

**Commonwealth of Massachusetts
Department of Energy Resources**

**Response to Comments on:
225 C.M.R. 21.00, Clean Peak Energy Portfolio Standard**

March 2020

Regulatory Authority: M.G.L. Ch. 25A §17

I. INTRODUCTION

The Massachusetts Department of Energy Resources (“Department”) Clean Peak Energy Standard (225 CMR 21.00) aims to reduce demand for and increase clean supply of energy during the periods when net demand of electricity is the highest.¹ Clean Peak Resources have the potential to reduce peak demand, system losses, the need for investment in new infrastructure, and distribution congestion; increase grid reliability; improve public health and safety; and diversify the Commonwealth’s energy supply. Further, Clean Peak Resources can also contribute to the Commonwealth’s environmental protection goals concerning air emissions including, but not limited to, those required by the *Global Warming Solutions Act*, M.G.L. c. 21N, §§ 1-9, (“GWSA”) by displacing non-renewable generating resources during Seasonal Peak Periods.

Originally proposed in the Governor’s 2018 Environmental Bond Bill, the first-in-nation Clean Peak Energy Standard (CPS) was part of An Act to Advance Clean Energy and signed into law in August 2018. The CPS is a market mechanism designed to shift clean energy to peak and reduce demand at peak, thereby decreasing emissions and costs.

Clean Peak Resources are defined in M.G.L.c. 25A § 3, and include:

1. New RPS Class I eligible resources which become operational on or after 1/1/19
2. Existing RPS Class I / Class II resources, operational prior to 1/1/19, that are paired with a Qualified Energy Storage System
3. Qualified Energy Storage Systems, which primarily store and discharge renewable energy
4. Demand Response Resources

Any qualified resource that generates, dispatches or discharges energy during a Seasonal Peak Period will generate Clean Peak Energy Certificates (CPECs). The CPECs can then be sold to retail electricity suppliers, which are required to purchase a certain amount each year to meet the minimum standard obligation. The CPS sets annual obligation and compliance rates along with eligibility and participation requirements to frame and structure the CPEC market and ensure that statutory and policy objectives are met.

Beginning in January of 2019, DOER sought responses to a set of questions intended to help with the development and design of the CPS. On April 2, 2019 DOER presented a straw proposal describing the

¹ Capitalized terms in this document are defined terms in 225 C.M.R. 21.00.

anticipated structure of the CPS, and sought written feedback on the straw proposal by April 12th. On August 7th and 9th DOER held public sessions to present a draft regulation summary.

On Friday, September 20, 2019, acting under statutory authority of M.G.L. Ch. 25A § 17, DOER filed Notice of Public Review of the proposed 225 CMR 21.00, the Clean Peak Energy Portfolio Standard regulation with the Secretary of State for the Commonwealth to be published in the Massachusetts Register.

DOER hosted three public hearings on the draft regulation at the following times and places:

Friday, October 25, 2019; Boston

Monday, October 28, 2019: Greenfield

Wednesday, October 30, 2019: Westborough

Public comments on the proposed regulation were due to DOER on October 30, 2019.

II. PURPOSE

The Department received 46 comments on the proposed regulation. The comments included recommendations on program design that in turn informed revisions to the regulation. The Response to Comments provides responses to common topics raised by commenters and further provides the Department's rationale for regulation changes made in response to comments. The Department is not responding directly to all comments received, but all comments were considered and are posted on our website.

III. EMISSIONS

A. Combustion Resources

Comment: Numerous commenters suggested that the Department exclude all combustion-based technologies from participating in the program.

Response: The proposed regulatory provisions are being retained in the final regulation. The authorizing statute defined eligible resources, including Class I/II RPS resources to participate in the CPS, and did not grant the DOER discretion to remove otherwise eligible resources from participation. The Department makes no changes to the proposed regulation, as the CPS only includes combustion-based technologies which are eligible resources by statute.

