



February 5, 2019

Commissioner Judith Judson
State of Massachusetts, Department of Energy Resources
100 Cambridge Street, Suite 1020
Boston, MA 02144

RE: Clean Peak Standard (CPS) Stakeholder Questions

Dear Commissioner Judson:

Anbaric Development Partners (Anbaric) is grateful for the opportunity to provide feedback on the plan to implement the monumental Clean Peak Standard (CPS). Anbaric is a development platform focused on electric transmission and microgrid development. The company is a partnership between Anbaric and Ontario Teachers' Pension Plan Board (OTPP). Anbaric conceives, incubates, develops, and obtains financing for projects that strengthen the bulk power grid, integrate regional markets, and bring renewable energy to population centers. Our top priority is to bring the highest value to our customers, investors, and electric power consumers by developing assets that bring affordable, competitively priced electricity to market.

Overarching principles

Having a clean peak standard to complement the admirable and aggressive RPS goals in the Commonwealth is critical for achieving deep decarbonization. The road to achieving a clean peak will be arduous based on the current capabilities of renewable and storage technologies - but recent history gives tremendous optimism for what can be achieved with properly balanced incentive regimes. In this spirit, we have come to a few guiding principles that we have used in crafting our responses to the set of CPS stakeholder questions. Those include:

1. Massachusetts would like to have as clean a generation mix during peak periods as soon as possible to complement the 80% by 2050 Clean Energy Standard and other state goals.
2. Clean peak MWh are more valuable than bulk renewable MWh.
3. Massachusetts' historical (and future) procurement of renewable energy provides clean energy during the peak - CPS is an opportunity to augment that renewable production during peak periods.

As a corollary to these principles, we strongly believe that DOER should enable the CPS program to utilize resources interconnected at all voltage levels. This allows aggressive targets to be set by DOER (principle 1) and most cost effectively achieve a clean peak. Additionally, competitive procurement and long term contracts are essential to project financing that will enable achievement of the CPS.

Response

Anbaric is pleased to provide specific input on the questions enumerated below.

Clean Peak Standard (CPS) Draft Stakeholder Questions

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?

Unnecessarily limiting eligibility to resources connected to the distribution system would undermine the effectiveness of the CPS, and accordingly resources interconnected to the transmission system would be eligible to qualify. Achieving a clean peak will require many resources of many different types. DOER should allow CPS to access as varied a set of resources as possible to make sure that the clean peak goals are achieved as efficiently as possible (both economically and administratively). Just as the RPS allows for both transmission and distribution connected resources, the CPS should procure resources at all voltage levels to help move renewable energy to the peak periods. Further, restricting CPS to systems connected at lower voltage levels could restrict competition and raise the costs to ratepayers – either by missing out on the economies of scale for standalone storage projects connected at transmission voltages or by precluding the opportunity for retrofits of storage to RPS generation sites that are connected at transmission voltages. While we feel that it would be advantageous for the DOER to focus on CPS resources interconnected to load zones in the Commonwealth – it may be advised to expand eligibility to all the ISO-NE load zones if CPS resources cannot be procured cost effectively within the Commonwealth. Moving to procurement of CPS from adjacent Control Areas would unnecessarily expand the geographic area of impact and could provide administrative oversight issues that increase costs above total costs for assets wholly within ISO-NE.

Demand Response Resource

Demand response resource is defined as “changes in electric usage by end-use customers in the commonwealth from their normal consumption patterns in response to: (i) changes in the price of electricity over time, including, but not limited to, time-of-use rates for residential and small commercial and industrial customers; or (ii) incentive payments designed to induce lower electricity use at times of high wholesale market prices or when system reliability is jeopardized.”

3. What types of resources should be included in this definition?
4. Should electric vehicles (EVs) qualify?

5. How should DOER interpret the inclusion of different types of rate designs in this definition?
6. Should this definition only be limited to active demand response?
7. Should standalone energy storage resources (i.e. not directly connected to another resource type) be eligible to qualify as demand response resources? What requirements, if any should standalone energy storage resources face in order to qualify as demand response resources?
8. Should the DOER view thermal storage facilities as a Demand Response Resource? What requirements, if any, should thermal storage facilities face in order to qualify as demand response resources?

Standalone energy storage (and variants such as EV, thermal storage, et cetera) should qualify as demand response resources for clean peak certificate generation only to the extent that they can be shown to have been 'charged' from clean sources. Electric vehicles, and particularly fleets of electric vehicles and buses, can be a useful demand response resource contributing to a clean peak as a controllable load.

