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California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

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RE: Bioenergy Market Adjusting Tariff (BioMAT) Program Review and Staff Proposal

The National Fuel Cell Research Center ("NFCRC") appreciates the opportunity to comment on the Energy Division staff's straw proposal for program changes to the Bioenergy Market Adjusting Tariff ("BioMAT"), issued by the California Public Utilities Commission ("Commission") on October 30, 2018, to inform the scope and content of future workshops and program revisions.

The NFCRC facilitates and accelerates the development and deployment of fuel cell technology and fuel cell 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 various stakeholders in the fuel cell community.

Introduction

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, other greenhouse gas ("GHG") emissions and criteria air pollutant 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 an increased penetration of

renewable solar and wind resources on the grid. The deployment of fuel cell systems using renewable fuel is hindered, however, by policies and incentives that strongly favor the use of renewable gas for transportation rather than stationary generation. BioMAT is the only program currently in place that helps to ensure that a portion of these renewable gas resources is used for firm and dispatchable renewable power generation.

Additionally, fuel cells offer these substantial benefits:

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

(2) increased energy efficiency,

(3) providing firm, 24/7, load-following power,

(4) increasing resiliency through local power generation in microgrids,

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

(6) virtually zero emission of criteria pollutants, and

(7) promoting energy security and reliability through energy diversity.

The NFCRC strongly supports the continuation of the BioMAT program and is generally in favor of the program provisions and modifications proposed by staff. However, the NFCRC would like to see additional preference given to resources, such as fuel cells, that offer criteria air pollutant emissions reductions. We offer the following specific comments on selected questions posed by staff.

Responses to Questions Pertaining to Staff Proposal

10. Do you support the proposal to extend the current program end date for an additional five years, from February 2021 to February 2026? Why or why not?

The NFCRC fully supports the proposal to extend the current BioMAT program end date for an additional five years. Coupled with the proposed preference for air emission reduction

recommendations outlined below, the positive impact of carbon neutral and criteria air pollutant reducing projects can be amplified during this extended timeframe. While the utilities have, to this point, procured renewable resources beyond their Renewable Portfolio Standard ("RPS") requirements, BioMAT projects will create incremental positive local impacts, provide non-intermittent renewable power, and support the state's policies to convert organic waste streams to beneficial use. These incremental benefits justify the extension of the program.

While fuel cell systems available today use biofuels effectively and efficiently, they are constrained by the lack of availability of these fuels at price points supported by current renewable power programs other than the BioMAT program. This 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 renewable fuel in continuous power fuel cell systems.

18. Achieving pollution and GHGs reductions was an original goal of BioMAT. However, whether or not individual projects reduce net lifecycle emissions depends on project-specific factors. Do you think that the Commission should establish a requirement that facilities reduce emissions as a condition for BioMAT eligibility? In your response, please explain how such a program requirement would complement or not complement the work of other state or local agencies that regulate or provide grants to BioMAT-eligible facilities.

The NFCRC recommends that RPS eligibility be the criterion for GHG emissions. That is, criteria for establishing BioMAT eligibility as a renewable resource should not differ from those used to determine eligibility for other renewable resources.

Consistent with AB 617 and other state policies, the NFCRC additionally recommends that a preference be established for BioMAT projects that create net criteria pollutant emissions reductions directly or through qualified local offsets included in the bid price. Preference could be established from a calculation like dollar per ton of criteria air pollutant emissions, based on nameplate emissions. Preference could additionally be given to projects with tools such as mitigation measures or offsets.

Fuel cells address simultaneously the mitigation of CO_2, criteria air pollutants, and short-lived climate pollutants – co-benefits which are all direct or indirect goals of the California Air Resources Board ("CARB") Climate Change Scoping Plan. For CO_2, high fuel-to-electrical efficiency significantly reduces the carbon emitted per MWh of electricity produced. The high operating temperatures of fuel cells also enable the cogeneration of heat, steam, or chilled water (through absorption chilling), thereby further displacing conventional, carbon emitting sources (e.g., grid electricity, natural gas boilers, and natural gas furnaces). Fuel cells operate today on biogas, further contributing to the reduction of GHG emissions. Particularly important as supply evolves, fuel cells will operate in the future on renewable hydrogen as a principal strategy to capture and store intermittent renewable energy that would otherwise be curtailed. In this mode, the fuel cell system will provide firm (24/7), 100% load-following renewable electricity with net zero emission of carbon.

For criteria pollutants, fuel cells have the distinct attribute of emitting virtually zero criteria pollutants, which is an especially important feature in comparison to combustion systems that could offer the same load-following generation.

a. Would you support a proposal requiring that in order to be eligible for BioMAT, a project must demonstrate that it will result in net GHG emissions reductions based on the GHG quantification methodologies and accompanying calculator tools developed by CARB that are discussed on pages 12-13, or a customized calculator tool developed by the CPUC? Please explain.

Again, the NFCRC recommends that BioMAT eligibility be based on the same criteria and standards as RPS eligibility.

12. Do you support the proposal to remove the three MW cap on payments via BioMAT PPAs for facilities larger than three MW? Why or why not?

