Fuel Cell &
Hydrogen Energy
Association

Fuel Cell & Hydrogen Energy Association Public Comments on
The Quadrennial Energy Review

Background
The Fuel Cell and Hydrogen Energy Association (FCHEA) appreciates the opportunity to provide comments for the Quadrennial Energy Review (QER).

The Fuel Cell and Hydrogen Energy Association is the trade association dedicated to the commercialization of fuel cells and hydrogen energy technologies. Fuel cells are a unique set of clean, efficient, and resilient energy technologies being placed in service for stationary power generation, backup power, material handling equipment, and on-road vehicles.

Introduction
Our members continue to see tremendous value in the QER process, and applaud the effort to create a multi-year roadmap to help coordinate federal policies in a meaningful way.

In June, FCHEA submitted comprehensive comments following the initial public meeting held in Washington, DC. Our previous submission focused on the following issues: Stationary Fuel Cells for Resiliency, Solutions for Critical Infrastructure, Ultra-Clean Power Generation, Fuel Cells for Transportation Resiliency, Fuel Cell Electric Vehicles and Hydrogen Development, Fuel Cells for Material Handling Equipment for Reducing Demand on the Grid and Reducing Pollution, and Recommended Policies.

The comments contained below are intended to supplement our earlier remarks, and will further clarify additional information on Transmission, Storage and Distribution to support stationary and transportation fuel cell and hydrogen technologies.

We iterate the fact that stationary fuel cells meet the infrastructure characteristics outlined in the Climate Action Plan, including: a minimal environmental footprint, robustness, flexibility, and scalability. We also applaud the fact that fuel cell electric vehicles (FCEVs) were included as a pathway under the Advanced Transportation Technologies section.

Our comments conclude with basic policy and regulatory recommendations that will help achieve national goals through increased utilization of fuel cell technology.

Leveraging Existing Hydrogen Infrastructure and H_2USA
For many years, policymakers have recognized the role that hydrogen can play in providing an unparalleled level of resiliency since it can be derived from a diverse mix of domestic resources, including natural gas and renewable energy technologies. The transition from petroleum to hydrogen will allow the nation to utilize our domestic resources for transportation fuel with lower greenhouse gas emissions.

According to the National Renewable Energy Laboratory (NREL), facilities that produce hydrogen (largely in support of petrochemical refining) top 11 million tons per year. If this hydrogen were utilized for use in FCEVs instead of for use in refining, this resource would support 50 million light duty vehicles annually.

FCHEA understands that subsequent QER reports will include a more thorough examination of alternative vehicle platforms, however, this version should focus on how existing hydrogen production, for use in support of gasoline refining, will be transitioned to support FCEV fleets.

This request takes on new importance when we consider that 1) automobile companies are planning to manufacture FCEVs to help meet new CAFE standards, 2) that eight states have committed to deploy 3.3 million Zero Emission Vehicles (ZEV), including FCEVs, on the road by 2025, and 3) the Department of Energy helped co-launch H_2USA, a public-private collaboration aimed at deploying hydrogen infrastructure.

Leveraging Existing Natural Gas Infrastructure for Resiliency and Energy Security

Many stationary fuel cells connect with existing underground natural gas pipelines, which provide an increased level of reliability. The natural gas pipeline infrastructure is highly reliable due to its network design without single points of failure, underground storage capacity, low physical exposure risk, and multiple input sources. However, the increasing domestic production and consumption of natural gas have made it necessary to closely examine this rapidly changing area as part of the QER.

Critical energy-dependent infrastructure such as telecommunications networks, datacenters, and hospitals depend primarily on grid connectivity with diesel generators providing backup power when grid power is unavailable. These backup units must be serviced frequently and require cumbersome supply chains to maintain – problems that are exacerbated during natural or man-made disasters. Should severe weather events become more frequent, strengthening our aging electrical infrastructure with distributed power generation technologies like fuel cells should be a high priority.

In addition, as hydrogen fuel cell vehicles become commercially available, there will be a need to consider the linkages between natural gas infrastructure and newly developed hydrogen fueling infrastructure. These linkages could include natural gas availability and how hydrogen fueling infrastructure is accounted for in planning processes.

