

August 26, 2024

Thomas Ferguson
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SUBMITTED ELECTRONICALLY

Re: Comments of Bloom Energy on 2024 Clean Peak Energy Standard (CPS) Emergency Rulemaking

Dear Mr. Thomas Ferguson & the Clean Peak Energy Standard Team,

Bloom Energy Corporation (Bloom Energy) hereby respectfully submits the following comments in response to the emergency regulation issued on July 19, 2024 by the Massachusetts Department of Energy Resources (DOER). Bloom Energy appreciates the opportunity to provide written input to inform the evolution of the Clean Peak Energy Standard which serves a critical need to reduce emissions during peak energy periods that are otherwise served by fossil fuel combustion-based marginal power plants.

About Bloom Energy

Bloom Energy is a manufacturer of solid oxide fuel cell technology that utilizes an electrochemical process to power non-combustion microgrids as well as advanced electrolyzer systems capable of converting renewable electricity into renewable hydrogen. Our solid oxide fuel cells and electrolyzers are designed in a modular fault-tolerant format that provides mission critical reliability with no downtime for maintenance. Bloom Energy has installed over 1,200 of its non-combustion solid oxide fuel cell systems for customers in thirteen U.S. states as well as in Japan, South Korea, India, and Taiwan, with over 35 systems operating in Massachusetts. Our systems have proven resilient through outages caused by hurricanes, winter storms, earthquakes, forest fires, and other extreme weather and natural disasters.

Context for the Clean Peak Energy Standard

The intent of the CPS is to reduce emissions associated with electricity generated during peak periods of energy usage. As such, the regulations guiding implementation of the CPS state that eligible Clean Peak Resources are defined as "A Qualified RPS Resource, a Qualified Energy Storage System or a Demand Response Resource that generates, dispatches or discharges electricity to the electric distribution system during Seasonal Peak Periods, or alternatively, reduces load on said system during said periods." (225 CMR



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21.02).¹ Each of these resources prevent grid-side greenhouse gas emissions from being released into the atmosphere and limits harmful air pollutants generated by marginal power plants which are predominately inefficient fossil fuel combustion units located in or near marginalized environmental justice neighborhoods. The technology neutral approach taken in the CPS program is to be commended as it allows a variety of resources to contribute in their own way – by reducing load during peak periods through implementing demand response and load curtailment actions, by discharging stored energy, or by utilizing renewable distributed generation systems reducing the load on the broader grid. Understanding the current shortfall of Clean Peak Energy Certificates (CPECs) which prompted the emergency rulemaking, the program should encourage the market to look to innovative strategies designed to meet this need and utilize the full scope of resources eligible.

Fuel Cells' Potential to Contribute to the CPS

Bloom Energy's Energy Servers are fuel flexible, capable of running on natural gas, biogas, or hydrogen. As defined in 225 CMR 14.02, fuel cells powered by biogas or hydrogen derived from biomass or electrolysis using renewable electricity are Qualified Class I RPS Resources, eligible to generate CPECs.² Driven by the immediate need to reduce emissions today, biogas fuel cell projects are uniquely positioned to provide a number of emissions benefits while harnessing the energy content of a resource that would otherwise be entirely lost, exacerbating climate change in the process:

1. The non-combustion nature of biogas fuel cells virtually eliminates emissions of nitrogen oxides and sulfur dioxide, reducing local air quality concerns.
2. Biogas fuel cells can be configured as microgrids, eliminating the need for combustion-based emergency generators which further worsen air pollution.
3. When electrochemically converted into electricity in a fuel cell, biogas can provide electricity with a negative carbon intensity – a highly productive use of an otherwise detrimental source of emissions.
 - a. Biogas is produced from sources such as wastewater treatment plants, landfills, and agricultural operations, venting methane directly into the atmosphere. Methane's high Global Warming Potential makes it a greenhouse gas of particular concern.
 - b. In other cases, biogas is often flared for methane destruction, without extracting any useful energy. This process wastes the energy content of the resource, while producing carbon dioxide and releasing byproducts of combustion into the air further contributing to greenhouse gas emissions and local air pollution.

