

February 5, 2019

Department of Energy Resources  
100 Cambridge St, Suite 1020  
Boston MA 02114

**Re: Clean Peak Standard (CPS) Draft Stakeholder Questions**

Key Capture Energy, Inc. (KCE) is an energy storage developer with a focus on utility-scale battery storage projects in the northeastern United States. KCE selects project sites, secures all necessary permits, procures full battery systems, and oversees construction to move battery storage projects into operation. KCE is commissioning shortly the 20 MW KCE NY 1 battery storage project in New York, and has several stand-alone utility-scale battery storage projects in development in Massachusetts.

KCE understands the Department of Energy Resources (DOER) is interested in soliciting comments on definitions and structure of the Massachusetts Clean Peak Energy Standard. KCE submits these comments to discuss our views on the inclusion of standalone energy storage systems within the Clean Peak Energy Standard. We thank you for facilitating stakeholder feedback.

**Definitions of Key Terms**

**Clean Peak Resource**

Clean peak resource is 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.”

1. Should only resources interconnected to the electric distribution system be eligible to qualify, or should resources connected to the transmission system also be eligible to qualify?
2. Should DOER interpret the use of the term “electric distribution system” to mean that only facilities on the electric distribution system in the Commonwealth should be eligible to qualify as clean peak resources under the CPS? Should the CPS also include all distribution and/or transmission level resources connected in the ISO-NE control area? Should it include adjacent Control Areas such as NYISO, Quebec, or New Brunswick?

Eligible resources should be allowed to interconnect at the distribution and transmission levels, and should include all distribution and/or transmission level resources connected in the ISO-NE control area. As Massachusetts ratepayers are affected in the same way that ratepayers from Rhode Island or Vermont are by ISO-NE’s capacity charges, there is benefit whether the peak resource is located in the Commonwealth or a neighboring state.

Additionally, developers may elect to have their clean peak resources located in different areas of the ISO-NE grid to provide better grid stability, resiliency, or optimal power flows. As the grid grows more efficient, this benefits all ratepayers.

**Qualified Energy Storage System**

Qualified energy storage system is defined as “an energy storage system, as defined in section 1 of chapter 164, that commenced commercial operation or provided incremental new capacity at an existing energy storage system on or after January 1, 2019; provided, however, that such system operates primarily to store and discharge renewable energy as defined in said section 1 of said chapter 164.”

9. How should DOER define what constitutes “incremental new capacity at an existing energy storage system”?

DOER should follow the same requirements established for resources under the Renewable Portfolio Standard.

9. How should DOER interpret the requirement that a Qualified Energy Storage System operate “primarily to store and discharge renewable energy”?
- a. Would alignment with the federal ITC requirement that storage is eligible for a credit as long as the battery is charged by a renewable energy system more than 75 percent of the time be appropriate?

While co-located storage adds value through “firming” of renewable energy production, energy storage systems are often unable to perform other grid-essential services when unable to charge from the grid, greatly reducing their value. These services include frequency regulation, operating reserves, and potentially capacity. Through several studies, it has been proven that providing ancillary services through efficient, multi-use facilities such as energy storage systems can greatly reduce a system’s carbon emissions. For example, Beacon Power in a 2015 report found CO<sub>2</sub> reductions of 214,129 tons/year for their 20 MW frequency regulation project in PJM, as the energy storage project displaced natural gas in the ancillary services market<sup>1</sup>.

Through a study performed internally in KCE for the NYISO market, which has comparable generation profiles to ISO-NE, it was revealed that performing energy arbitrage, charging during off-peak and discharging on-peak, a 20MW/40MWh battery is able to relieve 249.6 lbs-NO<sub>x</sub>/yr, 720.2 lbs-SO<sub>2</sub>/yr, and 890.2 tons-CO<sub>2</sub>/yr. This is due to moving energy from when the majority of wind coming online in the evenings and low demand, where low capacity-factor fossil-fueled peaker plants don’t perform, to when those peaker plants do perform and when wind production is more limited.

Therefore, limiting participation to energy storage only paired with renewable generation limits the benefits that these systems can provide to the grid. However, should DOER maintain that qualified energy storage systems must be paired with renewable generation, the interpretation of the requirement that “the systems operate primarily to store and discharge renewable energy” must be specified. The suggestion to align the definition with the federal ITC requirement that a battery be charged by renewable power sources more than 75 percent of the time in order to be considered should not be followed. This requirement would reduce the ability for the systems to provide the additional, previously discussed benefits. Therefore, if DOER chooses to place a requirement for pairing with renewables, it should instead require that the use case with the greatest system allotment is renewable firming.

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<sup>1</sup> Beacon Power. 2015 Final Technology Performance Report. Contract ID DE-OE-0000200

- b. If not directly physically or electrically connected to a renewable energy resource, how can the qualified energy storage system demonstrate that it operates primarily to store and discharge renewable energy? Purchase and retirement of RECs? Some other means?
- c. If not directly physically or electrically connected to a renewable energy resource, how can the qualified energy storage system demonstrate that it operates primarily to store and discharge renewable energy? Purchase and retirement of RECs? Some other means?

