**BEFORE THE PUBLIC UTILITIES COMMISSION**
**OF THE STATE OF CALIFORNIA**

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# OPENING COMMENTS OF THE NATIONAL FUEL CELL RESEARCH CENTER ON ORDER INSTITUTING RULEMAKING TO INVESTIGATE AND DESIGN CLEAN ENERGY FINANCING OPTIONS FOR ELECTRICITY AND NATURAL GAS CUSTOMERS

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In accordance with Section 6.2 of the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission"), the National Fuel Cell Research Center ("NFCRC") hereby submits our comments on the *Order Instituting Rulemaking to Investigate and Design Clean Energy Financing Options for Electricity and Natural Gas Customers* ("OIR"), issued on September 4, 2020.

## I. Background

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 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.

## II. Interest in this Proceeding

Clean energy financing options are critical to the continued development of markets for renewable biogas, fuel cell systems and hydrogen into the future. The NFCRC has extensive experience examining policy, incentives and regulatory structures to incentivize the use of clean and renewable fuels and generation technologies in multiple states and countries.

The use of fuel cell systems, biogas, and renewable hydrogen has a significant impact on the reduction of criteria air pollutants and air toxics as well as greenhouse gas (GHG) emissions, making these technologies important solutions to advance current California policy priorities related to air quality and environmental justice. Fuel cells for heat, power and backup power generation are unique non-combustion solutions in agricultural, commercial, industrial and other facilities today. Fuel cells offer substantial benefits that include:

(1) the ability to operate on renewable gas, hydrogen and natural gas;

(2) increased energy efficiency;

(3) promoting energy security through energy diversity;

(4) providing 24/7, load-following power behind-the-meter and at utility-scale;

(5) reducing and eliminating greenhouse gas emissions and short-lived climate pollutants;

(6) virtually zero emission of criteria pollutants.

Fuel cell systems also displace traditional emergency backup generators (almost exclusively diesel combustion generators) that emit criteria air pollutants and GHG.

## III. Comments

Renewable wind and solar power generation, fuel cells operating on natural gas, biogas, and renewable hydrogen, and energy storage technologies can all reduce $CO_2$ and other GHG emissions. Through the fuel flexibility of fuel cells and the ability to operate continuously and follow fluctuating electrical (and thermal) loads, fuel cell systems can also provide a critical role in enabling increased penetration of renewable solar and wind resources on the grid. These features of fuel cell systems allow them to reduce pollutant emissions and improve air quality over and above the improvements that can be made with solar, wind, and energy storage systems alone.

The NFCRC notes the lack of references to biogas, fuel cells and hydrogen in the clean energy options addressed in the OIR and requests that the scope of the proceeding explicitly include these options to pursue the goal of statewide decarbonization by 2045.

The NFCRC emphasizes the importance of creating renewable gas policies with financing options for projects that have great environmental benefits, enabled by the development of the renewable gas market. Fuel cell systems used in behind-the-meter commercial, industrial and multi-unit residential buildings today can readily use these renewable fuels. These potentially renewable energy projects are only constrained by the availability of the fuels, limiting both the market and the significant GHG, criteria air pollutant and toxic air contaminant emission reductions that can be uniquely achieved by the

use of these continuous power fuel cell systems. This situation could be alleviated with thoughtful program financing options resulting from this proceeding.

The combined impact of the Renewable Fuel Standard (RFS) and the Low Carbon Fuel Standard (LCFS) exacerbates the challenge of non-transportation uses of renewable gaseous fuels. The NFCRC supports policies and financing options that would allow fair access of stationary fuel cell systems to renewable gas at reasonable market prices. The greatest NOx reducing scenario that provides the best air quality and health impacts in local communities includes using some renewable gas use for electricity generation with stationary fuel cell systems. However, this scenario is currently precluded by the high price that is produced by RFS and LCFS support for renewable gas use as a transportation fuel. Current renewable gas prices (again, because of the policy support of RFS and LCFS) lead to fuel cell power generation that is uneconomical and not competitive with the grid. The NFCRC encourages policies that lead to using some renewable gas in transportation applications and some in stationary fuel cell systems to produce the greatest benefit from use of renewable gas to local community NOx reductions and air quality.

Renewable hydrogen, including hydrogen as a blend stock or secondary component with methane can be produced from many renewable sources including biogas, other renewable gas derivatives, and by renewable solar or wind powering of water electrolysis in power-to-gas applications. Hydrogen is critically needed to address both the stationary power and the transportation air quality and GHG reduction goals of the State. First, hydrogen offers one of the only economic, modular, and geographically flexible means for zero emission long-duration (e.g., seasonal) storage of renewable power. Second, hydrogen can be produced in much larger quantities than all other renewable gases to meet a much

larger fraction of the otherwise difficult to electrify end-uses (such as long-haul freight, aviation, marine transport, and district heating). Third, hydrogen offers zero GHG and zero criteria pollutant conversion options in both its production and end-use. Fourth, there are fuel cell systems available today that can use these renewable fuels and are only constrained by the availability of these fuels, which limits both the market and the significant GHG, criteria air pollutant and toxic air contaminant emission reductions that can be uniquely achieved by the use of continuous power fuel cell systems. Organic feedstocks are important to support, but they are more limited than solar and wind resources, which are technically able to produce large amounts of renewable hydrogen via a power-to-gas electrolysis process.

Ensuring that financing options are available to all clean energy technologies, including fuel cells, renewable gas and hydrogen is critical to developing the carbon reduction pathways that can only be achieved with their inclusion. We cannot achieve our zero emissions policy goals without renewable fuels.

## IV. Conclusion

The NFCRC thanks the Commission and other parties for the opportunity to participate in this proceeding and offer comments. We emphasize the importance of developing different clean energy financing tools to allow customers to choose the technology options that meet their needs.

Dated: October 5, 2020

Respectfully submitted,

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