Bloomenergy™

February 5, 2018

Hon. Judith Judson
Commissioner
Massachusetts Department of Energy Resources (DOER)
100 Cambridge St, Suite 1020
Boston, MA 02114

Re: Clean Peak Standard (CPS) Stakeholder Questions

Dear Commissioner Judson:

Thank you for the opportunity to comment on the Clean Peak Standard (CPS) program design elements identified in the stakeholder questionnaire released on January 15.

I. Introduction

Bloom Energy is a provider of all-electric solid oxide fuel cell technology that converts fuel into electricity through an electrochemical process without combustion. Among the most efficient energy generators on the planet, Bloom Energy solid oxide fuel cells reduce greenhouse gas emissions andvirtually eliminate emissions of criteria air pollutants including NOx, SOx, and particulate matter. The combination of a high efficiency non-combustion process and extremely high capacity factors results in more emissions avoided over time than other forms of distributed power generation.

Bloom's all-electric solution allows fuel cell systems to be deployed at sites where it is not necessary to match an on-site thermal load. As a result, a much broader range of facilities can enjoy the resiliency and environmental benefits provided by distributed generation. Importantly, Bloom Energy offers a lithium-ion battery option that can be integrated into our fuel cell systems. This allows a project to provide customers with reliable baseload power *and* active load management that will benefit both customers and the wider grid.

Bloom Energy commends the Commonwealth of Massachusetts for taking the ambitious, and innovative step represented by the Clean Peak Standard. This first of its kind initiative

has the potential to solve some of the most significant environmental impacts associated with operating the electricity grid. By increasing the mix of clean energy deployed during peaks – and at other times of the year - this program can significantly reduce GHG emissions from some of the dirtiest hours of grid operations, avert the need to use distillate fuel oil to generate electricity during winter peaks when prolonged cold weather drives natural gas scarcity, and avoid substantial emissions of greenhouse gases and locally harmful criteria air pollutants like SO2, NOx, and PM.

II. Responses to Select DOER Questions Regarding Demand Response Resources

3. What types of resources should be included in this definition?

Some forms of traditional demand response rely on extremely dirty generation from onsite backup generation. For example, backup diesel generators often participate in utility administered demand response programs, but emit significant amounts of CO2, SO2, NOx, and PM. Bloom Energy agrees with numerous other commenters that forms of demand response that increase emissions should not be award clean peak credits.

However, an outright ban on fossil fueled generation is not the appropriate response either. The aim should be to reduce emissions of greenhouse gases and other pollutants in the atmosphere and science should dictate which resources are most effective at achieving that aim. The definition should include those resources that *reduce* greenhouse gas and criteria pollutant emissions rather than only those that *do not emit* or are not fossil fueled. This distinction is critical since in many cases high efficiency fossil fueled distributed generation reduces more greenhouse gases than an equivalent sized zero emitting resource.

Therefore, Bloom Energy recommends that DOER apply a standard that awards CPS credits only to demand response resources that reduce emissions of CO2, SO2, NOx, and PM. One readily available way to structure such a requirement would be to require that an eligible resource emit less CO2, SO2, and NOx than the On-Peak Marginal Emission Rates of Emitting LMUs in the most recent ISO New England Electric Generator Air Emissions Report. By referencing a report that is updated annually, this would have the effect of making the standard more stringent as the grid gets cleaner and ensure that CPS credits are only awarded to projects that are cleaner than the grid power that would have otherwise been required at those times.

6. Should this definition only be limited to active demand response?

No. Many forms of passive demand response can also reduce peak energy demand and should be eligible. For example, improved insulation reduces cooling loads during summer peaks, heating loads during winter peaks, and also reduces energy use during every other hour of the year. Likewise, a highly efficient distributed generation technology that clips the peak during critical periods can also displace higher emitting generators at other times. This is not a drawback, rather it is a co-benefit. If the Clean Peak Standard can be employed to reduce emissions during peak times *but also at other times* that result should be encouraged, not discouraged. As a result both active and passive measures should be included.

8. Should the DOER view thermal storage facilities as a Demand Response Resource? What requirements, if any, should the thermal storage facilities face in order to qualify as demand response resources?

Yes. It is important for DOER to consider the relationship between the natural gas system and the electric system during the implementation of the the Clean Peak Standard. Different seasonal peaks place stresses on different parts of the system. During summer peaks, high temperature and humidity lead to increased load on the electrical grid from HVAC systems. During winter peaks, the need to heat homes and businesses drives dramatic increases in natural gas demand. The resulting natural gas scarcity forces ISO New England to dispatch electricity generation from dirty distillate fuel oil generators.

To the extent a technology can decrease peak natural gas demand during winter peak energy, that technology should be eligible to generate CPS credits. New high efficiency distributed generation displaces less efficient central station gas generation, resulting in a net reduction in natural gas throughput at the level of constrained interstate pipelines while simultaneously reducing load on the electric grid and providing valuable co-benefits like customer resiliency that are especially important during peak events.

III. Conclusion

DOER should employ a science backed approach focused on reducing greenhouse gas and criteria pollutants while increasing system and customer resiliency. Those technologies that effectively mitigate the environmental and system impacts associated with peak events should be included in the program. Those technologies that are able to achieve that aim while also providing additional co-benefits and/or reducing emissions at other times should be viewed more, not less, favorably.

Bloom Energy appreciates the opportunity to comment and stands ready to assist the DOER in its effort to implement the Clean Peak Standard.

Very truly yours,

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