

HYDROGEN AND FUEL CELL TECHNICAL ADVISORY COMMITTEE

MEETING MINUTES

February 9, 2012

Webinar

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Note: This two-hour meeting was held by conference call with a live webinar.

1. Hydrogen and Fuel Cells Technical Advisory Committee (HTAC) Business

- **Approval of Meeting Agenda**

Agenda for the February 9, 2012 HTAC meeting was approved without comment.

- **Adoption of minutes from previous HTAC meeting**

The minutes of the November 3-4, 2011 HTAC meeting were adopted without comment.

2. Public Comment Period

There were no comments from the public

3. Editing of the HTAC Draft 2011 Annual Report

The principal purpose of this meeting was to provide final editorial comments on the draft of the 2011 HTAC Annual Report.

Peter Bond, Editor of the Annual, led the discussion. Overall, the report was well received by the committee and Dr. Bond was congratulated and thanked for his efforts in writing the document. Several of the significant changes and action items discussed are listed below:

- Hydrogen Safety
 - Mr. Freese suggested adding a short paragraph under “Remaining Challenges” or “Policy and Regulatory Status” about the perceptions of hydrogen safety. He noted that safety is a perennial issue and is often raised as a concern by the public.
 - Dr. Ogden suggested moving any information relating to safety out of the “Remaining Challenges” section and into a separate sidebar in the “Codes and Regulations” section.
 - Mr. Hofmeister endorsed this idea.
 - The group agreed.
 - Mr. Eggert stated that as written, it doesn’t sound as if the safety issues have been solved. He suggested changing the tense to the present tense, especially when discussing safety of fueling and vehicle operation.
 - It was noted by Chairman Shaw that a BMW study showed that people under 30 do not consider the safety of hydrogen to be a concern, though many older people still associate hydrogen with the Hindenburg explosion.
- Dr. Taylor suggested any mention of the industrial use of hydrogen be put in a sidebar as it is outside the flow of the report.
- Hydrogen Storage paragraph
 - Dr. Ogden questioned the validity of the “factor of three” in the needed cost reduction. She offered to send information on the storage costs to Mr. Marcinkoski, including National Academy of Science studies.

- There was some discussion about the lack of storage cost goals on Table 1. Mr. Marcinkoski stated that the DOE is currently in the process of revising these cost goals.
- Conclusion
 - Mr. Freese stated that OEMs take a global perspective; fleet deployments may never develop into actual retail sales because of the lack of widespread infrastructure. OEMs are committed to making vehicles, but the cars may not be located in the U.S. and they may not be sold to retail customers.
 - Mr. Koyama stated that Hawaii and California are making significant strides in deployment of hydrogen vehicles. He asked if these signs are adequate for the OEMs to make decisions regarding vehicle manufacturing and distribution, or if additional conditions need to be met before a go-ahead decision can be made.
- Table 1
 - Dr. Ogden suggested making the assumptions in the table more obvious.
 - Several committee members pointed out that all assumptions and background data are referenced in the footnotes.
 - Mr. Eggert requested more detailed information on the gallon per gasoline equivalent (gge) listed in the table. He offered to send Dr. Bond a sentence on estimated efficiency numbers.
 - Mr. Freese verified that the vehicle durability numbers are appropriate.
- Policy section
 - The section will be renamed “Codes & Standards.”
 - The reference to ethanol will be deleted.
- Dr. Ogden would like to see more examples of international hydrogen and fuel cell deployment and will send a list of examples to Dr. Bond.
- Demonstration Activities, Fuel Cell Development section
 - Mr. Freese suggested changing “commercially acceptable” to “feasible to industrialize the technology” in the first paragraph.
- Commercial Deployments section
 - Dr. Taylor suggested changing the last sentence in the first paragraph to replace “lower labor cost” with “greater productivity”.
- Financial Climate section
 - Dr. Taylor expressed concern that the Financial Climate section is too easy on the U.S. government.
 - It was noted by several members that it is important for the HTAC to remain unbiased in its tone. There was concern that it is inappropriate to state in the report, “the HTAC is impressed by...” in the report.
- Policy and Regulatory Status section
 - “Fastramping” may not be understood by all readers. Mr. Novachek suggested new wording.
- Chairman Shaw proposed that the HTAC give Dr. Bond final authority over any edits to the report.

Formatting changes:

- The picture of the water treatment center will be deleted.
- The fuel cell stack picture will be replaced by a picture of a commercial fuel cell engine stack that shows the reduction in stack size. Mr. Freese will send the picture.
- A picture of a vehicle, such as the Chevy Equinox, should be added.
- The caption of the picture of the Solvay plant will be changed to read, “Fuel cells powering backup for a critical load at Solvay.”

