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Bloom Energy Comments on FPIP Solicitation

Additional submitted attachment is included below.

Bloomenergy

May 24, 2019

Deputy Director Laurie ten Hope
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: Comments on the Food Production Investment Program Solicitation

Dear Deputy Director ten Hope,

Bloom Energy (Bloom) appreciates the opportunity to provide these comments on the Food Production Investment Program (FPIP) Solicitation. We value the California Energy Commission's ("Commission") leadership with FPIP to reduce GHGs at food production facilities throughout the state while simultaneously maintaining competitiveness and creating food production jobs. Highly efficient, non-combustion fuel cells can help the Commission meet these ambitious and laudable goals.

Summary of Recommendations
Non-combustion fuel cells provide multiple air quality, resiliency, GHG reduction, and flexibility benefits. To realize these opportunities, Bloom suggests the following additions to the current FPIP solicitation draft:

1. Include all-electric fuel cells as an eligible Tier 1 technology: With nearly 300 MW of Bloom fuel cells deployed in California, this is an established technology with a proven track record.
2. Include all-electric fuel cells as an eligible Tier 2 technology: By providing always-on power, fuel cells: a). are a perfect complement to intermittent renewables, such as solar and wind; b). in a microgrid configuration, displace dirtier, less-efficient technologies, such as diesel generators.

Bloom's subsequent comments will focus on specific areas where the current draft can be updated to achieve these outcomes.

GHG, Air Quality, and Resiliency Benefits of Fuel Cells

Bloom is a provider of a breakthrough all-electric fuel cell technology that produces always-on power. By virtue of their non-combustion process, Bloom Energy Servers virtually eliminate emissions of criteria air pollutants including NOx, SOx, CO, VOCs, and particulate matter that are associated with traditional combustion and diesel back up power configurations while providing onsite power 24x7x365. The result is a significantly lower air emissions profile as compared to combustion-based distributed or central station power generation—reducing localized impacts in rural, disadvantaged, and vulnerable communities.[1]

Bloom's fuel cells are fuel flexible and can operate on either natural gas or biogas. In addition, our all-electric solution allows fuel cell systems to be deployed at sites where it is not necessary to match an on-site thermal load, thereby expanding the opportunities available to address energy needs with clean, reliable distributed

[1] https://www.bloomenergy.com/datasheets/energy-server-es5-300kw

generation. With nearly 300 MW installed across over 480 sites in California, Bloom has a proven technology with a strong track record of providing cost-competitive, clean, reliable energy solutions.

Importantly, on any fuel source, all-electric fuel cells reduce both GHG emissions and criteria air pollutants compared to other distributed technologies. Indeed, a recent third party impact evaluation of California's Self Generation Incentive Program found that all-electric fuels running on natural gas generated the largest reductions of any technology category—see Figure 1 below.[2]

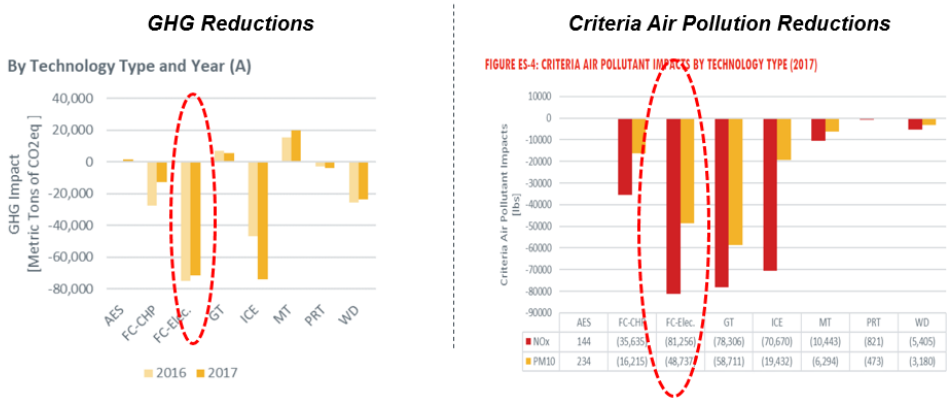

Figure 1

Additionally, by providing always-on power, all-electric fuel cells are a perfect complement to intermittent renewables, such as solar and wind. Indeed Bloom has over 75 microgrid installations—many of which are paired with batteries—which enable a customer to displace dirtier, less-efficient technologies, such as diesel generators. This microgrid architecture enables customers to island from the grid—an increasingly critical design as California grapples with climate caused disasters, such as wildfires, record heat, and flooding. Additionally, all-electric fuel cells can play an important role in riding through de-energization events, earthquakes, and other interruptions to the electricity grid.

Due to their GHG reductions, air quality improvements, and resilient design, we respectfully encourage the Commission to include all-electric fuel cells as eligible technologies for both Tier 1 and Tier 2 applications in the FPIP solicitation. To remain competitive, resilient, and contribute to the State's GHG reduction goals, agricultural facilities should be encouraged to pursue all technologies that provide these benefits.

Conclusion

[2] SGIP 2016-2017 Impact Report, Table ES-6: GHG Impacts by Technology Type and Year and Figure ES-4 Criteria Air Pollutant Impacts By Technology Type (2017)

We thank the Commission for the opportunity to provide feedback and reiterate that highly efficient, non-combustion, all-electric fuel cells should be an integral component of the Commission's continuing efforts to chart a resilient, prosperous, sustainable, and equitable energy future for all Californians.

Respectfully,

Erin Grizard
Senior Director, Regulatory and Government Affairs

Sam Schabacker
Policy Manager

Appendix A: Criteria Air Pollution Sources

Fuel Cells: https://bloomenergy.com/datasheets/energy-server-es5-300kw
Turbine: NOX: https://www.epa.gov/sites/production/files/2015-07/documents/catalog_of_chp_technologies_section_1._introduction.pdf, pg 1-6; VOC and CO: https://www.energy.gov/sites/prod/files/2016/09/f33/CHP-Gas%20Turbine.pdf, pg 4
Microturbine: https://www.epa.gov/sites/production/files/2015-07/documents/catalog_of_chp_technologies_section_1._introduction.pdf, pg 1-6; CO and NOX: https://www.energy.gov/sites/prod/files/2016/09/f33/CHP-Microturbines_0.pdf, pg 4
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Diesel Gensets: Emissions factors from NSPS standards and AP-42 for 2014 or later diesel genset >751 HP: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwjFl5mLl-3dAhXdFjQIHVNqCtwQFjAAegQIChAC&url=https%3A%2F%2Fwww.epa.gov%2Fsites%2Fproduction%2Ffiles%2F2016-07%2Fengines_ci_pte_calculator_version_1.0_0.xlsx&usg=AOvVaw0vJz3y-losGperFpB9EGpD