B. Emissions rates of on-peak and off-peak electricity

Comment: Commenters opined that the Department should use marginal carbon emissions rates analysis to evaluate the projected carbon emissions reductions that the CPS will achieve.² They state that marginal emissions change substantially seasonally, hour-to-hour, and on and off peak, and raise a concern that the program may not reduce emissions in light of the variability of marginal emissions rates. They are additionally concerned that the hours identified for charging energy storage may not be aligned with periods of low marginal emissions. Suggested changes include disallowing Qualified Energy Storage from charging coincident with solar production hours and shifting Spring and Summer Clean Peak Windows to later in the day to better align with peak marginal emissions instead of peak electric demand.

² It is understood that marginal emissions rates are an assessment of the rate of emissions (tons CO₂ / MWh) of the marginal generator (the last generator selected in the bid stack, i.e. the highest price generator that clears the energy market).

Response: The contribution of electric power production to global warming is a matter of total emissions, where total emissions are the sum of all emissions coming from all powerplants which are operating. The GWSA requires the state achieve at least eighty percent (80%) emissions reductions by 2050 in terms of cumulative emissions.

While commenters are correct that marginal emissions change dramatically hour-to-hour and day-to-day (depending on which power plant is the highest price to clear and operate), the total emissions of the electric grid are predictable and match closely to the load of the region.³ Fossil fuels are still the primary fuel source for the electricity of Massachusetts.⁴ As the CPS closely matches peak electricity demands, it is also well aligned with the peak total CO2 emissions of the grid.

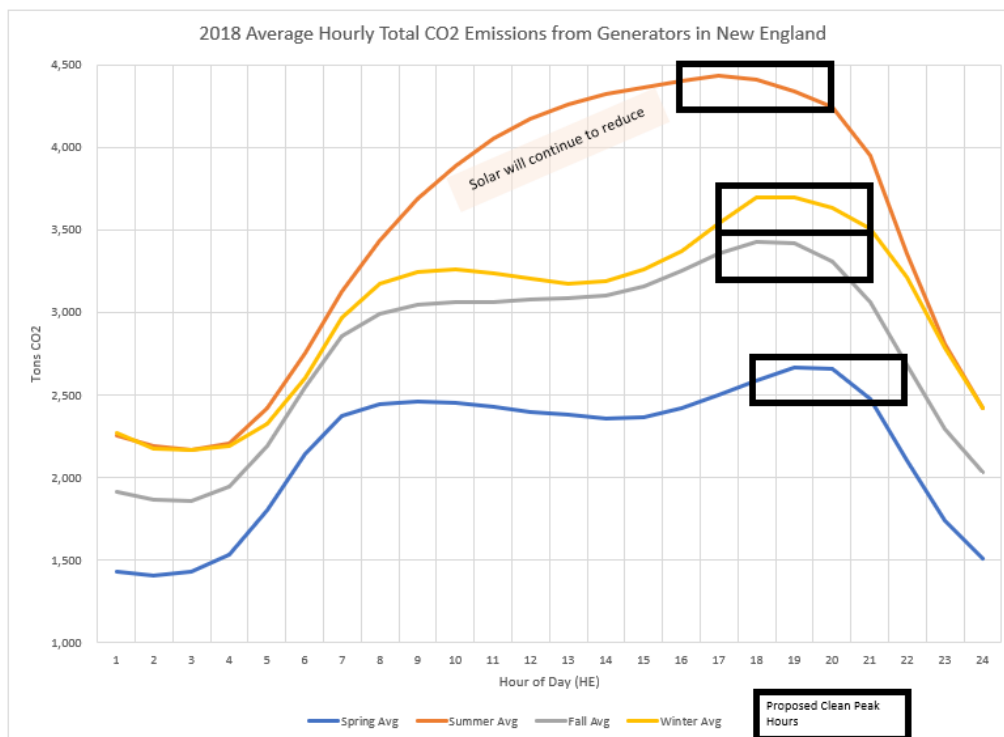


Figure 1 Average Hourly CO2 Emissions Profile of All Power Plants in New England in Each CPS Season Based on EPA Data

Figure 1 shows the average hourly CO2 emissions for each hour of the day for each CPS season. As demonstrated in Figure 1, the currently selected clean peak hours are well aligned with peak emissions from electricity.

