

April 15, 2019

Commissioner Judith Judson  
Massachusetts Department of Energy Resources  
100 Cambridge Street, Suite 1020  
Boston, MA 02114

**Re: Clean Peak Standard (CPS) Straw Proposal**

Dear Commissioner Judson:

Stem, Inc offers the following feedback on the Clean Peak Standard (CPS) program straw proposal presented on April 2<sup>nd</sup>. As Stem mentioned in its previous CPS comments, Massachusetts has both the opportunity and challenge to set good national precedent in Clean Peak policy design. With this in mind, Stem offers this feedback in support of the CPS program going beyond the text of the authorizing statute to meet the top priority objective of reducing emissions associated with supplying energy to meet peak demand.

**Overall Approach**

Successful design of the CPS depends on a threshold question regarding the Department's implementation intent. Does the Department seek to implement a compliance mechanism as specified in the statute, or does the Department intend to ensure that the compliance mechanism meaningfully and measurably reduces emissions?

This question is critical because, in incentivizing "clean peak resources", as defined, to deliver energy (or reduce load) during the "clean peak windows", the statute does not ensure that overall emissions will be reduced. One can infer that this was a core objective of the legislation (otherwise "clean peak" is somewhat meaningless), but as Stem has seen in other Clean Peak conversations, the Massachusetts statute failed to specify this clearly, making the common mistake of assuming that the basic Clean Peak concept will automatically result in emissions reduction.

The other critical question is whether the CPS program should be limited to its core objectives of reducing costs from peak demand and reducing emissions, or should it include other tangential or even unrelated policy objectives such as hosting capacity and resilience.

Because these questions are unanswered, Stem's comments distinguish between two approaches:

- Emissions Approach: assumes that measurable, significant emissions reduction is a core objective and the CPS program should focus clearly on it. Other policy objectives can be met with distinct, complementary mechanisms that do not complicate the core program design.
- Compliance+ Approach: assumes the opposite of both critical questions. The primary CPS objective is to create a compliance mechanism according to the bounds of the statute (where emissions reduction is assumed but not specified). However, the compliance mechanism can be altered to have the same resources meet other policy objectives.

## **Emissions Approach**

Clean Peak conversations around the country have struggled with the definition of “clean peak resource” and the earning of clean peak certificates/credits because there is no standard, broadly accepted emissions accounting methodology.

What is clear, however, is that Clean Peak programs should not treat every MWh delivered during a clean peak window as equivalent in terms of emissions value.

E.g. A MWh delivered during peak by a new PV system has a different emissions value than a MWh delivered at the same time by a storage system retrofitted to an existing PV system.

While it can be argued that RPS RECs do treat every generated MWh as equivalent, i.e. there is no time differentiated value in RECs, this is a weakness in RPS programs that Clean Peak programs should not repeat. In fact, it was this lack of time differentiation in RECs that inspired the original Clean Peak concept. Policymakers were looking for a way to attribute a time value to RECs without upending successful RPS programs and so, Clean Peak was conceived as a complementary concept.

Stem’s feedback relies on this foundational principle – the CPS needs to design for real emissions reduction and award Clean Peak Certificates (CPC) accordingly. Without this principle, Stem believes that the program would merely be a peak reduction mandate and would not fulfill the intent of the legislation.

## **Eligible Resources**

### New RPS Class I

Since the straw proposal allows a new RPS generator to generate a CPC and a REC simultaneously, Stem contends that the CPC will effectively be double-compensating the resource for the environmental attributes of each MWh delivered during a clean peak window. Such double counting risks a result where CPCs achieve much less emissions reduction than expected.

The Compliance+ Approach would follow the statute in allowing for the earning of both certificates and the earning of CPCs would not affect RECs. This would be administratively simpler and cleaner, especially with respect to interaction of the CPS with other programs such as SMART or PPAs for bundled RECs. However, it does risk CPS program failure in a core objective and has issues regarding consistent treatment of new RPS resources versus renewables paired with storage or standalone storage.

The Emissions Approach would still allow the generation of both certificates as specified in the statute, but would implement an accounting mechanism to modify the value of the CPCs without impacting the accounting for RECs.

### Existing renewables paired with storage

With respect to resources that added storage to existing renewable generator installations, the straw proposal provides full CPCs for “all electricity delivered by the resource during Seasonal

Peak Periods”.

First, Stem requests clarification that the “resource” is the combined facility and the “electricity delivered” to earn CPCs is measured as the combined output of both the renewable generator and the storage. Assuming this is true, the proposed design would provide unwarranted compensation for the electricity that the RPS resource was delivering during a clean peak window before the start of the CPS program.

In previous comments Stem asserted that these resources would get paid for doing nothing. The following scenario describes this, even if the resource installs an energy storage system larger than the minimum requirements.

*Scenario:* RPS facility was delivering an average of 1 MW during the 4-hr clean peak window before adding storage.