The NFCRC supports the removal of the three MW cap and allowing for larger facilities to receive payments via BioMAT PPAs. The criteria for carbon neutrality and criteria air

pollutant emission reduction should be considered favorably for preference in order to ensure these larger projects are aligned with meeting broader state policy objectives. These include impacts on criteria air pollutant emission reduction, short-lived climate pollutant emission reduction and eliminating disproportionately negative impacts on disadvantaged communities. Many fuel cell projects today exceed 3 MW, as more capacity is needed for projects where renewable gases might otherwise be flared, such as at wastewater treatment plants and food processing facilities.

13. Do you support the proposal to allow incremental generation from existing units to be eligible for the BioMAT program? Why or why not?

The NFCRC supports the proposal to allow BioMAT support for incremental generation from existing units in contracts for projects up to 5MW, with the caveat that a separate cap should be created for such projects.

Existing projects have already incurred project development, interconnection and other sunk costs that will give them an advantage over new projects in the contract price that is submitted. Because of this difference in pricing and the likelihood of lower bids from incremental generation projects, the NFCRC recommends a separate capacity set-aside for incremental generation within the procurement allocation for each technology category. This would allow existing generation projects with the advantage of lower incremental costs (as compared to higher start-up costs for new projects), to fairly compete within the program, against projects with like cost components.

By simultaneously adding a requirement for a net reduction in criteria air pollutants, as well as GHG emissions reductions, allowing incremental generation should also produce incremental emission reductions.

17. As noted in Staff's observations on pages 11-12, BioMAT is connected to the policy efforts of other State and Federal agencies. How could the Commission coordinate more closely with other agencies to streamline bioenergy development, increase consistency across related programs, and reduce costs for market participants and ratepayers?

a. What actions should the Commission take to better coordinate/maximize funding from federal agencies to support BioMAT program goals?

Fuel cells for power and heat generation are among the largest consumers of directed biomethane outside the transportation sector. The guarantee of a growing and reliable supply of biomethane and other forms of renewable gas is of crucial importance to consumers that deploy fuel cell systems. The current market, however, strongly favors the use of renewable gas in the transportation sector. Federal policies have established a Renewable Identification Number (RIN) that can be assigned to a batch of biofuel for the purpose of tracking its production, use and trading as required by the United States Environmental Protection Agency's Renewable Fuel Standard (RFS). Current RIN prices allow biogas developers to generate around $30/MMBtu for the RIN value alone if they sell their product in the transportation market. Selling the same biogas into the electricity market would not generate a RIN, and the developer would thus forgo this lucrative federal incentive.

The NFCRC also contends that directing the majority of the biogas supply to the transportation market for use in natural gas engines may not capture the most air quality benefits. The Union of Concerned Scientists recently released a report highlighting that "while biomethane generates lower global warming emissions than natural gas when used in CNG vehicles, it produces even lower emissions when used to make electricity … likewise [this] results in lower emissions of smog-forming nitrogen oxides than using biomethane directly in a CNG vehicle."[1]

[1] Union of Concerned Scientists, "*The Promises and Limits of Biomethane as a Transportation Fuel*," available on-line at: https://www.ucsusa.org/sites/default/files/attach/2017/05/Promises-and-limits-of-Biomethane-factsheet.pdf, May, 2017.

We understand that the Commission cannot change federal policy, however, we urge the Commission to consider incentives that would facilitate market transformation for the cleanest (lowest emissions) and most efficient use of biogas in this proceeding – stationary generation. The NFCRC asks that the Commission also consider these incentives within the context of prevailing state and federal incentives, and coordinate with other state agencies in considering ways to align and harmonize incentive programs in different sectors, in order to avoid unintentionally skewing fuel allocation between sectors.

The BioMAT tariff supports the objectives of California state policy including SB 100[2] for 100% renewable and zero-carbon resources and Executive Order B-55-18[3] to attain statewide carbon neutrality by 2045 using clean energy sources. The BioMAT program should also coordinate with CARB and local air districts as they implement AB 617 Community Air Protection Program[4] projects, by educating municipalities on options and incentives to reduce local air emissions.

Conclusion

Ensuring that a diversity of fuel sources is available to enable the 100% clean grid in the future is critical to meeting California policy goals. Essential to this required diversity is clean, firm, 24/7, dispatchable power generation that can address the realistic integration of renewable and distributed resources. The NFCRC therefore strongly supports the extension and expansion of the BioMAT tariff to recognize the full value and broad emission reduction potential of

[2] Senate Bill No.100, California Renewable Portfolio Standard Program: emissions of greenhouse gases, Chapter 312. Approved by Governor September 10, 2018. Filed with Secretary of State September 10, 2018.
[3] Executive Order B-55-18 To Achieve Carbon Neutrality, September 10, 2018, located at: https://www.gov.ca.gov/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf
[4] California Air Resources Board, Community Air Protection Program available at: https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program

directing renewable fuel to the clean, firm, 24/7, power generation capabilities of stationary fuel cell systems.

Sincerely,

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