³ As noted in Chapter 4 of the DOER's 2018 Comprehensive Energy Plan, natural gas typically remains the fuel of the power plant setting the marginal emissions rate, even if costs and conditions are driving an increase in consumption of higher emitting coal and oil. As such, marginal emission rates typically miss the impacts of peak demands associated with coal and oil emissions. For example, on Thursday 12/19/2019, ten percent (10%) of the ISO-NE fuel mix was coal and oil, yet the marginal fuel was reported as both natural gas and wind. Reported marginal emissions are further skewed by the inclusion of pumped hydro as a non-emitting marginal resource and by the fact that the majority of the over 3,000 MW of solar in the region are load reducers not reflected in the wholesale mix.

⁴ See <https://www.iso-ne.com/about/key-stats/resource-mix/>

Further, as highlighted below, intermittent renewable generation production profiles do not inherently match our electric demand profiles. The CPS is designed to shift the renewable production from when it is generated to when it is most needed.

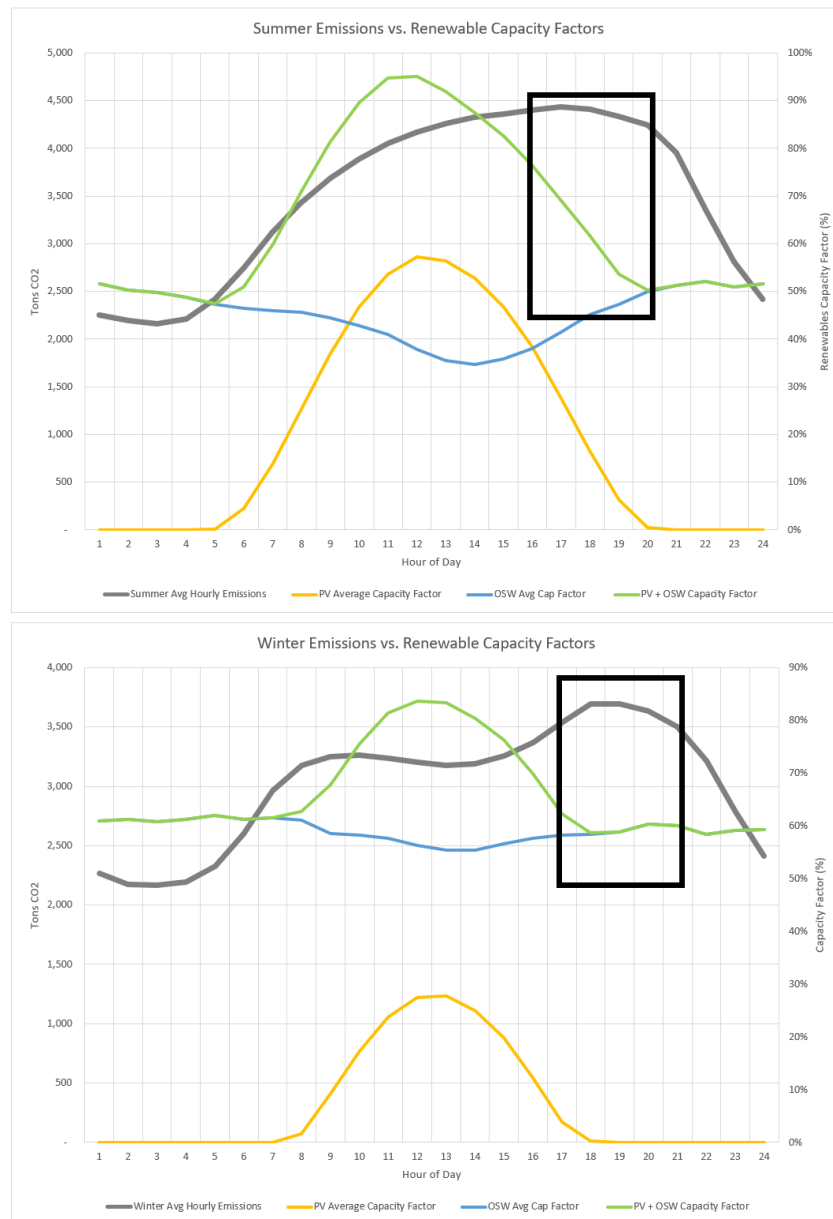


Figure 2 Intermittent Renewables Capacity Factor Vs. Electricity Emissions

Figure 2 shows average hourly electric sector CO2 emissions in Summer and Winter (dark grey). The average hourly capacity factors for intermittent renewable generation are shown (solar in yellow, off-shore wind in blue, combination of solar and wind in green). As intermittent renewable generation does not inherently match with our periods of highest emissions, the CPS is well designed to shift those renewables to better align with peak demand, thus offsetting peak emissions.⁵

⁵ The CPS provides further non-direct emissions benefits by enabling the continued deployment of intermittent renewables. Solar PV development in Massachusetts has recently been slowed due to infrastructure limitations. If

Finally, the Department selected the eligible hours for energy storage to charge based upon periods of the highest renewable generation as a reasonable proxy for the statutory requirement that “such system operates primarily to store and discharge renewable energy”. The statute does not require charging during low marginal emissions, but instead requires charging coincident with renewable production. In making this determination, the Department assessed the average grid mix of renewables by CPS Season based upon offshore meteorological data and past solar insolation data. The Department sought to maintain at least an hour gap between storage charge hours and CPS peak hours, as renewable generation in that hour is already well serving periods close to peak demand.

