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Ms. Kara Sergeant
Massachusetts Department of Energy Resources
100 Cambridge Street, Suite 1020
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RE: Proposed Regulation, 225 C.M.R. 21.00 *et seq.*, Clean Peak Energy Portfolio Standard (CPS)

Ms. Sergeant,

On September 27, 2019, the Department of Energy Resources (“DOER” or “Department”) proposed draft regulations to establish the Clean Peak Energy Portfolio Standard (“CPS”). The CPS is a new requirement of the Commonwealth’s retail electric suppliers to provide a minimum percentage of kilowatt-hour sales to end-use customers from clean peak resources. 225 C.M.R. § 21.00 *et seq.* The DOER now proposes permanent adoption of the proposed regulations, 225 C.M.R. § 21.00 *et seq.* (“draft regulation”), and began a formal rulemaking process as required by G.L. c. 30A. The DOER held public hearings on October 25, 28, and 30, 2019, and requested written comments to be filed on or before October 30, 2019. Pursuant to the DOER’s request, the Office of the Attorney General (“AGO”) submits these comments for the Department’s consideration.

In 2018, the Legislature directed the DOER to adopt rules and regulations in order to develop a statewide clean peak standard to annually increase the kilowatt-hour sales to end-use customers from clean peak resources. St. 2018, ch. 227, §§7-11, 13 (“the Act”). Prior to issuing the draft regulation, the DOER conducted a stakeholder process to develop the program, including presentation of a straw proposal on August 7 and 9, 2019.

I. COMMENTS

A. The Final Regulation Should Include a Definition of Energy Reserves. See §§ 21.02 and 21.05(7).

The draft regulation establishes a mechanism for CPS certificates to be generated by the provision of energy reserves. § 21.05(7). The draft regulation provides no definition of what “energy reserves” entail, rather, the term is simply stated as a product that could generate Clean Peak Energy Certificates (“CPECs”). The draft regulation states that the DOER will publish a “Guideline on Energy Reserves that explains the mechanism and its applicability.” *Id.* A guideline should not establish the basic framework of what constitutes “energy reserves”; the regulation should.

If the inclusion of energy reserves is intended to refer to the ISO-NE’s Voltage Support, Regulation Market, or operating reserve products—Ten-Minute Spinning Reserve (TMSR), Ten-Minute Non-Spinning Reserve (TMNSR), Thirty-Minute Operating Reserve (TMOR)—then DOER should make this explicit. At a minimum, the definition of “Energy Reserves” should reference these specific ISO-NE program but given the dynamic and changing ancillary markets the final regulation could implement an “including, but not limited to” approach, if necessary. The AGO recommends that the final regulation include a definition of “Energy Reserves” in the

definitions section, § 21.02, with allowance for the proposed Guideline on Energy Reserves to provide additional details as is necessary.

B. Amend Qualified Energy Storage Systems Eligibility Criteria. See § 21.05(1)(a)(2).

The draft regulation states the purpose of Clean Peak Resources as twofold, to increase clean energy during periods of high electricity demand and to contribute to meeting the Commonwealth's air emissions reduction goals. § 21.01. The draft regulation attempts to achieve both goals with rules specifying which resources and technologies qualify as A Clean Peak Resource, including certain Renewable Portfolio Standard ("RPS") Resources, Energy Storage Systems ("ESS"), and Demand Response. § 21.05(1)(a). However, in seeking to maximize the availability of ESS to meet the first goal of reducing high electricity demand, the draft regulation not only fails to reduce carbon emissions, but it may cause an *increase*. The Department should amend the draft regulation with respect to ESS eligibility criteria in § 21.05(1)(a)(2) to closely align the stated goals of the program with operational realities.