NYSDERDA's solicitations of their Tier 1 renewable energy resources have evolved over the last two years, first requiring co-located, behind-the-meter storage systems to be paired with new clean energy resources, and then not requiring that the energy storage be co-located or behind-the-meter.

This second approach is beneficial. To enhance power flows on our current electric transmission system, it often makes sense to have battery storage projects located close to load, while continuing to allow for new renewables to be far from load pockets (such as in northern Maine or offshore).

To meet the legislative intent, the CPS should allow for virtual transactions of renewable energy. For instance, a wind farm in northern Maine could contract with a new battery storage system near Boston – allowing for coordination of the charging / discharging of clean energy. This would reduce renewable energy curtailment, reduce congestion charges, and provide a more optimal power flow – while also meeting the Commonwealth's clean peak reduction goals.

#### Qualified RPS Resource

Qualified RPS Resource is defined as "a renewable energy generating source, as defined in subsection (c) or in subsection (d) of section 11F that has: (i) installed a qualified energy storage system at its facility; or (ii) commenced commercial operation on or after January 1, 2019."

12. Given the requirement that RPS resources that commenced commercial operation prior to 2019 must be paired with a qualified energy storage system in order to qualify for the CPS, what, if any, requirements should DOER adopt regarding how much energy storage needs to be installed?

- a. Should there be a minimum percentage threshold on the ratio of the size of the energy storage to the size of the renewable resource (e.g. minimum installed storage capacity equal to 25% or more than installed renewable capacity)?

No. The market should be designed to let the developer determine the most cost-effective solution with a demonstrated ability to shift clean production from off-peak to peak.

12. With respect the quantity of its capacity that a Qualified RPS Resource can qualify under the CPS, should the DOER discount a Qualified RPS Resource's eligible capacity based on the capacity it can supply through the duration of each seasonal peak period (e.g. a 2 MW solar resource that can only provide 50% of its capacity value over the peak period would qualify as a 1 MW facility)?

No. The program's goals are to shift from off-peak to peak clean energy. As such, any resource that can do this should qualify.

### **Generation of Certificates**

Some clean peak resources may only be capable of generating clean peak certificates during a portion of a seasonal peak period. For example, a solar resource trying to deliver energy for the duration of a summer seasonal peak period that lasts from 6-9 PM may generate a significant number of certificates in the early part of that window compared to the latter.

19. Should only resources that can provide value for the entire duration of a peak period be able to generate certificates?

No. The Commonwealth should encourage competition among resources that can deliver clean power at peak. Resources should receive credit for any MWh delivered during the clean peak performance period.

19. Should there be different values provided to resources that can provide value for a portion of a peak period versus the entire peak period? If so, how should DOER differentiate these value streams?

No. Each part of the performance window should have the same value. Contracting parties may have different ideas how to structure their contracts to allow for coverage for the full period.

19. Should qualified energy storage systems that can demonstrate they were charged during minimum load windows be provided additional incentives or benefits under the CPS? If so, how should these be structured and how should minimum load windows be established?

The goal of the clean peak is to allow for better use of renewables and to deliver them during the peak hours. Contracting with wind and solar and showing scheduling that allows for this to occur and then discharging it during the peak hours accomplishes the legislative intent.

### **Long-term Contracts**

In establishing certificate values, DOER "may include a process by which electric distribution companies competitively procure clean peak certificates from clean peak resources and enter into long-term contracts, subject to the approval of the department of public utilities."

31. If DOER does require competitive procurements:

- a. What types of facilities should be able to participate in solicitations? Should it be limited to certain types of facilities (e.g. facilities that are either new and/or not already supported by another type of long-term contract or financing tool)?
- b. How frequently should solicitations take place?
- c. How large should the procurements be (e.g. percentage of total load or annual requirement)?

d. How should the contract price be established? Pay as bid? Reverse auction mechanism with a single clearing price for all resources? Other?

Like all infrastructure projects, energy storage projects want to see long-term revenue certainty to be able to get the lowest cost financing. However – unlike wind or solar, we do not need 20-year contracts, as we are ineligible for federal tax credits. This allows for a different capital structure which can balance out shorter duration contracts (such as 5-10 years). DOER has well-established programs to procure clean energy, and should consider using them as the base for the Clean Peak Standard as well.

Clean peak resource procurements should be weighted heavily for large-scale resources to ensure the program goals are attained for the least cost to consumers. The SMART program has been set up for smaller energy storage projects, and the Clean Peak Standard should focus on the projects > 5 MWs with no upper boundary.

#### **Additional Comments**

Massachusetts has been a leader in renewable energy development and policy, and KCE commends the actions the commonwealth has taken to date. In continuing the deployment of energy storage systems and advancement of the market, KCE recommends the following legislative actions:

- Establish a **binding** statewide energy storage target

Energy storage will play a crucial role in helping Massachusetts provide clean, reliable, and affordable energy by improving the efficiency of existing generators, increasing the amount of renewable energy sources into the grid (especially at the distribution level) and enabling the flexibility of these resources, and enhancing the overall reliability and resilience of the electric grid. Advancing the development of the technology will also further solidify the commonwealth as a leader for clean energy in the nation.

Thank you for the ability to submit these comments, and I look forward to more discussions.

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