Average Percent of Grid Mix from Renewable Resource																										
HE	Spring		Summer		Fall		Winter																			
	Solar	OSW	Solar	OSW	Solar	OSW	Solar	OSW																		
1	0%	36%	0%	28%	0%	32%	0%	33%																		
2	0%	38%	0%	29%	0%	32%	0%	35%																		
3	0%	37%	0%	30%	0%	34%	0%	35%																		
4	0%	38%	0%	31%	0%	34%	0%	37%																		
5	0%	37%	0%	30%	0%	33%	0%	36%																		
6	1%	34%	4%	28%	0%	31%	0%	33%																		
7	6%	31%	11%	25%	1%	27%	0%	29%																		
8	13%	30%	18%	23%	8%	26%	1%	27%																		
9	19%	28%	25%	21%	14%	25%	7%	26%																		
10	25%	26%	29%	21%	19%	23%	12%	25%																		
11	28%	25%	32%	20%	24%	22%	16%	24%																		
12	30%	24%	34%	20%	25%	22%	18%	24%																		
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Hour of day of highest relative renewable percent of grid mix by season and resource																										

Figure 3 Projected Hourly Renewable Mix of Electric Generation

The proposed design aligns storage charge hours with periods of high renewables production consistent with the enabling statute and provides an additional mechanism to leverage storage asset performance in a manner that reduces overall emissions.

While the Department appreciates the perspective offered in Comments, the Department disagrees that the charge periods proposed will increase net carbon emissions and makes no changes to the Seasonal Peak Hours nor the Qualified Energy Storage System charging hours. The Department is, however, making adjustments that better align financial incentives for participating resources to dispatch on the highest total and marginal emission periods, namely, increasing the multiplier on winter/summer seasonal peak

additional solar is to be integrated to generate mid-day, substantial infrastructure upgrades may be required, adding substantial cost and time. The CPS provides an incentive to instead shift that renewable generation away from times of adding to hosting capacity constraints, to instead align production with peak demand. In so doing, the CPS opens additional runway for continued solar deployment, enabling the continued emissions reductions of renewables.

periods and on actual monthly system peak. The CPS is a market mechanism designed to shift clean energy to peak and reduce demand at peak, thereby decreasing emissions and costs.