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”?
This should require clear and substantial new investment at an existing storage system – typically expanding the MW and MWh rating of the facility appreciably (and compensation via CPS being limited to the amount of expansion).
10. 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?
Because a storage resource is best utilized by the grid via multiple non-concurrent use cases, it is difficult to establish a clear requirement for the proper threshold level for amount of renewables used to charge that system year round. For the purpose of contributing favorably to the clean peak a threshold value is useful and a level such as 75% is fair for the minimum proportion of charging energy (though not because it is a requirement of the federal ITC, but rather as a general principle). It is important that a storage facility (which can be cycled many times in the same day) not be 'tainted' because it has been charged with additional energy during the year for services that it provides outside of the clean peak hours. Simply put – it is a fair requirement that a storage system be charged by clean resources for at least 75% of energy that it is compensated for delivering during the as defined peak periods.

- 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?

Any contract between the storage system owner and renewable energy resource should be sufficient to demonstrate that it is operating to support the goals of a clean peak. This might be a REC purchase and retirement, virtual PPA, contract for differences or some clearinghouse renewable resource procurement vehicle – and it is recommended that the standard be developed in such a way to allow creative approaches to such contracting as long as they hold true to the intent of shifting clean generation to the peak hours to avoid the reliance on traditional peaking generation. It is probably advisable to have these contracts require that the resources be in the same load zone to help manage system constraint situations.

- 11. How should DOER view thermal storage facilities with respect to eligibility as a qualified energy storage system?

Thermal storage systems that are not being used as DR/load control should be eligible, but only to the extent that they are storing electrical energy from renewable sources and are delivery electrical energy during the periods defined by the program.

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)?

A minimum percentage requirement is unnecessarily restrictive to pairing storage with large renewable resources. The amount of clean peak contribution should be tied to the additional energy supplied by the storage resource (that which is in excess of the renewable generation at that point in time) and in that construct the contribution to the peak is based on the absolute value of the clean peak resource rather than its relative proportion to the renewable resource with which it is paired.

- 13. 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)?

Clean peak compensation should be for the total MWh delivered during the peak periods.

14. Should DOER adopt any additional requirements regarding the CPS eligibility of renewable energy generating sources as defined in subsection (c) or in subsection (d) of section 11F (e.g. emissions thresholds, fuel sourcing, etc.)?

Seasonal Peak Periods

Establishing Seasonal Peak Periods

DOER is required to establish seasonal peak periods, which are defined by that statute as “the daily time windows during any of the 4 annual seasons when the net demand of electricity is the highest; provided however, that a seasonal peak period shall be not less than 1 hour and not longer than 4 hours in any season, as determined by the department.”

15. Given these limitations, how should DOER establish different seasonal peak periods to both optimize cost reductions for ratepayers and emissions reductions for the Commonwealth?

There may be benefit in having two peak periods within a day during some seasons (e.g. winter). In that situation, DOER should consider having more than four (4) hours of daily clean peak period. This will allow procurement in that season from either a portfolio of solutions or single sites that can charge from renewables and discharge multiple times in the same day.

16. DOER is considering announcing seasonal peak periods on an annual basis based on 1 to 3 years of historical data.

- a. What formula should DOER use to set the seasonal peak periods to reflect real time operating conditions?

In order to facilitate commercial development of new CPS resources, predictability is critical to securing project financing. Accordingly, the seasonal peak periods for the CPS should be based on historical and projected peak loads and should not be related to real time operating considerations.

- b. What data sources should DOER use to determine seasonal peak periods?

- c. What time period(s) should each of the 4 annual peak periods cover?

It would be practical and efficient to have two of the peak period transition dates be tied to the start and end of daylight savings time.

- d. Should seasonal peak periods be different lengths depending on the season?

The seasonal peak period should be allowed to be different lengths, but should not be required to be different lengths.

- e. How often should the seasonal peak periods be examined and/or adjusted to reflect changes in seasonal peak demand over time? What should be the trigger and/or the process for making such adjustments?

In the interest of eliciting a robust market response to the CPS, modifications that could imperil project finance should be minimized. Any modifications of seasonal peak periods should not apply to projects developed and installed as of the time at which program modifications are made.

17. Are there alternative methods of establishing seasonal peak periods the DOER should consider?

Atypical Peak Events

Not all system peaks occur within the same 1-4 window throughout the course of a season (e.g. a 95 degree day on a weekday in May will almost certainly not have a peak that occurs at a similar time of day as the bulk of peak periods in the same month).

