

February 10, 2023

Energy Efficiency Division
Department of Energy Resources
100 Cambridge Street, 9th Floor
Boston, MA 02114

SUBMITTED ELECTRONICALLY

Municipal Fossil Fuel Free Building Demonstration Program

Re: Comments of Bloom Energy on Proposed Regulation and Model Rule

Bloom Energy Corporation ("Bloom Energy") hereby respectfully submits the following comments in response to the proposed draft regulation and model rule on the above mentioned Municipal Fossil Fuel Free Building Demonstration Program issued by the Department of Energy Resources ("DOER") on December 23, 2022. Bloom Energy appreciates the opportunity to provide written input to inform the ongoing development of this notable step in transitioning the Commonwealth's buildings off fossil fuels.

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 700 of its non-combustion solid oxide fuel cell systems for customers in thirteen U.S. states as well as in Japan, South Korea, and India, nearly 40 of which are in the Commonwealth supporting critical customers such as hospitals, data centers and grocery stores. Our systems have proven resilient through outages caused by hurricanes, winter storms, earthquakes, forest fires, and other extreme weather and natural disasters.

As a Distributed Energy Resource (DER), Bloom Energy's stationary fuel cell systems provide resilient on-site electricity to buildings and utility customers with zero criteria air pollutant emissions through an electro-chemical reaction between hydrogen and oxygen. Currently hydrogen is most readily available by converting the methane in natural gas, however renewable hydrogen and biogas present a path forward for fuel cells to transition to fully renewable fuels for zero emissions of both greenhouse gases and criteria pollutants. Fuel cells directly support end use electrification within buildings and can keep the heat on, the stove working, the communication networks functioning, and the electric vehicles charged in the event of a power outage, provided they are able to access fuel infrastructure outside the footprint of the building.

Together, fuel cells and electrolyzers are a critical component of a fully decarbonized electric grid, which will require seasonal energy storage to complement intermittent renewables.



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Comments

Bloom Energy supports the decarbonization of building end uses, and our broader energy systems, and understands the highly complex, interconnected nature of our electricity, renewable energy, and fossil energy markets. In order to deliver renewable electricity to fully electric buildings, we must place equal emphasis on the electric infrastructure that conveys the electrons. Despite being one of the least emitting regions in the United States, New England still depends heavily on natural gas combustion to meet demand even on normal usage days¹. As we transition to the grid of the future, powered by intermittent renewable electricity such as wind and solar, it is imperative that well-intentioned policies not simply displace direct fossil fuel use in buildings to a central power plant in another location generating electricity by burning fossil fuels. These fossil fuel plants, often in marginalized and environmental justice communities, will be providing a substantial portion of the electricity for our heat pumps and electric vehicles for many years to come as the necessary renewables come online, energy storage expands to support seasonal load shifting, additional transmission lines are built, and distribution systems are upgraded. Therefore, building electrification is only as beneficial for greenhouse gas reductions as the generation sources used to power them. Fossil free buildings are essential to addressing climate change, but we must understand the short- and medium- term impacts on the electric grid and the generation mix in assessing true emissions reductions. The Municipal Fossil Fuel Free Building Demonstration Program provides an excellent opportunity to do just that.

In the push to electrify heating and transportation systems we must also consider the lack of resiliency available to power those same pieces of equipment in the event of ever-increasing grid outages. An unintended consequence of eliminating infrastructure such as the pipeline distribution network could be the proliferation of ever larger fossil fuel combustion backup generators such as diesel reciprocating engines, which are the dirtiest remaining electricity generators in Massachusetts. Bloom Energy strongly supports requiring detailed information about fossil fuel combustion generator usage in cities and towns adopting the Fossil Free Demonstration Regulations, such as nameplate output, fuel type, efficiency, emissions reduction strategies installed, onsite fuel storage capacity, run hours, and reason for usage. As part of the Demonstration, the DOER should analyze this data in conjunction with observed electric grid emissions statistics (considering both average and marginal² emissions factors) to truly understand the full scope of emissions reductions provided by the Fossil Free building codes.

For the above reasons, Bloom Energy supports the decision made by the Legislature in An Act Driving Clean Energy and Offshore Wind (H5060 and St. 2022, c. 179, § 84) to study this demonstration in 10 municipalities. The cities and towns which have already expressed interest are poised to be leaders in the energy transition and have been considering this action for quite some time, enabling them to provide thoughtful examples of what fossil free building codes can look like. Their foray into this effort, along with deep data tracking and analysis by the DOER, will provide critical learnings on the impacts of different

¹ ISO New England determined that 45% of the region's net energy load was met through the use of natural gas in 2022: <https://isonewswire.com/2023/01/30/iso-ne-publishes-amounts-sources-of-electric-energy-used-to-meet-demand-in-2022/>

² In the context of the electric grid, the "marginal generation unit" refers to the power plant that comes online or increases output to meet incremental increases in load. These are typically the least efficient fossil fuel generators; therefore, by offsetting power that would otherwise be met by the marginal generation unit, DERs offset a much higher emissions rate than the grid average. This is commonly referred to as the marginal emissions rate.

approaches to mandating fossil fuel-free buildings. Investing the time and effort into properly collecting data and understanding the impacts, intended and unintended, over time of these new building codes will be essential to future successes. We strongly support the draft's adherence to the mandated 10 town limitation, as well as the approach for prioritizing and selecting participant municipalities.

Fossil Free Demonstration Draft Regulation

Bloom Energy is pleased to see the proposed Regulations include plans to address the specialized energy needs of process loads, research laboratories for scientific or medical research, and hospitals or medical offices in order to safely meet their mission critical nature. We would like to call attention to one key suggestion for clarity. In section (2)(a) of 24.08 Specialized Municipal Opt-in Energy Code and Model Rule, the statement should read:

*(a) Deviations from the model rule provided by the Department must include exemptions from fossil fuel free requirements for Research Laboratories for Scientific or Medical Research, ~~or~~ **and** for Hospitals or Medical Offices.*

Thank you for your consideration of these comments and for supporting the robust stakeholder process that is underway. Bloom Energy looks forward to enabling electrification and resilience in Massachusetts as the Commonwealth continues to be a leader in the energy transition. Please do not hesitate to reach out if we can provide additional information.

Sincerely,

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