While the discharge of an ESS is intended to impact system peak load of electricity in the CPS, when and how an ESS *stores* its energy will similarly impact the load profile of the system. A successful CPS seeks to increase ESS significantly—how and when those systems charge must be carefully designed. The draft regulation provides four distinct storage mechanisms, each of which require a change in order to provide emissions maximization, in order for an ESS to be designated a Qualified Energy Storage System. § 21.05(1)(a)(2). These methods are:

- a) Co-location with a Qualified RPS Resource as defined in § 225 CMR 21.02;
- b) Contractual pairing with a Qualified RPS Resource that demonstrates to the Department's satisfaction that the Qualified Energy Storage System operates primarily to store and discharge renewable energy;

- c) Charging coincident with periods of typically high renewable energy production as a percent of the grid generation mix; and
- d) Inclusion of an operational schedule in the Qualified Energy Storage System's Interconnection Service Agreement demonstrating that the Qualified Energy Storage System serves to resolve load flow or power quality concerns otherwise associated with intermittent renewable energy resources.

The AGO agrees that in order to mint CPECs, Qualified Energy Storage systems should be charged from clean resources. However, the qualification methods outlined in the draft regulation do not appear to be sufficiently rigorous to effectuate the CPS program goal of increasing clean energy during peak periods. As discussed further below, to directly connect the production of renewable energy to the ESS dispatch, the DOER should amend § 21.05(1)(a)(2), Qualified Energy Storage Systems.

First, for ESS co-located with a Qualified RPS Resource (§ 21.05(1)(a)(2)(a)), the final regulation should require additional engineering and metering requirements to ensure charging by the co-located generation. While it may seem implied, the draft regulation simply requires co-location, with nothing requiring the ESS to charge via the onsite Qualified RPS Resource rather than cheaper system power. The final regulation should clarify that the ESS co-located with a Qualified RPS Resource is mostly or completely charged from the RPS resource with the addition of comprehensive engineering requirements.

Second, for ESS contractually paired with a Qualified RPS Resource (§ 21.05(1)(a)(2)(b)), the regulation should require the ESS to purchase and retire the associated Renewable Energy Certificates ("RECs"). This will ensure that the ESS is charged with renewable energy and will minimize the need for non-clean resource generation.

Third, the allowance of an ESS to qualify as a Clean Peak Resource if it "serves to resolve load flow or power quality concerns otherwise associated with intermittent renewable energy

resources” fails to link the charging of that ESS to renewable energy generation.

§ 21.05(1)(a)(2)(d). The final regulation should clarify that the type of ESS which provides such services with a Qualified RPS Resource is mostly or completely charged from the RPS resource with additional engineering requirements.

Fourth, the final regulation should not allow resources to qualify as a Qualified Energy Storage System simply by charging during certain periods of the day (§ 21.05(1)(a)(2)(c)). The draft regulation attempts to link the storage and discharge periods of an ESS to the times of day and year when renewable generation produces the most generation, ostensibly assuming that these are periods of lower emissions periods. While the AGO understands the intended desire to identify consistent periods for clean-charging, the reality is that hour-to-hour renewable generation or emissions are sufficiently heterogenous that it is functionally impossible to pick charge and discharge periods which *consistently* allow storage to reduce (or keep neutral) system emissions.

In high resolution emissions data (5-minute or hourly), there is substantial variability on a day-to-day and hour-to-hour basis. Periods that might be low one day might be high the next. Some periods have lower emissions, on average, but variation means that it is easy to find periods with higher observed emissions during “low emissions” periods than during the nominally “peak” period. The proposed regulations attempt to avoid this problem by selecting periods when renewables are the greatest share of generation. This metric is more easily observable but not particularly useful when it comes to selecting charge/discharge periods that will reduce system emissions. High renewable output might lead to a lower *average* emissions rate but could also have no effect on *marginal* emissions. CPS will affect system dispatch *on the*

margin, so CPS periods should reflect the *marginal benefits* of charging and discharging at certain periods.

Charging storage during periods of generally high renewables output does not ensure that the battery itself is charged from a low-carbon resource or that it is charging from the grid at a time of day when ISO-NE system emissions (marginal) are lower than typical. Even if the period selection process were reasonable, the resulting periods will tend to result in storage dispatch which *increases net carbon emissions*. This can be illustrated simply in an example.

ISO-NE published high resolution data on system emissions for 2015-2017.¹ From this data, the historic average marginal emissions rates is calculated using the draft regulation's proposed seasons, CPS periods, and clean charging periods. Table 1 summarizes the results:

TABLE 1.