The QER should examine how regulatory changes to existing FERC policy would allow fuel cells to compete in more markets and make them cost-competitive with other technologies. For example, distributed generation should be included in power generation and transmission planning. The Committee should also aim for standardization of interconnection agreements, as well as natural gas price parity with merchant generation. FERC can also work to standardize interconnection rules, create a feed-in-tariff for fuel cells, and provide additional cost recovery for mission critical applications.

Finally, fuel cells not configured in a co-generation manner cannot be considered a 'Qualifying Facility' (QF) under the Public Utility Regulatory Policies Act of 1978 (PURPA). The designation of a Qualifying Facility entitles certain generating facilities to receive special rate and regulatory treatment. This should be modified to allow all fuel cell power plants to be eligible as Qualifying Facilities.

Electric Vehicle and Distributed Generation Synergies

The advancement of vehicle electrification and the continued traction that distributed generation technologies continue to make in the marketplace, should be recognized by the QER, with a specific understating that hydrogen will play a transformational role in for both of these markets.

The Department of Energy has recognized this and has helped facilitate a number of advanced demonstration projects. One such project includes a 'tri-generation', which utilizes renewable sources of methane from a nearby wastewater treatment facility. The methane is used in a high-temperature stationary fuel cell to generate electricity and heat. Methane not used for power generation is processed into hydrogen for use in FCEVs.

By one estimate, installing similar hydrogen-making systems at most of California's major waste-treatment plants would generate enough hydrogen to fuel about 10 percent of all the cars on the state's roads. [1]

Fuel Cells for Material Handling Equipment for Reducing Demand on the Grid and Reducing Pollution

Companies and industrial facilities across the country are beginning to convert their material handling equipment (MHE) from battery to fuel cell powered vehicles as a way to save money through decreased energy consumption. Since power companies frequently charge customers a premium to account for peak capacity that industrial facilities need (using batteries, the average three-shift schedule requires 1.9 million kW/h of electricity), there is a tremendous opportunity for businesses to save money and conserve energy. This transition also has the added benefit of reducing demand on the grid.

Currently, more than 40 industrial sites across the United States have replaced their MHE with fuel cell technology, with more orders expected. Finally, companies that have adopted fuel cell material handling equipment have calculated that they have the potential to reduce greenhouse gas emissions by 70-80[2] percent, compared to battery MHE charged from the grid.

Hydrogen as an Energy Storage Medium

As the cost of renewable electricity generation from intermittent sources decrease, electricity providers are examining wind-to-hydrogen and solar-to-hydrogen projects. These advanced demonstrations are providing information on how to create hydrogen from wind and solar at times when supply outstrips demand. The stored hydrogen can be used at a later time for power generation, blended with natural gas for commercial or residential use, or used as a renewable transportation fuel for use in FCEVs.

In the United States, NREL is leading the Wind2H2 project, which examines optimization scenarios for efficient and low-cost hydrogen production from renewables. Elsewhere, Germany, Sweden, and Denmark are investing in wind-to-hydrogen to improve the effectiveness of their renewable electricity investments, while providing infrastructure for future FCEV deployments.

Recommended Policies

In addition to the previously mentioned policy items, the following is an abridged list of recommended policies or positions that seek to strengthen the existing cooperative effort between federal agencies and the private sector in the development and deployment of fuel cell and hydrogen infrastructure technologies.

Robustness and Scope of Department of Energy Programs

Since its inception in 2003, the Fuel Cell Technologies (FCT) program managed by the Office of Energy Efficiency and Renewable Energy (EERE) at the Department of Energy has been well managed – providing tremendous leverage of private investment that has resulted in lower costs and improved durability of fuel cell and hydrogen technologies. While this program has served as a stellar example of public-private collaboration, our industry has received varying degrees of support from the Administration and Congress.

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[1] Sewage-Derived Fuel Powers Hyundai California Green Dream: Cars – February 14, 2014 - Business Week
http://www.businessweek.com/news/2014-02-14/sewage-derived-fuel-powers-hyundai-california-green-dream-cars#p1

[2] Plug Power Brochure – Debunking Hydrogen Fuel Cell Myths - GenDrive System
http://www.plugpower.com/Libraries/Documentation_and_Literature/Whitepaper_Debunking_Hydrogen_Fuel_Cell_Myths.sflb.ashx

Within the context of consistent and adequate funding, forthcoming DOE budgets should commit a greater share of resources toward deployment activities, with an increased focus on market transformation, technology validation, codes and standards, and hydrogen infrastructure.