IV. CLARIFICATION AND OTHER REQUESTED AMENDMENTS TO THE REGULATION

A. Application of Seasonal Multiplier to Actual Peaks in May and September

Comment: Commenters sought clarification on which Seasonal Multiplier will be applied against the Actual Monthly System Peak Multiplier in May and September. May 1st through 14th are in CPS Spring while May 15th through 31st are in CPS Summer. Similarly, September 1st through 14th are in CPS Summer while September 15th through 30th are in CPS Fall.

Response: The proposed regulatory provisions are being retained in the final regulation. As proposed, the applicable Seasonal Multiplier applied during the Hour of Actual Monthly System Peak certificate would be determined based on which season the Actual Monthly System Peak occurs. For example, if the Hour of Actual Monthly System Peak of May was 4 pm on May 13th, the Spring Seasonal Multiplier would be in effect. Alternatively, if the Hour of Actual Monthly System Peak of May was 4pm on May 16th, the Summer Seasonal Multiplier would be effective. The Department will consider whether further explanation or clarification of this interpretation is necessary or appropriate for inclusion in Department guidelines.

B. Establish a Ceiling at the ACP Rate for the Price of CPECs Procured by EDCs

Comment: Commenters sought a regulatory change that would establish the ACP rate as the ceiling price for those CPECs that the EDCs procure pursuant to 225 CMR 21.05 (8).

Response: The proposed regulatory provisions are being retained in the final regulation. The proposed regulation states that any contracts resulting from procurement(s) will require review and approval by the DPU. As it is anticipated that DPU will review the price of CPECs when reviewing any such contracts, the DPU process is an appropriate venue to consider the price of CPECs resulting from a procurement. The Department makes no changes to establish a ceiling on the procurement pricing at this time.

C. Exempt Pre-Existing Contracts

Comment: Commenters sought regulatory changes to exempt retail electric supply contracts that pre-date the promulgation of the regulation.

Response: The proposed regulatory provisions are being retained in the final regulation. Ch. 25A Section 17(a) provides:

Section 17. (a) Every retail electric supplier providing service under contracts executed or extended after December 31, 2018, shall provide a minimum percentage of kilowatt-hour sales to end-use customers in the commonwealth from clean peak resources.

The proposed regulation is consistent with this section.

V. RELEASE GUIDELINES FOR COMMENT

Comment: Commenters requested the release of guideline documents prior to the promulgation of the regulation.

Response: The draft guidelines will provide technical and process requirements associated with the regulations. The Department will publish all guidelines for public review and will accept public comments on each guideline, providing a reasonable timetable for interested stakeholders to review and comment.

VI. Financial Certainty and Program Cost Effectiveness

Comment: Several commenters raised concerns that the program would not provide adequate financial certainty and incentives, resulting in lack of market participation in the program. Such comments included details and estimates supporting their perspectives and concerns. Commenters stated that, as a result, the clean peak obligation would likely be met primarily with Alternative Compliance Payments (ACP). Commenters highlight concerns that if the program incentive structure is insufficient to drive a market response, program costs will remain in the form of ACP while program benefits will not accrue to ratepayers. Commenters also noted that the CPEC market is illiquid because Massachusetts retail electric suppliers are the sole final purchaser of certificates. Individual commenters suggested the following program adjustments to address these common concerns and to also increase the cost effectiveness of the program:

- an increase in the ACP rate;
- use of a price floor to reduce market risk;
- an increase in the number of certificates generated by projects through multipliers;
- adjustments to the multipliers to increase cost effectiveness;
- use of new multipliers to reduce certificates produced by energy storage in the SMART program and;
- additional detail on the procurements.