Season	Marginal Emissions (lbs/MWh)		Change in System Emissions ² (lbs/MWh-stored)
	Charge Windows	CPS Periods	
Winter	982.2	1,000.4	143.0
Spring	887.6	903.6	129.6
Summer	893.1	942.0	100.2
Fall	875.4	927.5	94.4
Annual	907.5	945.4	112.7

Table 1: *Average Marginal Emissions Rates for 2015-2017 using § 21.05(1)(a)(2)(c) proposed periods and seasons*

Over the course of the year, the charging periods provide emissions which, on average are four percent lower than their CPS-period. However, because ESS have a round-trip

¹ <https://www.iso-ne.com/committees/planning/environmental-advisory/>, I correct for two unreasonable assumptions in the emissions dataset which indicate unreasonably low emissions rates in some hours by setting the system's minimum emissions rate to 700 lbs/MWh.¹ First, the ISO dataset assumes that pumped hydro storage has an emissions rate of 0 lbs/MWh (even though it is almost always charged from natural gas). Second, when more than one fuel is marginal in the system, the ISO dataset also takes the simple average of the two rates rather than the nodal-weighted average rate.

² Induced Emissions = [Charge Rate / (92% charge efficiency)] – [Discharge Rate x 92% discharge efficiency.]

efficiency of 75-90 percent, if a battery charged from the system at the charging emissions rate and discharged during the peak-period, it would *increase* emissions by 94 to 143 lbs/MWh-stored. This is in direct conflict with the stated purpose of the CPS. *See* § 21.01.

Given hour-to-hour emissions volatility and relatively small peak/off-peak emissions differential, selecting periods which can reduce emissions on average may be impossible. The Department should either (a) provide evidence that the charge periods in § 21.05(1)(a)(2)(c) lead to reasonable system outcomes; or (b) eliminate this compliance method.

C. Clarify Which Clean Peak Season Multiplier to Use in May and September for Actual Monthly System Peak Multiplier. *See* §§ 21.05(3) and 21.05(6).

The final regulation should clarify how the calculation of the Actual Monthly System Peak Multiplier is conducted in the months of May and September because the Clean Peak Seasons split each month. The draft regulation imply, but do not clearly spell out, how the calculation proceeds for these months. For example, if the monthly peak is on May 3rd, CPECs presumably generate using the Spring Multiplier, while a monthly peak of May 28th would generate CPECs using the Summer Multiplier (similarly, September 3rd would calculate at the Summer multiplier and September 28th at the Fall rate). Neither the text of “Actual Monthly System Peak Multiplier” nor “Clean Peak Seasons” explicitly state that the Seasonal Multiplier applies according to the date of the precise monthly system peak. §§ 21.05(3) and 21.05(6). The AGO recommends providing such clear intent in the text of the final regulation to avoid confusion in the calculation of future CPECs.

D. Create an Actual Annual System Peak Multiplier. *See* § 21.05(5) and (6).

The current CPS Multipliers insufficiently value the benefit of CPECs during the system annual peak hour. The draft regulation calculates certificates using certain multipliers (including seasonal and monthly peak load multipliers). The monthly peak load multipliers may reasonably

reflect the value of avoiding costs attributed to distribution system peak demand. This multiplier, however, fails to capture the benefits of avoiding wholesale market costs associated with the ISO New England Forward Capacity Market (“FCM”). As the costs from the FCM are allocated based on demand in the system’s annual peak load hour, the AGO proposes that the Department develop another multiplier which is tied to system *annual* peak load in §§ 21.05 and 21.06.

FCM costs reflect a significant share of all avoidable wholesale market costs. The value of avoiding the system peak hour are also significant: assuming a \$5/kW-month capacity price, a 1 MWh reduction during the peak hour is worth \$60,000 per year. The value of avoiding the system peak hour is far in excess of what a Clean Peak Resource would receive for reducing the peak.³ An annual multiplier in the range of 100x would provide clear incentives for Clean Peak Resources to shave the system peaks that are avoidable and that drive consumer costs.