18. Should DOER establish peak periods other than the seasonal peak periods during which clean peak resources are eligible to generate clean peak certificates?

No. It is certainly possible that these resources could be used for such purposes but that service should be procured outside of the CPS procurement.

- a. If so, what criteria should DOER use to establish these periods and what mechanism(s) and should be used to trigger and announce these events in advance of them occurring?

None.

- b. Should DOER specifically target ISO system peaks?

Yes.

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. Any clean MWh that is shifted to the peak period is valuable.

20. 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?

Clean peak resources should be compensated based on the clean MWh that they deliver during the peak period. Each resource should generate certificates based on actual delivery in this period and should be compensated volumetrically.

21. Should there be a penalty (i.e. negative credits) if a resource under-produces during the actual monthly peak?

Missed revenue from a volumetric energy delivery contract is sufficient penalty.

22. How should resources participating in other state programs (e.g. section 83 procurements, SMART, EE programs, etc.) interact with the CPS?

CPS resources should be in addition to the renewable energy procured by other state programs. The renewable energy procured for state programs should be added to clean base percentage of the peak and CPS targets and procurement should be additive to this 'clean base.' Renewables that are built on their own economic basis (without state program support) should be eligible for CPS.

23. 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?

If a storage resource can establish that it was charged from a renewable resource, the time at which it is charged should not matter. There are constructs where the renewable content of the grid would define 'how renewable' the charging energy is for a storage resource. To the extent that a storage resource is not connected to a renewable energy generator and has no bilateral agreement with a remote renewable resource, charging during minimum load windows may be advisable and merit additional incentives. But, as long as a storage resource is physically or contractually linked to a renewable resource in the same load zone it should be credited with its % renewable charging based on a comparison between its charging MW in an hour and the renewable resource's generation in that same hour (such that if the battery always charges at a level below the renewable resource's coincident production it would be 100% renewable).

Metering

Verification of Metered Data

DOER proposes that all clean peak resources be registered with NEPOOL GIS as Non-NEPOOL participants. This would mean that, as required by the NEPOOL GIS operating rules, all resources would be required to report their eligible output to NEPOOL GIS by a DOER approved Independent Third-Party Meter Reader. This entity would be responsible for verifying the accuracy of the reported data before uploading it to NEPOOL GIS for the creation of certificates. To ensure that all data is collected, reviewed, and reported to NEPOOL GIS in a consistent manner, DOER would select a single entity to act as the Independent Third-Party Meter Reader, similar to the process used under the SREC programs, in which the Production Tracking System at the Massachusetts Clean Energy Center serves in this role.

24. Do you support this proposal? If not, please describe why.
25. If DOER procures the services of a single Independent Third-Party Meter Reader:
- What criteria should DOER use to evaluate the capabilities of the entity that is selected to act as the Independent Third-Party Meter Reader?
 - Do you support the establishment of a fee structure to support the ongoing services provided by the Independent Third-Party Meter Reader?
 - How should this Third-Party verification take place?

Metering Specifications and Requirements

Because clean peak certificate creation is dependent not just on the quantity of energy output, but also its timing, more sophisticated metering will be required than that which is required for many RPS eligible systems, which only require monthly meter reads.

26. Describe in as much detail as possible the metering standards and requirements (type, accuracy, etc.) that DOER should employ to ensure the accurate collection of data.

27. Should different standards apply to different sizes and types of facilities? If so, please describe your recommendations in as much detail as possible.
28. What other verification mechanisms could be deployed to simplify the process, particularly for small-scale systems for which some types of metering solutions may be cost-prohibitive?

Value of Certificates

DOER must establish an alternative compliance payment rate and potentially other mechanisms that will help establish the value of clean peak certificates. Please describe in as much detail as possible:

29. How much value is likely needed on a per MWh basis to incentivize different types of existing resources to operate during peak windows and/or new resources developed or financed using CPS revenue streams?
30. How should DOER establish these values?

