

The Hydrogen and Fuel Cell Technical Advisory Committee
Washington, D.C.

July 15, 2013

The Honorable Dr. Ernest Moniz
Secretary of Energy
U.S. Department of Energy
1000 Independence Ave. SW
Washington, D.C. 20585

Dear Mr. Secretary:

Enclosed is the Hydrogen and Fuel Cell Technical Advisory Committee's (HTAC's) Annual Report on the State of Hydrogen and Fuel Cell Commercialization and Technical Development. I am pleased to provide it to you on behalf of my fellow Committee Members, who have endeavored to provide you with a comprehensive, thematic report, along with sufficient detail to create an understandable overview, while also writing an easy-to-read document for the widest possible audience.

Fuel cell and hydrogen technologies can help achieve the Administration's key energy initiatives, including the potential to double advanced energy technology exports, increased deployment of CHP by 50% by 2020, and developing advanced electric drive vehicles in pursuit of both climate and energy security goals. HTAC also supports the new clean energy manufacturing initiative, which is of substantial value to the fuel cell and hydrogen energy industry.

The Committee is pleased to report to you that within its statutory independence, the working relationship with the Fuel Cell Technologies Office is productive, functional, and cooperative. The Office remains key to addressing the Department's ongoing efforts on fuel cell durability, costs, advanced research and manufacturing, and infrastructure. The Committee has assessed these efforts with a Subcommittee structure that operates in the mutual interests of both the full Committee and the Program Office.

Critical also to the Committee's functioning has been the Department's leadership and its interests, both from EERE and the Secretary. We have completed a productive year, having had significant and helpful interactions with both Assistant Secretary Danielson and your predecessor, Secretary Chu, along with other senior Department leaders. We look forward, via this letter and subsequent communications, to an ongoing and mutually beneficial new relationship with you and are most anxious to tell you our story and keep you abreast of our concerns.

This Annual Report may be the most important to date not only because of the progress made over the past year, but also because it highlights the fragility of the economic support for future developments in the hydrogen and fuel cell field. It also flags the international competitive threats to a sustained U.S. leadership position in hydrogen fuel cell technology and in the emerging industry more broadly.

For clarity this letter covers highlights of the Annual Report in summary, which we believe warrant your attention, and then also summarizes key concerns, which we believe we have a duty to bring directly to you. We conclude with recommendations for your consideration. We also hope that you have the opportunity to look through the entire Annual Report and will enjoy doing so.

Highlights of 2012:

- The growth in applications and volumes of hydrogen fuel cell products, both stationary and mobile, is happening to a far greater extent than is commonly known or reported. Such growth is critical for sustained economic support, especially from private sources.
- Department leadership was more visibly involved and verbally supportive than in the past. We are hopeful that under your leadership these efforts will expand even further.
- Natural gas production expansion bodes well for future hydrogen supplies.
- Commercial activities in material handling and power systems have exceeded expectations and rapid development is happening because of market pull, from what we observe, as well as technology push. This is truly significant considering where we have been.
- Pre-commercial activities, such as transportation, renewable hydrogen from bio-gas, wind and solar, and energy storage continue, but not perhaps at the pace in the United States that the Committee believes will sustain our nation's leadership over time. As has always been the case, the pre-commercial depends upon public support and collaborative agreements, which have become more difficult over the past year.
- Research and development funding for the Program Office has dropped by 50%. Progress thus continues, but at a reduced rate.
- Hydrogen fuel cells for transportation were included in the National Petroleum Council's major report of 2012: *Advancing Technology for America's Transportation Future*. FCEVs produce zero tailpipe emissions and significantly reduce life-cycle GHG emissions, making them a critical part of our portfolio to address climate pollution.
- Work continues on creating policy and on setting codes and standards. This is a critical part of the overall hydrogen infrastructure efforts and thus the Program Office continues to pay attention to developments in these areas.
- Finally, the financial climate is fragile and warrants ongoing attention from the public and private sectors if we are to both progress and hold a leadership position in the world. As a natural outgrowth there has been some consolidation among companies; helpfully, there have also been some amazingly high valuations of companies in the public marketplace.

Concerns:

- A recent public announcement in Japan describes the creation of a task force of public- and private-sector participants to secure "Japanese dominance" of hydrogen fuel cell vehicles in the years ahead. The U.S. leadership position is under serious challenge by

both Japan and Germany from the Committee's perspective and the experience of recent years.

- Increased attention to the hydrogen fueling infrastructure is ever more important to maintaining the interest and financial commitment of the U.S. and global auto company leaders. There are more indications that Germany and Japan have made infrastructure progress beyond what has been happening in the United States. These initiatives influence where the future suppliers to the auto companies focus their product development and manufacturing efforts. We stand to lose the leadership position not only in first market mover advantage of auto sales volumes, but also in terms of establishing the manufacturing base for components, parts, and finished products.
- The journey will nonetheless remain a long haul and we should keep that in mind as we pursue opportunities and tackle challenges. Market uptake in both vehicle and stationary hydrogen fuel cell markets is not immediate and returns on investments remain a future promise.
- The language chosen surrounding hydrogen fuel cells and technology by the Department's leadership is extremely important to both the public- and private-sector perceptions of the industry. Words, actions, and consistent funding have profound impact to enable increased support and more rapid progress.
- A recent reorganization and priority setting within the Department has had the unintended consequence of appearing to separate hydrogen fuel cell program development for transportation from stationary power generation. The consequence is a lack of clarity on where and how stationary hydrogen fuel cell program activity is being managed, and there is a risk that others perceive this outcome as signaling a diminished interest in or support for hydrogen and fuel cells in power generation.
- The risk of diminished funding by Congress and the Department will have a real impact in the coming years that may simply not be recoverable on an internationally competitive basis.

The Committee has worked hard for many years to provide a mature, pragmatic set of useful recommendations to the Secretary as part of its Annual Reporting process. We are thus delighted to offer you our recommendations for your consideration. And we welcome the opportunity to discuss these suggestions further with you.

Recommendations:

- Please include the importance of hydrogen and fuel cell technology and the progress being made in your formal and informal remarks to multiple audiences. The impact of your messages is significant and your voice amplifies the importance of the efforts underway.
- We feel that it is important for you to recognize publicly the reality of international competition and the potential that it will permanently erode the U.S. leadership position in the market for fuel cells.
- We suggest you make positive efforts to support the rollout of a retail infrastructure for hydrogen fueling by intermediating with the multiple interested parties. A special

conference in the coming months to review and discuss infrastructure issues and opportunities could be an extraordinary opportunity to learn, decide, and lead the next steps to progress and success. Such an event could also build upon and reinforce the efforts of H2USA and important state initiatives such as those developing in California, Hawaii, and the Northeast.

- We would be pleased if you would request a review of both the work of HTAC and its Subcommittees later this year or early next year, where you and your leadership team will hear and see firsthand how this committee of citizen volunteers, a well-functioning group of energy technology and energy policy experts, is helping to shape the nation's transportation and technology future in support of the ongoing efforts of the Program Office.
- Despite the challenging funding environment, please include this work among your funded priorities.

We look forward to continuing our service to you, your leadership team, and the Program Office. It is a pleasure to serve our nation by virtue of our contributions while serving on this Committee. Any feedback you might have, as well as the opportunity to discuss our findings with you, would be most welcome and appreciated.

Sincerely yours,

A handwritten signature in black ink, appearing to read "John Hofmeister". The signature is fluid and cursive, with a large initial "J" and "H".

John Hofmeister
Chair

On behalf of the Hydrogen and Fuel Cell Technical Advisory Committee