4. Next Meeting – May 9-10, 2012

- A list of potential agenda topics for the May meeting had earlier been circulated by Chairman Shaw to members. The following are notes on the discussion of that list.
- Potential speakers and presentations
 - Mr. Steve Chalk could discuss his trip to Germany in conjunction with the IPHE meeting and share his experiences in visiting a wind-to-hydrogen facility.
 - Dr. David Danielson, Acting Assistant Secretary for Energy Efficiency and Renewable Energy, will be invited to attend.
 - Candidates for participation in the Entrepreneurial session were discussed:
 - Nuvera/Hess (Borden Walker has been invited).
 - Altery.
 - Mr. Freese suggested Hydrogenics speak on their grid demand-shift technology. Mr. Novachek pointed out that they have already been invited.
 - Mr. Freese suggested GTherm, a company that generates low-cost hydrogen through geothermal processes using an unconventional, closed-loop system.
 - » Dr. Carlin stated that one of the electrolyzers in Hawaii is powered by geothermal energy.
 - » Chairman Shaw agreed to review the GTherm plan prior to any invitation.
 - Mr. Koyama suggested Italian company Electro Power Systems (EPS), which uses Chinese electrolyzers.
 - States - Indiana
 - Dr. Wylam suggested Dr. Peter Schubert, Director of the Lugar Center for Renewable Energy at Indiana University-Purdue University Indianapolis.
 - A representative from the Indiana State Government will also be invited.
 - Panel – European Perspective on Hydrogen Production as an Enabler for Renewables
 - Mr. Novachek will chair this panel.
 - Dr. Carlin suggested Areva, which would pair well with Siemens and Hydrogenics, who have already been invited.
 - Several other potential presentation ideas for upcoming meetings were discussed:
 - Mr. Novachek suggested a discussion of the utility industry perspective on intermittent generation and storage (it was agreed to save this for the November meeting).

- Chairman Shaw suggested a discussion on carbazole as a storage medium featuring AirProducts and/or Professor Arlt of ECN Nurnberg, Germany (save for November meeting).
- Chairman Shaw suggested Korean infrastructure issues featuring Hyundai, Kia, and a representative from the South Korean government.
 - » Dr. Satyapal added that Korea has announced plans to open 168 hydrogen fueling stations,
 - » DOE will determine appropriate contacts and make the invitations.
- Mr. Rose suggested a discussion of the European Union study on hydrogen leakage and implications on global warming.
 - » Dr. Ogden suggested Mark Jacobson of Stanford as a potential speaker on this topic. He is also a member of the Energy Efficiency and Renewable Energy Advisory Committee (ERAC).
- Dr. Carlin offered to give an update on Department of Defense fuel cell and hydrogen deployments, specifically related to the micro-grid and using fuel cells and hydrogen electrolyzers for multi-purpose applications.
- Chairman Shaw suggested an update on the use of hydrogen vehicles at the 2012 Olympic Games in London.
 - » Dr. Satyapal suggested Intelligent Energy may be able to speak about this topic.
 - » DOE will identify a potential speaker.
- Mr. Hofmeister suggested a presentation from the Fire Marshals Association to update HTAC on any remaining concerns around safety of hydrogen fueling stations.
 - » Mr. Eggert added that permitting is an issue in California.
 - » DOE will provide some names of potential speakers.

5. Additional Topics

- HTAC Leadership

Chairman Shaw urged members to consider whether they would be willing to step into an HTAC leadership position, as his chairmanship term is coming to an end on June 30, 2012. Any member interested in serving as chair, vice chair, PPC chair, or Annual Report editor, should contact Chairman Shaw.

- Vice Chair Novachek stated that he would like to withdraw his name from consideration for Chair. However, he will continue to lead the Hydrogen Enabling Renewables Working Group.

Chairman Shaw also stated that four new HTAC members have been nominated and it is hoped that their nominations will be approved by the May meeting.

- Blue Ribbon Panel on Hydrogen Production

The HTAC will organize a Blue Ribbon Panel (BRP) on Hydrogen Production. The panel will assess the status and prospects of near- and long-term production technologies, provide

the basis for optimizing effectiveness of the DOE hydrogen production portfolio, and produce a report that includes recommendations for making hydrogen a commercial success as well as guidance to the DOE FCT Program on coordination with other agencies and offices. The panel will be a two-and-a-half-day workshop that consists of experts from industry, government, and academia and is scheduled to start on the evening of Thursday, May 10 and run through the morning of Saturday, May 12.

- HTAC member, Professor Levi Thompson, has agreed to chair the BRP.
- Mr. Kaya asked how members of the HTAC can contribute to the BRP.
 - Dr. Eric Miller, Technology Development Manager at the Fuel Cell Technologies Program and organizer of the BRP, replied that they encourage HTAC members to participate in the BRP. Specific information will be forthcoming.
- A planning committee consisting of Prof. Thompson, Prof. Richmond, and Chairman Shaw was named to work with Dr. Miller.