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The Challenge of China's Green Technology Policy and Ohio's Response

Fuel cells are a family of technologies that make electricity and useful heat electrochemically, without combustion. Fuel cells are inherently efficient and are environmentally the cleanest energy technology that consumes fuel. Fuel cells are entering a variety of markets. Fuel cell power generation and combined heat and power systems are powering homes, commercial buildings and industrial facilities, utilizing domestic natural gas and a variety of renewable biofuels. Fuel cells are replacing batteries in industrial equipment, and in military, consumer electronics and backup power markets. Fuel cells are supporting batteries in recreation and military markets and, along with hydrogen generators, provide stability and high quality power to the power grid in support of intermittent renewable power generation. Fuel cell passenger vehicles are on the road in the hundreds today and millions are expected within 10 to 15 years.

Fuel cells facilitate a transition to renewable energy generation and can provide a bridge between solar and wind power generation and carbon-free transportation. Fuel cells also can help revitalize the US electrochemical industry and reduce our dependence on foreign suppliers of rechargeable batteries for portable electronics, including cell phones, laptops and 2-way radios which are now a critical part of our modern society.

Fuel cells have been called the "microchip of the hydrogen age," the key to abundant energy from a variety of domestic and renewable sources. The US Department of Defense has identified fuel cells as a critical technology whose development is vital to the nation's security.

The US has the lead in fuel cells – in products, in intellectual property and in industrial capability. Retaining that lead will not be easy. There is a worldwide consensus on the strategic importance of fuel cells and their fuels and a race to commercialize fuel cell products and capture a share of the 3 million jobs that will come with commercialization.

The Ohio Fuel Cell Coalition and its sister organization the **US Fuel Cell Council** supports the Obama Administration's efforts to increase the export of fuel cells and other renewable and efficient energy technologies.

We both urge the Administration to support expansion of markets here at home. Governments around the world are investing heavily in fuel cell research, development and demonstration, providing market entry support and investing in fueling infrastructure for vehicles. In return for access to these markets, these governments typically encourage US firms to provide local assembly, manufacturing and/or intellectual property sharing, just as we do in the United States.

Our industry will be better able to compete in world markets if there is a strong program to help US companies achieve commercial volumes and benefit from real world consumer experience. But our market support programs for fuel cells are not competitive today.

Japan has a 20 year program to commercialize fuel cell vehicles; the current goal is 2 million vehicles and 1,000 hydrogen stations by 2015. The industry believes vehicles will be fully cost competitive by 2025 and hydrogen sales will produce profits. They believe this pace of deployment is necessary to achieve 80% reduction of CO2 from the vehicle sector by 2050, a goal shared by the industrial nations including the United States. Japan also has a 10 year plan to commercialize fuel cells for residential applications. **The United States has no similar programs.**

Korea has a 20 to 30 year plan with the goal of supplying 20% of the global fuel cell market, creating 560,000 jobs. Milestones include 50 MW of fuel cell power generation by 2012 (supported by a feed-in tariff of 15-18 cents/kwh); 10,000 residential units by 2012 and 2,000,000 by 2020 (90% federal/local cost share in 2010); and 1,000 cars per year beginning 2012, increasing to 10,000 in 2015 and 100,000 in 2020. **The United States has no similar programs.**

Germany has established a public company called NOW, to lead a 10-year, $2 billion effort that would double fuel cell vehicle fueling stations in Germany by 2012 and develop a business plan for 500 to 1000 stations by 2015 to support "several hundred thousand vehicles within a few years." Germany also is undertaking an extended field test of 800 residential fuel cells by 2015, involving 5 utilities and three suppliers. **The United States has no similar programs**.

Many other countries in Europe and Asia including **China** have programs focused on this industry. In the private sector, suppliers worldwide are attempting to gain market share in advance of full commercialization.

In general, US fuel cells are welcome in emerging international markets, but the sales come with a price in terms of local assembly, manufacture and/or technology transfer. Increasing the US program of support for fuel cell deployment will strengthen US companies, create jobs at home and assure that American companies will remain competitive in the race to commercialize fuel cells and their fuels. Additionally, Federal interagency cooperation has been effective in educating federal agencies about the benefits of fuel cells and their suitability for federal purposes. In recent years, however, high-level cooperation appears to have declined. A vital, active interagency task force at the Assistant Secretary level would be of substantial help to the fuel cell industry.

Finally, a strong domestic industry serving a strong domestic market will keep the US competitive in fuel cells. On the technical level, the US Fuel Cell Council is a leader in a broad international effort to harmonize international regulation. Federal agencies can help by supporting industry's effort to establish uniform national and international safety standards and product standardization recommendations, to promptly adopt supportive, harmonized codes, standards and recommended practices when they are developed, and to educate code officials and state and local regulators in the U.S.

May I continue to discuss Ohio's Fuel Cell Initiative, the Ohio Fuel Cell Coalition (OFCC) was formed in 2003 in support of Ohio's investment in fuel cell development encouraging public/private investment and partnerships. The Coalition's mission is forming "a united group of industry, academic, and government leaders working collectively to strengthen Ohio's fuel cell industry and to accelerate the transformation of the industry to global leadership in fuel cell technology and application". We are located in Cleveland, Ohio with an office in Dublin, Ohio.

Since the Coalition's inception the organization has grown to 75 members and In a few short years Ohio has become one of the top three states in the country in fuel cell development.

Thanks to a significant investment by the Ohio Third Frontier Project, fuel cells today are being used commercially for stationary grid power, lift trucks, laptops and a variety of other portable and stationary applications. Additionally, this investment has leveraged more than $300 million of Federal dollars to support fuel cells.

The State of Ohio offers the fuel cell industry unmatched growth potential, Ohio has the R&D strengths, a great supply chain, a skilled work force and an enviable partnership with the State of Ohio and the Ohio fuel cell industry. Because of these strengths Ohio has attracted 4 fuel cell companies and projects to the State since 2005, including Rolls-Royce Fuel Cell Systems, UltraCell, GrafTech, and Contained Energy.

The opportunities are limitless in Ohio, but without State and Federal support the competitive advantage in Ohio would evaporate. With additional State and Federal Support the following will happen:

- UltraCell will continue to grow and hire scores of new people to manufacture the fuel cell powered laptops both in the military and commercially.
- Crown Equipment will be the pre-eminent Lift truck manufacturing company in the world.
- GrafTech from Parma will continue to be a premier leader in developing cutting edge fuel cell components in Ohio and selling products all over the world.
- Rolls Royce will establish its manufacturing operations in Canton Ohio and have its technicians trained at Stark State College of Technology.
- Many other companies from across the country will set up operations in Ohio to take advantage of Ohio's competitive advantage.

Fuel cells are clean and efficient in their use of energy and have a low carbon foot print.

We can envision a new future where fuel cells are heating and cooling our homes our offices and our factories and powering our electronics and having a significant impact on our transportation sector. Ohio is and will be playing a significant role in this new and emerging energy provider area.

Thank you Mr. Chairman and Committee Members