Response: The Department considered all of the suggested program adjustments and determined it is appropriate to adopt certain targeted changes to the regulation to address concerns of financial certainty and program participation levels, while balancing emissions and cost effectiveness considerations. Based review of the market data and analysis provided by commenters, the Department determined there was a risk that, at the proposed ACP rate and without refinement to the program structure, projects may not move forward and participate in the program.

The primary policy levers available to support the desired market response are to;

- adjust the ACP rate
- adjust the number of certificates resources produced through use of multipliers, and
- adjust the method by which obligations and procurements are established.

In response to concerns raised in the Comments, the Department determined that it is appropriate to adjust the program to better ensure an appropriate market response that achieves designed outcomes and ratepayer benefits, as follows.

- The Department raised the initial ACP to \$45 per CPEC, increasing the value of each certificate. In conjunction, the Department is reducing the initial ACP rate term from 10 years to 5 years in order to mitigate ratepayer impacts associated with the ACP increase. The increased ACP value increases the program incentive in the short term to support increased resource participation, while reasonably mitigating additional program costs.

- The Department agrees with Comments recommending an increase to certain multipliers, and has increased the Summer/Winter multiplier to 4x from the originally proposed 3x. This change increases the relative weighting of Summer and Winter vs. Spring and Fall and increases the number of certificates generated by each project to improve project financeability, while better aligning the incentive structure with higher emission seasons. This change increases the number of certificates in the market without impacting overall program costs. This change addresses the concerns of both commenters who sought an increased relative weighting of Summer/Winter over Spring/Fall, as well as commenters who sought an increased incentive to ensure resource deployment.
- In order to increase market response in the highest emission peak hours, the Department increased the Actual Monthly Peak Multiplier to 25x from the originally proposed 15x. This change will increase the number of certificates generated by projects which supply on actual peaks, while also increasing the total number of certificates in the market without impacting overall program costs. This change addresses comments that provided support for increased emphasis and higher relative weight to performance coincident with actual monthly peaks due to emissions and cost benefits, both of which strongly align with critical Clean Peak program goals.
- The Department created clear distinctions between the existing and contracted multiplier by creating three separate multipliers, where Existing remains at 0.1x, Contracted is reduced to 0.01x, and Energy Storage in the SMART Program receives 0.2x. These adjustments will improve program cost effectiveness and reduce the number of certificates in the market from types of participating resources already receiving support through other state renewable energy programs such as long-term procurements and solar incentives. This adjustment will also partially offset the increased number of certificates from the other multiplier changes.
- The Department declines to establish a price floor as requested by some commenters. However, the Department includes the following changes to increase market price stability.
 - The Department adjusted the procurement target structure, such that if the market is substantially undersupplied, the EDC procurement target is responsively increased. Procurements enable purchase of certificates for below ACP value and ensures projects are built and operating, providing the emissions and ratepayer benefits sought by the program.
 - The Department also adjusted the procurement target structure, such that if the market is fully supplied or oversupplied, the EDC procurement target is responsively decreased. This reduces the potential contribution of additional EDC procurements to an oversupplied market, which could otherwise result in CPEC price volatility.
 - The Department similarly amended the obligation requirement and ACP rates to adjust in response to market supply conditions. The adjustment, if triggered by market conditions, will advance the obligation increase as well as ACP decline by a year. The inclusion of a responsive obligation and ACP rate establishes a mechanism to increase market demand and decrease market response in cases of oversupply and increases CPEC price stability. The obligation adjustment is designed to sunset in 2030.

VII. Conclusion

The Department appreciates stakeholder's time and participation in the regulatory process to develop the first in the nation Clean Peak Energy Standard. The Department carefully considered all comments received and has revised certain portions of the CPS regulation in response to comments.