

HYDROGEN AND FUEL CELL COMPETITIVENESS SUBCOMMITTEE

Draft Report Summary to HTAC
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Charter and Team

Assess the competitive international landscape for the emerging hydrogen and fuel cell industries and make recommendations for actions or further work, if needed, directed at achieving a sustainable competitive advantage.

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Focus

- Hydrogen production and infrastructure technology and development
- Low Temperature PEM fuel cell technology and commercialization in stationary and motive

Process

- Identify key countries in the focus areas
- Conduct literature review
- Develop “SWOT” style assessments based on public data and individual visits and experience for each country
- Identify key trends in developing competitive capabilities relative to the USA

Executive Summary

- Historically three regions have led the bulk of technological advancement in hydrogen and fuel cells: North America, the EU and Japan
- The industry has gone through a long period of gradual commercialization, straining the resources of companies leading the development
- The United States has lagged Japan and some countries in the EU in broad commercialization efforts
- China has undertaken a massive program to absorb hydrogen and fuel cell technology and to spur domestic, commercial market development
- The USA is at a “tipping point” for key decisions to secure its competitive technical and commercial position

1. Target a portion of the *FY19 and FY20 FCTO budgets to address the immediate (0-3 years) threats and opportunities* to avoid being “frozen out” of this important stage of international fuel cell market development. This might include public-private partnerships and focused collaboration with Japan.

2. Identify the *highest value advanced technology areas* with long term competitive advantage, e.g. low platinum or platinum free MEA's, advanced design and manufacturing of metal bipolar plates, hydrogen generation (especially lower cost MEA manufacturing for electrolysis and optimized porous transport layers) and hydrogen storage and distribution, and create significant, *focused funding streams* for these technology areas with emphasis on time to market objectives.

3. Additionally, in accordance with recommendations provided in the report on “Standardization of PEM Components,” which were based on Fuel Cell OEM inputs, there were a number of recommendations for focused development of common components. In this report (reference 10), the highest priorities identified as common needs were Air Management subsystems and Support Capabilities. Investigation into and funding for these key common areas of need should be considered.

4. *Increase the rate of new technology innovation*, focusing funding on high risk performance measures and early deployment. One approach would be to develop an early stage analysis approach, similar to the DOD Army Futures Command strategy where funding is provided for early stage technology investigation and evaluation fostering early stage decisions on future spending. The goal is to look at technology with a small investment and early exit if the promise of the technology is not clearly demonstrated. This triage approach will support key technologies advancement rather than big program, large investment funding that results in no products at the end of the day.

5. *Create a direct path from lab-to-factory* for these technologies that dramatically reduces time to market and ensures the technology will not be brought offshore.

6. *Stimulate home markets for hydrogen and fuel cells,* investing at key leverage points (hydrogen infrastructure for example) to tip the industry into self-sustaining commercial growth.

7. Stimulate export of fuel cell and hydrogen products by providing appropriate incentives for opening and growing markets outside the United States to hydrogen and fuel cell products, strategically targeting domestic high value production.

8. Create a monitoring process and metrics to explicitly *track technical and commercial competitiveness* in hydrogen and fuel cells.

Next Steps

- Receive and discuss input from HTAC
- Incorporate feedback overnight
- Revisit discussion with HTAC (complete if possible)
- Refine and submit for HTAC adoption