With regard to hydrogen infrastructure, the Department should provide a more equitable role in the development of hydrogen infrastructure for fuel cell electric vehicles (FCEVs). Federally supported infrastructure programs like *EV Everywhere* have helped leverage private investment and provided confidence to technology developers.

The Administration has also tried to cut funding for the Solid State Energy Conversion Alliance (SECA) program within the Office of Fossil Energy despite strong bipartisan, bicameral support from Congress.

The technologies being developed by SECA not only utilize domestically available fuels, but also are being developed in cooperation with international partners. Robust support for this program, as part of a coordinated natural gas research and development effort, will provide export opportunities for domestic manufactures and enable carbon capture and storage (CCS) technologies.

What both of these programs have been subjected to over the last few years is not unique to the fuel cell industry, however, the prevailing 'technology-de-jour' approach to government support for alternative energy technologies ultimately slows progress and preserves the status quo.

Tax Policy

Federal support must go beyond annual appropriations for research, development, and deployment activities. Common sense tax policies that allow our technologies to compete on a level playing field with other clean energy solutions are required.

To overcome the technology development and commercialization 'valley of death', fuel cells and their associated infrastructure would benefit from a long-term, fair and consistent package of tax incentives that recognizes how the technology works, and its current share of the market.

In general, FCHEA is open to the concept of comprehensive tax reform recommended by the President and Congress as a means to improve aggregate economic activity, create manufacturing jobs, and foster energy efficiency. However, fuel cells are in the early commercialization phase, and the incentives that were enacted into the tax code are just starting to have the desired impact.

We also note that drafts and proposals aimed at tax reform, which all purport to make the tax code more technology neutral as a way to avoid 'picking winners and losers', would be severely detrimental to our industry. More specifically, implementing an all encompassing Production Tax Credit (PTC) for stationary fuel cells will not have the desired impact of reducing acquisition costs for clean energy technologies.

Furthermore, many of the proposals would make immediate changes to the tax code, allowing some technologies that have benefitted from specific, targeted and highly favorable tax treatment for many years, to continue enjoying preferential treatment.

Fuel cells, which are beginning to enter the marketplace, should have additional time to benefit from modified versions of existing tax incentive policies that are better suited to the unique nature of these technologies. We propose the following small, meaningful changes that will help fulfill the promise that these technologies offer:

- Extend and revise the investment tax credit to reward the most efficient stationary fuel cell systems;

- Extend current consumer FCEV tax credits, and revise to phase out incentives based on sales volume by individual automakers;

- Permit all hydrogen related refueling property to be eligible for incentives, remove or raise the cap, and expand the definition of a fuel cell vehicle to include industrial vehicles; and

- Modify the Hydrogen Fuel Excise Tax Credit to incent gaseous hydrogen.

Federal Communication Commission (FCC) Requirements
In the past, major weather events like Hurricane Katrina prompted concerned citizens and FCC regulators to consider strengthening rules for mandatory backup power requirements for telecommunication infrastructure. Many telecommunication firms argued that market pressures provided sufficient incentive to ensure adequate backup power existed. However, after Hurricane Sandy, most observers point out that vulnerabilities still exist, yet FCC rules remain static.

Recently the Telecommunications Industries Association (TIA) established a working group on fuel cells for backup power. While our industry thinks this is a positive development, the work is focused mainly on codes, standards and other technical issues. The FCC should move swiftly on rulemaking to establish a minimum of 48 hours of continuous runtime for telecommunication facilities.

Conclusion
We applaud the Administration for initiating the QER process, and we ask for steady and consistent funding for the aforementioned programs as a way to speed full deployment of these technologies.

This, in combination with workable incentives for stationary and automotive fuel cells and its corresponding hydrogen infrastructure, will ensure continued deployment of the technology in a way that improves efficiency, lowers emissions, and helps protect us from catastrophic events.

Should you have any questions regarding these comments, please contact Bud DeFlaviis, Director of Government Affairs with the Fuel Cell and Hydrogen Energy Association at bdeflaviis@fchea.org, or 202-261-1335.