- Facility adds storage, but the storage is idle during the clean peak windows. (storage is being used for some other service, e.g. local resilience or wholesale markets)
- Combined facility will earn 4 CPC without changing behavior during the clean peak window.
- Because no behavior changed with respect to the grid, those CPCs will represent no emissions reduction from before.
- In the extreme case, where much of the program is subscribed by these types of resources, CPS compliance could be achieved with little to no emissions benefit (and even risk emissions increases)

Again, the Compliance+ Approach allows for the above Scenario, but risks failure in the core objective. The Emissions Approach would most easily address this scenario with the pre-program baseline that Stem has suggested previously.

For any RPS resource that added storage in order to participate in the CPS, the program would require 8760 hourly production data from the previous year. Then the resource only earns CPCs for delivery above the baseline for each hour in the clean peak window. This would seem to be the simplest, most logical way to ensure that CPCs are only earned for actual impact made on the system.

And as Stem stated before, if such a pre-program baseline is implemented, then the program no longer needs minimum size requirements for the storage added to renewable generators.

Furthermore, if the abovementioned REC issue is resolved correctly with respect to new RPS resources, the handling of RECs for storage retrofits to existing resources needs to be resolved also. The solution would depend on where the REC meter is located.

If the REC meter in a combined system is located at the generator output (likely in AC-coupled systems), then the eligibility accounting would need to follow the same methodology as that used for standalone storage. (using REC retirements as commented previously by ESA and Stem)

If the REC meter is located at the combined output of the generator and storage (necessary for DC-coupled systems), the combined facility should probably follow the same methodology as that used for new RPS resources.

The Compliance+ Approach would allow existing renewables paired with storage to earn full CPCs for energy delivered during clean peak windows. This is again administratively simpler and the issue of RECs does not arise. However, this also risks significant failure in the emissions reduction objectives, and even further, if the REC meter is located at the generator output in a combined system, could cause emissions increases.

### Qualified Energy Storage Systems

In Stem's response to the CPS Stakeholder Questions, Stem provided three options by which an energy storage system can qualify as a clean peak resource within the statutory definition. Again, Stem emphasizes that the key design element is that "primarily" should be designed based on the amount of charging with renewable energy relative to the amount of energy discharged for CPCs, not all charging activity of the storage for all purposes.

Stem maintains that the CPS program should provide several methods for this qualification, allowing the resource developer to choose the most cost effective method.

If one of these options is to limit charging to times when the renewable generation percentage of the resource mix is high, Stem would recommend three important design points:

- If a percentage threshold is set, it should be set as low as is reasonable in order to provide flexibility for the storage device to provide maximum grid value.
- Alternatively, if time windows are set, the windows should be as broad as is reasonable for the same flexibility.
- This option should not be the only option for qualification. Strict yes/no charging windows have proven in other programs to be a major hindrance to realizing full value from storage.

### **Demand Response (DR) Resource**

As described in Stem's previous comments, any DR resource that earns CPCs through load reduction must establish a baseline in order to accurately account for performance. Even resources that can be directly metered, such as air-conditioning (AC) units or electric vehicles need to establish a baseline. By definition, the only way to measure load reduction is establish what the load would have been. The exception to this is behind-the-meter (BTM) storage where the "load reduction" is measurable by directly metering the storage discharge.

This baseline would not be a traditional 10-in-10 style DR baseline. Instead it would be similar to the above described pre-program baseline for existing renewable generator production: an 8760 hourly measurement of the site load in the year before the resource was enrolled in the CPS. (This may require weather adjustments for weather sensitive load like AC units)

This same baseline could then be used to track associated load increases and resulting emissions increases to properly account for the value of the CPC earned by DR resources.

### **CPC Generation**

Stem recommends that instead of taking the average output and multiplying by the length of the window, the program employs the simpler reading of the statute: CPCs are earned on the sum of the MWh delivered during the clean peak window. In fact, this methodology is mathematically

equivalent to the proposed averaging methodology. And applying a multiplier to the sum is the same as applying the multiplier to the average MWh which is later multiplied by number of hours in the window. Since these methods are mathematically the same, employing the more “intuitive” calculation will likely cause less confusion and questions.

As Stem explained in its previous comments and the Emissions Approach section above, a CPS program that prioritizes real emissions reduction must design for the different emissions values of different MWh delivered in clean peak windows. In other words, just because a resource qualifies as a clean peak resource, does not mean it should earn CPCs at the same rate as other clean peak resources. This differentiation would not be based on technology per se, but based on actual differences in emissions impact.

With the Emissions Approach, the program must design for this differentiation, but with the Compliance+ approach, all qualifying clean peak resources’ deliveries can be treated the same. Of course, Stem strongly urges the Emissions Approach, not only for the general principle of policy integrity and for actual achievement of emissions reduction goals, but also so that the Massachusetts CPS does not set a misleading and erroneous precedent for future clean peak type policies around the country. It would be highly disappointing for policy advocates to be forced to spend the next several years telling policymakers not to follow the example of the country’s first CPS implementation.