In order to achieve 100% clean peak, it is important that the initial ACP levels be set high enough to encourage asset development based solely on CPS revenue (see comments in response to question 22 on CPS and clean base recommendations). The clean base contribution of existing and future procurements of renewable energy via state programs will complement the contribution of CPS assets that are procured to shift clean energy to the peak periods. Since those CPS assets will be procuring renewable energy to charge their systems it is important that the ACP be set at such a level so as to include both the asset development costs and the charging energy costs (renewable energy charging energy costs could be proxied as the ACP for the RPS procurements). DOER could establish the asset development component of the CPS ACP in a manner similar to the Cost Of New Entry (CONE) calculation used for generation. This would be achieved by: 1) using a simple payback term of six to seven years to establish the annual revenue requirement for a resource (based on the CAPEX estimate of that resource) and then 2) dividing that annual revenue requirement by the expected number of annual peak hours (likely just over 1,000 hours assuming four (4) hour daily peak windows during non-holiday weekdays). For CPS assets developed to shift renewable energy to the peak periods we estimate that this cost could be in the area of \$200 per MWh initially.

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.”

Competitive procurements and long-term contracts are critical to the success of the CPS. This is a novel policy mechanism, and investors will require certainty in relation to market revenue in order to finance projects.

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)? (see additional comments on questions 9, 22, 30 and 32)
DOER should establish the baseline amount of clean base peak energy and only new facilities that are not supported by other state programs should be eligible

to participate in the solicitations. Because flexible solutions have the ability to provide multiple non-concurrent services from the same facility, it is important not to exclude new facilities that have additional independent long-term contracts from the CPS solicitation (unless those are contracts are part of state supported programs such as RPS, et cetera).

- b. How frequently should solicitations take place?

The solicitations should be for 10 year contracts and be held once or twice a year (more frequently if the utility running the solicitation is below its CPS target and paying ACP).

- c. How large should the procurements be (e.g. percentage of total load or annual requirement)?

Assuming that the CPS target is set based on a percentage of total load that must be CPS (incremental above the clean base – see response to question 22), the procurement should be at least 110% of the utility's shortfall with respect to the target. If the utility has over-procured (compared to the CPS target for the period that solicitation would serve) then that utility would have the option to run a solicitation.

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

Pay as bid. This pricing approach provides more certainty for the bidder in an RFP/procurement and as a result makes the project more financeable.

Procurement approaches that produce responses that are more financeable reduce the cost of capital and are likely to reduce costs overall while allowing for portfolio considerations to be more easily integrated into the procurement.

Post-2019 Minimum Standard Requirements

DOER has established a baseline Minimum Standard requirement of 0% for 2019. Each year after 2019, DOER is required to establish a Minimum Standard requirement for retail suppliers that increases at a rate of at least 0.25% of total retail sales annually.

32. What methodology should DOER use to establish post-2019 Minimum Standard requirements (e.g. fixed annual requirements in a published schedule, supply reactive formula, other)?

33. How large should the minimum standard be?

(see comments on question 31a)

It is our recommendation that DOER establish a 'clean base' measure based on the amount of clean resources that showed up during the reconstituted peak periods of 2019 (e.g. hydro, nuclear, RPS, SMART, other BTM DER, DR/EE, etc.). The CPS target should be established annually for the next year and with a schedule of the targets for at least the following four (4) years (five (5) years total). The DOER should set a goal for clean peak percentage – XX% clean peak by 20YY – and use the schedule to project what the CPS target schedule should be so that 'clean base + CPS' hits XX% by 20YY. The minimum standard would be 80% by 2050 to match the Clean Energy Standard... but there are tremendous advantages to the Commonwealth by being more aggressive than this due to the positive impact of 100% clean peak on deep decarbonization efforts (e.g. enabling more positive effects from beneficial electrification efforts).

Demand Response Resource Carve-out

Separate from the total Minimum Standard requirement, DOER is required to establish “a minimum percentage of clean peak certificates that must be derived from demand response resources.”

34. How should DOER interpret this requirement?
35. What methodology should DOER use to establish this carve-out of the larger Minimum Standard?

Other

36. Please discuss any other implementation issues not addressed above

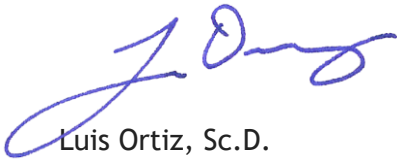
If DOER decides to have the utilities run/review the CPS solicitation, we believe that it would in the best interest of ratepayers that utilities be precluded from procuring CPS services from rate-based assets or projects proposed by affiliated entities to those utilities.

Conclusion

Anbaric appreciates the Department's consideration of these comments. We look forward to working with the DOER during the rest of 2019 in whatever means is most productive during this formative year of the CPS program.

Thank you again for the opportunity to provide our input.

Sincerely,



Luis Ortiz, Sc.D.
Vice President
Anbaric Development Partners