



June 6, 2017

Chair Mary Nichols
Air Resources Board
1001 I Street
Sacramento, CA 95814

Secretary Karen Ross
California Department of Food and Agriculture
1220 N Street
Sacramento, CA 95814

Re: Dairy and Livestock GHG Reduction Working Group Workshop on May 23, 2017

Dear Secretary Ross and Chair Nichols,

Bloom Energy appreciates the opportunity to provide these comments on the first meeting of the Dairy and Livestock GHG Reduction Working Group.

Bloom supports developing a robust renewable methane supply

Bloom Energy stands ready to further contribute to strategies aimed at achieving the State's ambitious climate and energy goals through the use of renewable fuels. Bloom's fuel cell technology is the most efficient at converting methane to electricity and is able to run on biogas produced from a variety of sources including waste streams from dairies. As a reliable source of firm 24x7 power, Bloom can significantly contribute to overall reductions in methane emissions while providing a reliable power source.

Bloom has over 20 MW installed in California running on biomethane. However, increasing the number of these ultra-clean projects and the associated positive environmental benefits has been stunted by limited availability of biomethane. Therefore, we fully support the Dairy and Livestock GHG Reduction Working Group exploring options that will accelerate digester projects for both onsite electricity generation and access to pipeline injection in order to make this an economical option available for our customers. Bloom strongly supports the mission statement of Subgroup #2: Fostering Markets for Digester Projects, to establish a roadmap to expand digester projects in California and to identify benefits and barriers. All-electric fuel cells can currently run on biomethane, so this represents an immediate benefit that may be realized if cost-effective and accessible renewable biomethane supplies are made widely available.

Interconnection and injection pilots are critical

As mentioned by several parties at the May 23 workshop, it will be critical to the overall expansion of the market to identify and overcome barriers to pipeline

interconnection and injection through the dairy biomethane pipeline interconnection and injection pilots. Transport of biomethane through the common carrier pipeline system will make this renewable resource accessible to a broader geography and wider array of consumers who are interested in generating reliable, renewable onsite power, but specific and targeted policies are needed to address significant market barriers.

Bloom's experience in working to connect our customers with biomethane sources matches that of other stakeholders who mentioned that uncertainties around cost and timeline of pipeline interconnection have been a primary barrier to potential suppliers obtaining project financing. Achieving a better understanding of the interconnection process through the pilot projects and working to establish standard processes and costs will provide the certainty needed for financiers to invest and for projects to move forward and increase biomethane supply.

Another challenge in obtaining financing for projects has been the need for an understanding of what scale of project is needed to develop a project and inject into the pipeline (e.g. approximate number of cows, annual tons of waste, or MMBtu/day) as well as a consistent methodology to estimate the energy yield from a given input of waste. Understanding that there will be some variability across projects, a consistent framework to consider these concepts will facilitate communication between project developers, financiers, and offtakers.

Electricity generation should continue to be considered as an end use

Multiple stakeholders expressed concern that encouraging electricity generation projects would exacerbate air quality issues. Not all options for electricity generation are combustion-based. For example, Bloom Energy Servers efficiently convert fuel into electricity through an electrochemical process without combustion. By virtue of the non-combustion process, Bloom Energy Servers virtually eliminate emissions of criteria air pollutants including NO_x, SO_x, CO, VOCs, and particulate matter that are associated with combustion. The result is a significantly lower air emissions profile as compared to combustion-based distributed or central station power generation. Onsite electricity generation projects using ultra-low emissions technologies such as fuel cells can provide reliable onsite power as well as air quality benefits to surrounding communities.

Long-term electricity generation contracts support project financing

Both onsite electricity generation and pipeline biomethane contracts for electricity generation end use can be structured as long term agreements. Longer term, fixed price agreements (10-20 years) provide a predictable base of revenue that will aid in the ability of digester projects to be financed. This should not be seen as competitive with transportation end use, but rather an approach that allows for multiple end uses from the same digester project to enable project development. This approach also does not preclude policies that will help to stabilize the LCFS (Low Carbon Fuel Standard) and RIN (Renewable Identification Number) market credit prices; rather it provides an immediate remedy while these complementary policies are developed to further increase the attractiveness of projects to investors.

Bloom Energy appreciates the opportunity to provide these comments to the Working Group and looks forward to continued engagement as these discussions move forward.

Respectfully,

A handwritten signature in black ink, appearing to read "Erin Grizard". The signature is fluid and cursive, with a large initial "E" and "G".

Erin Grizard
Senior Director, Regulatory and Government Affairs