## **Multipliers**

From long experience in such programs nationwide, Stem asserts that best practices in applying multipliers to an RPS-like compliance program limit the use of multipliers to attributes of resources that have a direct impact on the achievement of the program’s policy objectives **and** are directly related to the energy system service that the compliance is based on.

In the Massachusetts CPS, this means that multipliers should only be applied to the earning of CPCs if the delivery of a MWh during a clean peak window produces a different level of benefits (in terms of peak costs reduction or emissions) than other deliveries.

On this basis, the Seasonal Multiplier makes clear sense as a Core Design element. Delivery during the clean peak windows of different seasons clearly has different cost reduction and emissions value. The Actual Monthly System Peak multiplier appears similarly justified as long as the Actual Monthly System Peak falls within a Clean Peak Window. If the Actual Peak falls outside a Clean Peak Window, then theoretically, no CPCs should be earned for that delivery and there’s nothing to multiply against.

Stem recommends that the multiplier number for the Actual Monthly System Peak should be transparently calculated to reflect both the additional cost reduction and the additional emissions reduction benefits from delivery during the actual monthly peak. Stakeholders should have clear visibility into the justifications for the number.

## **Resilience Multiplier**

While Stem strongly supports the policy objective of determining a value for resilience and creating a program or market mechanism that fully compensates resources for providing resilience, Stem just as strongly believes that a Resilience Multiplier has no place in the CPS program.

Resilience and Clean Peak are unrelated, and such policy objectives should only be mixed in the rare circumstances where it's absolutely necessary. This fundamental principle is critically important to energy storage policy because storage can provide so many different services. Referring back to abovementioned design principles, the ability to provide resilience has nothing to do with the delivery of a MWh during a Clean Peak Window. So, there's no multiplication of value occurring.

Stem would note that as the storage industry's outlook may point to significantly more renewables+storage deployments that are configured to provide resilience, the resilience multiplier could potentially be significantly beneficial. Despite this, Stem feels the policy design principle is more important for the success of the CPS, and the same policy objectives for resilience are more appropriately addressed in a completely distinct market mechanism.

#### Minimum Load Negative Multiplier

The Minimum Load Negative Multiplier is slightly more relevant to the CPS than the resilience multiplier in that increasing the renewables hosting capacity of the system does provide long term emissions reduction benefits. However, financial compensation or penalty for a resource's activity during minimum load times should be a separate policy mechanism, mainly because the CPS is compliance-based.

If the CPS was a price-response mechanism where short and long-term emissions were incorporated into a price signal, then it would make logical sense for both "directions" of delivery to be included in the same program/market. But unless the hosting capacity benefits of activity during minimum load times becomes a compliance mechanism, this multiplier is unnecessarily mixing apples and oranges.

The only policy/program in the country that has attempted something similar in terms of incentivizing activity during low demand, even negative pricing, periods is the California ISO – Load Shift product which has been approved, but not yet implemented. The development of that product and the associated Load Shift efforts at the California Public Utilities Commission revealed the abundant complexities in such a policy that would make it extremely difficult to boil down the service to a simple multiplier. Stem was deeply involved in all these efforts and very strongly recommends that the DOER does not attempt to bolt on this concept to the CPS. Accordingly, Stem would be happy to work directly with DOER staff on designing a separate program that compensates resources for this service.

All the above said, the concept of modifying the value of a CPC based on the marginal emissions of the energy used to "charge" the resource is important and should be retained (see CPC Generation section, Emissions Approach).

#### **Analysis of Impacts**

Stem recommends that the analysis include both the "operational margin" emissions impacts as well as the "build margin" emissions impacts of the program.

The "operational margin" is based on system marginal emissions rates in every interval where clean peak resources are delivering **as well as** every interval where those same resources are "charging" or increasing load in order to earn CPCs. Methodologies for calculation of operational margin impacts are well understood and can be adapted from the studies done in California

The “build margin” is based on the impact that the resource has in changing overall load shape, which determines the buildout of the long-term resource mix and associated portfolio emissions. Methodologies for calculation of build margin impacts are not well developed, especially when considering the context of each state’s RPS or GHG reduction mandates. Stem recommends that the DOER include the creation of a build margin methodology in the scope of work of the contracted analysis partners for the CPS.

Stem would also highlight that if the CPS includes a robust emissions impact analysis as part of its evaluation of program success, the DOER would be best served by taking the Emissions Approach described in these comments. If the CPS is designed with the Compliance+ Approach, such an analysis is likely to show a failure in the emissions reduction objective.

## **Conclusion**

Stem appreciates the opportunity to provide these comments and looks forward to continuing to work with DOER and other stakeholders throughout the remainder of the program design and rulemaking process in 2019.

Sincerely,

Ted Ko  
Director of Policy, Stem, Inc.

Cc: Will Lauwers, DOER