¹ <https://www.mass.gov/doc/225-cmr-21-clean-peak-energy-portfolio-standard-cps/download>

² <https://www.mass.gov/doc/rps-class-i-11-28-22/download>

"Eligible Biogas Fuel. A gaseous fuel that is produced by the contemporaneous bacterial decomposition or thermal gasification of Eligible Biomass Fuel. Eligible Biogas Fuel does not include natural gas, but does include renewable natural gas, which is Eligible Biogas Fuel upgraded to a quality similar to natural gas"

"Eligible RPS Class I Renewable Fuel. An Eligible Biomass Fuel, hydrogen derived from such fuels or hydrogen derived from water using the electrical output of a Renewable Generation Unit, but not hydrogen derived using RPS Class I Renewable Generation if the RPS Class I Renewable Generation Attributes of such Generation are sold, retired, claimed, used or represented as part of electrical energy output or sales, or used to satisfy regulatory obligations in any jurisdictions, and not hydrogen derived directly or indirectly from ineligible fuels."

Highlighting the climate benefits of generating electricity from biogas via fuel cells, a Bloom Energy one megawatt (1 MW) biogas fuel cell microgrid project at a California dairy farm was recently certified by the California Air Resources Board with a Carbon Intensity (CI) Score of -790gCO₂e/MJ.³ As of December 2023, this was the lowest CI Score recorded under the Low Carbon Fuel Standard program. A case study is available for reference.⁴ Bloom Energy is eager to utilize pipeline directed biogas in Massachusetts to deliver to the market additional CPECs and their associated benefits as discussed above. Due to the cost premium of biogas, support for such projects through the CPS is vital to ensure a project can be built.

Dependence on the Renewable Energy Portfolio Standard

As defined in Massachusetts General Laws Chapter 25A Section 11F, fuel cells utilizing renewable fuels are a Class I renewable energy generating source.⁵

f. In the case of a Generation Unit that uses Eligible Biogas Fuel, the Eligible Biogas Fuel may be either conveyed directly to the Generation Unit without the use of facilities used as common carriers of natural gas, or transported to a Generation Unit within the ISO-NE Control Area or an adjacent Control Area via a common carrier of natural gas, in which instance the gas would be subject to the following provisions:

- i. the gas is produced entirely within the ISO-NE Control Area or an adjacent Control Area;*
- ii. documentation is provided, satisfactory to the Department, regarding the gas transportation and related contracts; and*
- iii. demonstration is provided, satisfactory to the Department, that the gas can be physically delivered to the Generation Unit.*

It appears that no resource has yet been qualified by DOER under the “common carrier” arrangement whereby a project contracts for Eligible Biogas Fuel produced elsewhere and conveys it to the generator. Given that this opportunity for renewable power generation has yet to be utilized in the RPS, DOER has not yet further defined what documentation would be “satisfactory to the department” in order to consider a generation unit’s eligibility using pipeline directed biogas. However, to generate CPECs, a generation unit must first be established as a qualified pipeline directed biogas system under the RPS. We wish to raise this need for the DOER to proactively put forth these guidelines such that biogas fuel cells can assist in meeting the CPEC shortfall currently limiting the CPS Program’s success.

³ https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/comments/tier2/b0490_summary.pdf

⁴ <https://www.bloomenergy.com/resource/bar20-case-study/>

⁵ <https://malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter25A/Section11F>

Conclusion

Thank you for your consideration of these comments and for supporting the stakeholder process that is underway. We greatly appreciate the Department of Energy Resources' effort to ensure the Clean Peak Energy Standard provides emissions reductions and supports availability of clean power during periods of peak demand. We understand that DOER had to act in an emergency capacity to adjust program terms based on the shortfall of credits while protecting ratepayer's investment in generating or dispatching clean energy when its most beneficial to the grid and hope to contribute to the supply of CPECs in future compliance years through the pathway described above. We are eager to support the Department's efforts to revise the program to meet these goals and wish to continue the discussion on how biogas fuel cells can help meet the goals of the program. Please do not hesitate to reach out if we can provide additional information.

Sincerely,

/s/Maryette Haggerty Perrault

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