NATIONAL FUEL CELL RESEARCH CENTER

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Liane Randolph, Chair
California Air Resources Board
1001 I St.
Sacramento, CA 95814

Re: Agenda Item 21-5-5 Informational Update on the AB 617 Technology Clearinghouse

Dear Chair Randolph and Members of the Board:

The National Fuel Cell Research Center (NFCRC) submits this written testimony to express deep appreciation and support for the continued development of the Assembly Bill 617 Technology Clearinghouse (Technology Clearinghouse). The Technology Clearinghouse is an important public tool to show the vast portfolio of commercially available near-zero and zero-emission technologies to improve air quality today in local communities.

The NFCRC facilitates and accelerates the development and deployment of fuel cell technology and systems; promotes strategic alliances to address the market challenges associated with the installation and integration of fuel cell systems; and educates and develops resources for the decarbonization of power and energy storage sectors. The NFCRC was established in 1998 at the University of California, Irvine by the U.S. Department of Energy and the California Energy Commission in order to develop advanced sources of power generation, transportation and fuels and has overseen and reviewed thousands of commercial fuel cell applications.

Prior to the development of the Technology Clearinghouse, public information was only available on Best Available Control Technologies (BACT) for emitting stationary sources. Because non-combustion fuel cell systems are low- or zero-carbon emitting resources with no criteria air pollutants, they do not require an air quality permit.

Fuel cells convert the chemical energy of a fuel directly into electricity via a non-combustion electrochemical reaction. Fuel cells operate on external fuels that are delivered or stored on-site, such as natural gas, biogas, or hydrogen, and will continuously provide electricity as long as fuel is provided. In contrast to combustion engines commonly used for electricity generation from similar fuel sources, stationary fuel cells provide clean, highly efficient energy conversion. Fuel cells scale with high efficiency, providing power in quantities ranging from kilowatts for individual buildings to multi-megawatts for supporting the grid, all with virtually zero emission of criteria pollutants and virtually zero water consumption. These important attributes allow fuel

cells to provide different industries and applications with a wide range of energy, environmental, and economic benefits.

The flexibility, modularity, and scalability of fuel cell systems yield many options for customers to meet primary, backup, emergency, and auxiliary load demands. For primary load demands, fuel cells provide continuous clean, reliable, and load-following power and can be configured to provide seamless transition to meet critical loads in the case of a utility grid outage, thus eliminating the need for backup diesel generators. Fuel cells can also support combined cooling, heating, and power (CCHP) operations [1, 2]. Additionally, tri-generation fuel cell systems produce electricity, heat, and hydrogen to provide not only the expected high-quality electricity and heat, but also hydrogen for fueling fuel cell electric vehicles (e.g., light-, medium-, and heavy-duty vehicles, and cargo and materials handling equipment).

The Technology Clearinghouse provides a new and critical designation for low- and zero-emission resources like fuel cell systems that do not require permits, which have historically not been considered to be BACT (because they did not require a permit) and which simply had no other public listing. The NFCRC is already using the Prototype Tools within the Clearinghouse website in education and outreach efforts for interested parties such as potential end-users, non-governmental and community organizations, and policymakers. We are very pleased with the progress of the Prototype Tools and look forward to utilizing the final Technology Clearinghouse to continue promoting clean stationary primary and backup power resources for air quality improvement.

Respectfully Submitted,

/s/ *Jack Brouwer*

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