paper by email on October 24
- Our objective in today's discussion is to
 - » Reach consensus on the HTAC paper that can be used as a framework for discussions with the transition team
 - » Select a group of HTAC members to meet with the Energy transition team as soon as possible, with the intent of keeping hydrogen and fuel cell technology on the new administration's energy agenda

HTAC ANNUAL REPORT

- At the July meeting we agreed that HTAC would prepare an Annual Report presenting its perspective on achievements and set-backs in the Hydrogen and Fuel Cell field
 - » Limited to 5 pages or less
 - » Presenting as balanced and highly credible a view as possible -- based on facts, not advocacy
 - » To be reviewed by HTAC at its February 2008 meeting and published by the end of 1Q09
- On October 24 a memo was sent to every HTAC member seeking inputs on topics that you felt should be referenced in that report
 - » Thanks to those of you who responded
 - » Your inputs have been organized by our dedicated staff team (summary attached)
- Our objective in today's discussion is to
 - » Add additional points to those suggested by members, as you feel appropriate
 - » Select the highest priority points for including in the Annual Report

Key Reports

- NAS report on the Hydrogen Transition + key findings
- NAE Review of the FreedomCAR and Fuel Partnership
- H2 Program Annual Progress Report & Annual Merit Review and Peer Review Findings
- GAO report “Advanced Energy Technologies: Budget Trends...”
- GM/Shell infrastructure report + key findings
- CaFCP vision paper
- NHA report on the Hydrogen Transition
- DOE Jobs study
- EU report: HyWays? FC Seminar charts from METI

Product Introductions and Events

- APCI fueling station deployment at “record pace”
- APCI Hydra liquid trailer for delivery of LH₂ or GH₂ at 10ksi
- Growing market for materials handling systems (forklifts) has created backlog at APCI for associated H₂ production and dispensing products
- Construction of the first 100% renewable tri-generation (CHP and H₂) station from municipal WWT biogas
- Hydrogen Road Tour
- Honda and GM’s initial deployment of FCVs to consumers: GM’s Project Driveway
- Ford’s new 700-bar fueling station in Dearborn, MI
- New hydrogen permitting in all markets
- Stationary FC with guarantee of 80,000 hours in warranty
- CA placed order for 8 fuel cell buses
- Major coverage of road tests in automotive magazines; increasing press coverage
- Total # of fueling stations added this year
- Federal agencies as early adopters: USPS, DOD, FAA, etc.
- # of FC forklifts in commercial use
- # of fuel cell miles driven (CaFCP, NHA, OEMs might have #s) –1.5M, 60,000kg in DOE Learning Demonstration --- give one or the other number
- Sacramento (SMUD) opened first fully solar-powered fueling station

Technology Events

- Achieved 7,300 hours durability in the lab in MEAs (single cell, low-Pt, with cycling)
- Cost reduction \$94 → \$73/kW (DOE estimate)
- Identification of storage materials with 10%wt H₂ capacity
- Strong progress on nuclear production of hydrogen
 - » High Temperature Steam Electrolysis research at INL: 3 electrolysis modules with a total of 720 cells operating at 830°C and a 15 kWe power level producing 5,000 L/h H₂
 - » Water splitting by the Sulfur-Iodine (SI) thermochemical cycle research (joint French/US effort): initial production 100 L/h H₂
 - » Hybrid Sulfur (HyS) thermochemical cycle research at SRNL: multi-cell electrolyzer demo showed potential for commercial scale up
- Honda Clarity or other vehicles: cargo capacity, driving range, etc.
- DOE provide top 5 technical accomplishments from R&D

Technology Events, cont...

- FCVs continue to progress rapidly
 - » Stack durability/cost reduction
 - » Achievement of 250+ mile range
- Ford Focus fuel cell vehicle fleet of 30 vehicles achieves one million miles of road operation (move to Product events section?, include other OEMs)
- Safety:
- Nearly every OEM working on fuel cell powertrains has announced that they can now:
 - » start up the fuel cell system from -25°C or lower and in less than 90 sec
 - » store H_2 onboard with 700 bar systems, extending driving range

Technology Events, cont...

- Demonstration of a REDOX cathode for PEM fuel cells that eliminates the need for platinum catalyst (international work)
- APS & NETL progress on substitute natural gas from H₂ and coal ...(Frank N.)
- DOT approval of new technology/processes
 - » Special permits issued
 - » New codes and standard being accepted by DOT and FAA

Policy Initiatives

- €1.0 billion EU Fuel Cell and Hydrogen **Joint Technology Initiative**
- **Germany's NOW program**
- Daimler, AG announced that it will work with energy companies to build an H₂ fueling infrastructure in Germany
- Workshops are being held to educate fire and building code officials about hydrogen, public and emergency responder safety, and the current status of hydrogen development in their region

Policy Initiatives, cont...

- Training for first responders: CaFCP, Project Driveway
- DOE creates new H₂ Storage Engineering Center of Excellence
- Investment tax credit (ITC) for non-motive fuel cells increased and extended to 2016
- Rec'd approval to drive HFCVs through NY tunnels
- State level: CA ZEV mandate
- Lack of (or plus-ups for) budget earmarks in 2007 and 2008

New Entrants

- No inputs – delete category

Setbacks

- Carbon sequestration program cost and changes
- Economic meltdown threatens industry investment, availability of capital, and risk taking
- Ethanol program activity is under criticism for impact on food
- A fire at a 700-bar demonstration fueling station (see APCi/Shell press release for explanation)
- H2 fueling stations are being identified for closure in California, as number of FCVs increases

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