# Clean Peak Standard (CPS) 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?

**The most effective mitigation of peak loads is from resources at the distribution level. Accordingly, only resources interconnected to the electric distribution system 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?

**Only facilities on the electric distribution system in the Commonwealth should be eligible to qualify as clean peak resources under the CPS**

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?

**Any resource that qualifies for Massachusetts RPS or APS programs. Given the level of operational flexibility required to effectively participate, the category of eligible resources will need to be broad and include such resources as biomass and CHP.**

4. Should electric vehicles (EVs) qualify?

**No, given their cross functional nature (transportation), EVs should not qualify.**

5. How should DOER interpret the inclusion of different types of rate designs in this definition?

**Any variable pricing that incorporates the underlying production cost of the NEPOOL system should be included such as day-ahead hourly pricing, real-time pricing, etc.**

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

**No.**

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?

**Yes, standalone energy storage resources should be eligible as demand response resources. Energy storage resources should have a minimum delivery period such as 4 hours in order to be comparable to storage systems combined with dispatchable clean generation.**

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?

**No, thermal storage should only be eligible if combined with a clean generation resource where the thermal storage enables greater electrical availability and flexibility to participate in demand response. The only clean generation resource that meets that requirement is CHP.**

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"?

**Since cells of electric battery storage systems are continuously replaced over the life of the system to meet performance parameters, an incremental capacity has to represent a new physically independent addition to the same site.**

10. How should DOER interpret the requirement that a Qualified Energy Storage System operate "primarily to store and discharge renewable energy"?

1. 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?

**Yes.**

2. 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?

**RECs are the most universally accepted validation of the acquisition of renewable energy. So for a stand alone energy storage system the acquisition and retirement of RECs from NEPOOL-based generation would be a good approach.**

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

**Thermal storage should only be eligible if combined with a clean generation resource where the thermal storage enables greater electrical availability and flexibility. The only clean generation resource that meets that requirement is CHP.**

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?

**None. It is likely that the market will determine the battery size that will participate based on the break-even point from the costs of monitoring and dispatch scheduling versus the program revenues. If that point results in too many smaller systems that makes the program difficult to manage, DOER can always establish an appropriate size in the future**.

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)?

**None. As in the case of question 12, the market economics will establish a minimum that should limit the number of systems to a manageable quantity. As the cost of the**

**technology decreases, as it does with most similar technologies, there may be a point that a minimum is established.**

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)?

**Yes.**

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.)?

**No.**

**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?

**The obvious answer is review of historical load data. However, spring and fall are common times for generator maintenance. So historical and expected plant availability must viewed with the load data for reserve levels. Those hours with the lowest reserved hours are key, which may not correspond to the actual peak hours.**

16. DOER is considering announcing seasonal peak periods on an annual basis based on 1 to 3 years of historical data.
    1. What formula should DOER use to set the seasonal peak periods to reflect real time operating conditions?

**See answer to question 15 – projected generation availability.**

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

**NEPOOL.**

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

**The seasons.**

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

**No.**

5. 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?

**Should be done annually.**

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

**In addition to generation availability, the DOER may want to assess transmission capacities and imports for a more detailed assessment of the reserve each hour (which is true "peak").**

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?

**Yes**

1. 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?

**For time periods where there are short relative peaks and not absolute peaks for the day. For example, the absolute peak period for the day may be from 3 to 6 pm, but a smaller peak may occur from 10 am to 12 pm. Due to the short duration of the peak (2 hours), quick start generation, primarily simple cycle combustion turbines, would be the generation most likely to be dispatched. Clean distributed resources could meet the relative peak more economically and better environmentally.**

2. Should DOER specifically target ISO system peaks?

**Yes, while the program is Massachusetts-based, generation is dispatched to meet NEPOOL demand so the program should target NEPOOL ISO system peaks.**

**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.**

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?

**Some resources, such as combined solar PV and energy storage systems will have difficulty meeting long peak periods, but are key to the program. Most straightforward would be to pro-rate the hours available of the peak period.**

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

**No, this creates participation issues in the market place.**

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

**Their participation should be viewed independently as the participation requirements and impact on the operation are very different.**

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?

**Yes, multi-hour minimum load (valley) periods should be defined and be rewarded with additional incentives. Charging during shoulder hours is far less beneficial to the NEPOOL system and the environment.**

**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.

**No, we believe the MA APS program with approved independent third-party meter readers provides a better structure. It creates a more market-responsive program and for service providers to competitively create better monitoring and reporting systems for the resource owners.**

25. If DOER procures the services of a single Independent Third-Party Meter Reader:

1. What criteria should DOER use to evaluate the capabilities of the entity that is selected to act as the Independent Third-Party Meter Reader?

**See answer to question 24.**

2. Do you support the establishment of a fee structure to support the ongoing services provided by the Independent Third-Party Meter Reader?

**No, a competitive market should be established minimize these costs for resource owners.**

3. How should this Third-Party verification take place?

**Similar to the MA APS program.**

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.

**15 minutes interval data should be collected from revenue quality meters at key node points such as battery charge/discharge, on-site generation output, etc.. Electronic files with audit capability should be maintained.**

27. Should different standards apply to different sizes and types of facilities? If so, please describe your recommendations in as much detail as possible.

**No, the same standard should apply regardless of size. The resource economics establishes a market-based minimum size for the program**.

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?

**None. See answer to question 27.**

**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?

**Our analysis of the market with the goal maximum resource participation while keeping the cost increase to ratepayers to less than 5 $/MWh and applying the peak to 10% of the annual hours with most peak periods from 4 to 8 pm shows that certificates should be at between 85 to 280 $/MWh depending on the application. At minimum our analysis shows the need for certificate prices at 100 $/MWh with multipliers for higher prices.**

30. How should DOER establish these values?

**An Alternative Compliance Price.**

**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:

    1. 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)?

**This would clearly be important for stand-alone energy storage systems and critical for their initial installations, but it is unnecessary for other resources. Therefore, long-term contracts should be limited to only stand-alone batteries.**

    2. How frequently should solicitations take place?

**Quarterly.**

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

**A percentage of load.**

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

**Reverse auction.**

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)?

**Fixed annual percentage with a fixed minimum price (e.g. CT Class III).**

33. How large should the minimum standard be?

**In order to stimulate a rapid response to the program, a higher initial minimum with modest annual increases is a good approach, such as 4% year one and increasing 0.5% per year.**

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?

**This could be approached as a minimum percentage of the overall certificate total with an adder until that percentage is achieved.**

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

**See answer to question 34.**

**Other**

36. Please discuss any other implementation issues not addressed above.

**Our analysis indicates that consistent selection of peak hours from 4 to 8 pm creates the greatest benefit.**

Thomas J. Flynn
Executive Vice President, Sales & Marketing
Green Harbor Energy
125 Church Street, Suite 90-154, Pembroke, MA 01720
Phone: 617.818.1213
tflynn@GreenHarborEnergy.com