Hydrogen and Fuel Cell Technical Advisory Committee (HTAC)
Meeting Minutes, October 2-3, 2006
Executive Summary
Approved by HTAC on Nov. 17, 2006

The Committee

The Hydrogen and Fuel Cell Technical Advisory Committee (HTAC) was established by Section 807 of EPAct 2005. In June 2006, the Secretary of Energy approved its charter and appointed 25 members to serve on the Committee after an open nomination phase. The members include representatives of domestic industry, academia, professional societies, government agencies, financial organizations and environmental groups, as well as experts in the area of hydrogen safety. HTAC will advise the Secretary on issues related to the development of hydrogen and fuel cell technologies. It has an oversight function over Title VIII, Hydrogen of EPAct. HTAC will provide recommendations to the Secretary regarding DOE's implementation of programs, plans, and activities, as well as safety, economic, and environmental issues related to production, distribution, delivery, storage, and use of hydrogen and fuel cells. Following guidance provided in EPAct, the Secretary will deliver a biennial report to Congress describing HTAC recommendations, DOE plans for implementation and, if necessary, the rationale for not implementing particular recommendations.

Attendance and Roles

The DOE Hydrogen Program consists of the hydrogen and fuel cell activities conducted by the Offices of Energy Efficiency and Renewable Energy (JoAnn Milliken), Fossil Energy (Lowell Miller), Nuclear Energy (Carl Sink), and Science (Harriet Kung). EERE coordinates the advisory committee activities on behalf of the Department. The Designated Federal Officer (DFO) for HTAC is Ms. Kathi Epping. At the inaugural October 2-3, 2006, meeting in Arlington, Virginia, the 23 members in attendance, from a total membership of 25, were briefed by the DFO on their charter, EPAct deliverables, priority issues, and the schedule for reporting their recommendations to the Secretary. The 60 attendees (attached) at this open meeting included HTAC members, government representatives, national laboratory researchers, and interested members of the public.

Predecessor Committee Key Activities Review

Dr. Alan Lloyd of the International Council on Clean Transportation, a former Chair of the previous Hydrogen Technical Advisory Panel (HTAP), summarized the 1992-2003 activities of HTAP, the purpose of which was to help the DOE hydrogen program increase its visibility and achieve a balanced research, development and demonstration portfolio. Funding levels increased by nearly a hundred fold from $0.5 million to $45 million during its tenure. DOE implemented a majority of the recommendations made by HTAP. HTAC will have a broader purview than did HTAP, as the hydrogen and fuel cell programs at DOE have been combined since the end of HTAP and receive considerably more funding.

DOE Program, Plans, and Reviews

JoAnn Milliken, Acting Hydrogen Program Manager, gave a presentation on the Hydrogen Program, the Posture Plan, and their evaluation and reviews. The Hydrogen

Program's overarching goal is to enable technology readiness leading to industry commercialization of fuel cell vehicles and hydrogen fuel from diverse domestic resources. Key identified challenge areas are 1) technical: *Hydrogen Storage (target: >300-mile range), Fuel Cell Cost and Durability (targets: $30 per kW, 5000 hours durability), and Hydrogen Cost (target: $2.00 - 3.00 per gallon gasoline equivalent)* and 2) economic/institutional: *Codes and Standards (safety and global competitiveness), Hydrogen Delivery (investment for new distribution infrastructure), and Education (safety and code officials, local communities, state and local governments, and students).* The goal of the program is to enable industry to make decisions regarding commercialization of fuel cell vehicles and hydrogen infrastructure by 2015. DOE Program participants, resources, planning, elements and progress, milestones and decision points, evaluation and coordination were discussed.

The FY 2007 Hydrogen Posture Plan (in the final process of approval) satisfies Section 804 of the Energy Policy Act of 2005, which requires that the Secretary of Energy transmit to Congress a coordinated plan for the Department's hydrogen and fuel cell programs. This Plan updates the February 2004 version, for successfully integrating ongoing and future hydrogen research, development and demonstration (RD&D) activities into a focused Hydrogen Program. The program will integrate technology for hydrogen production (from fossil, nuclear, and renewable resources), infrastructure development (including delivery and storage), and fuel cells for transportation and stationary applications. A coordinated Hydrogen Program will improve the effectiveness and accountability of the government's RD&D activities and increase the Program's ability to achieve its goals. Activities by the Department of Transportation (DOT) and the DOE are included.

The Program is reviewed and evaluated through several mechanisms:
1) HTAC recommendations directly to the Secretary of Energy at least every two years, as described in Section 807 of EPAct;
2) National Academy of Sciences' (NAS) External Review of the programs under Sections 805 and 808 every four years as described in Section 811. The NAS reviews program priorities and technical milestones, and evaluates progress toward achieving the program goals;
3) FreedomCAR and Fuel Partnership (which includes Technical Teams comprised of automobile and energy company representatives) input on technical milestones and system needs, and evaluations of individual projects; and
4) DOE Annual Program Merit Review & Peer Evaluation meeting that solicits detailed technical evaluations and institutional input on the conduct and progress of projects and the overall program.

Key Discussion Areas

- Key HTAC Deliverables

1) HTAC will review of the FY 2007 DOE Hydrogen Posture Plan and make recommendations.

2) Inputs from HTAC will be addressed by the Secretary in a biennial report to Congress. Recommendations will be implemented in the program following approval by the Secretary.
3) HTAC will review the implementation of Title VIII programs and activities as well as the safety, economic, and environmental consequences of production, distribution, delivery, storage, and use of hydrogen and fuel cells.

- Codes and Standards

HTAC members raised concern about codes and standards adoption and how the U.S. might fall behind other countries in implementation, which could hurt U.S. competitiveness. The Committee discussed alternative solutions such as accelerating the standard-setting process, adopting universal international codes and/or having Congress legislate a national code or limits on liability.

- Congressionally-directed Projects

HTAC members discussed the high level of Congressionally-directed projects in the program and were concerned with potential impacts on schedules and milestones. They plan to address this topic in the future.

Committee Actions

1. **Chair and Co-Chair elected by HTAC Members**

   Chair: Dr. Alan Lloyd, International Council on Clean Transportation
   Vice-Chair: The Honorable Robert Walker, former Chair of House Science Committee, Wexler & Walker Public Policy Associates

2. **Elevate Interagency Working Group (EPAct Section 806)**

   The Interagency Working Group, first chartered in 2003 as a subcommittee of the Committee on Technology of the National Science and Technology Council (Office of Science and Technology Policy), was reestablished as fulfilling the responsibilities assigned in Section 806 of EPAct. HTAC recommends to the Secretary of Energy that the operational structure of the Interagency Working Group on Hydrogen and Fuel Cells requires participation at a functional level of Assistant Secretary or higher, to ensure an appropriate decision-making level inside each participating agency. This recommendation is to be fast-tracked in 2006.

3. **Subsequent Committee Meetings**

   Phone Conference Call on November 17, 2006, Noon EST to be arranged by DOE to discuss:
   - HTAC structure
   - Committee priorities
   - HTAC plan and future 2007 meetings