The AGO recommends the final regulation include another column of calculations, based on the Actual Annual System Peak Demand, for inclusion in the formula to determine Clean Peak Energy Certificates Generation in § 21.05(5). The annual multiplier would not substitute for the monthly peak multipliers. An explanation of the Actual Annual System Peak Demand should also be added to § 21.05(6), *Clean Peak Energy Certificate Multipliers*.

E. Reduce the Annual Minimum Standard Increases to More Closely Match the Minimum Set by The Act Until a 2025 Program Review. See § 21.07(1).

The proposed regulations establish the minimum standard to increase one and one-half percent annually. § 21.07(1). The statute requires an annual increase at a much lower rate—no less than one-quarter of one percent. G.L. C. 25A, § 17(a). Given that this CPS is a first-in-the-

³ CPS offers a maximum benefit of \$1350/MWh (*3x seasonal multiplier x 15x Monthly System Peak Multiplier x \$30/MWh ACP*).

nation program, the minimum standard, and therefore the corresponding ratepayer investment, should be cautiously set. The draft regulation sets the minimum standard at six times that required by the statute. By comparison, the annual minimum standard increase for the Renewable Portfolio Standard began at one half of one percent for the first ten years, then grew to one percent for the second decade and will now add two percent per year until 2029. G.L., c. 25A, § 11F; St. 1997, c. 164, § 50; St. 2008, c. 169, § 32; St. 2018, c. 227, § 12. While one and one-half percent is an aggressive pace likely intended to spur rapid development of Clean Peak Resources, the untested nature of the program places great risk on ratepayers to pay large amounts of alternative compliance payments (“ACP”) in the initial years of the program (as happened in the start of the RPS and the Solar REC programs). As the industry adjusts to program development and regulatory requirements, and as the financing, construction and interconnection of additional Clean Peak Resources ramps up, the potential mismatch of minimum standard and available CPS certificates will be funded by ratepayer ACP funds.

As the first-in-the-nation program, a “look before you leap” strategy would ensure that ratepayer funds are used prudently. The annual increase of one and one-half percent is too much at this time. If CPS is proved effective after substantive review, an accelerated increase may be warranted. Thus, rather than initiate the program with the proposed aggressive annual increase, the final regulation should set a Minimum Standard at three-quarters of one percent or less for the first five years of the program and then revise the increase schedule thereafter, as contemplated in § 21.07(2), for subsequent years.

F. The Regulations Should Establish a Formal Review of Program Efficacy in 2025

The draft regulation calls for a review of both the Minimum Standard and ACP rates in 2025 and every five years thereafter. §§ 21.07(2) and 21.08(3)(b). The final regulation should

expand and align these planned reviews in 2025 to include a formal, required review of the regulations to assess program efficacy. Because this is a first-in-the-nation program, the DOER, ratepayers, and program participants have no prototype to copy or build upon when modeling incentives and criteria. A comprehensive review of the successes and challenges of the CPS, after five years of program implementation, will provide stakeholders with an opportunity to weigh in and recommend appropriate changes. This five-year review should be expressly called for in the final regulation so that all participants are aware of the potential for change.

G. Limit the Use of ACP Funds to Furthering the Commercial Development of Clean Peak Resources. See § 21.08(3)(b).

The CPS allows Retail Electric Suppliers to satisfy their obligations under the Clean Peak Portfolio Standard through the purchase and settlement of Clean Peak Certificates or the issuance of an Alternative Compliance Payment (“ACP”). § 21.08(3). Such ACPs are to be remitted to the Massachusetts Clean Energy Technology Center (“MassCEC”). *Id.* The DOER will oversee the use of ACP funds by MassCEC, as allowed by § 21.08(3)(b).

“The Department shall oversee the use of ACP funds by the MassCEC, so as to further the commercial development of Clean Peak Resources, *promote projects or activities that reduce greenhouse gas emissions or ratepayer costs, or other energy policy related activities as determined by the Department.*” (emphasis added)

Id. The ACP funds should be used to support the program goals intended by the creation of the Act, namely to spur the use of “clean peak resources during seasonal peak load hours.” St. 2018, c. 227, § 17(a). The AGO recommends the DOER amend § 21.08(3)(b) by striking the words after “Clean Peak Resource.”

II. CONCLUSION

The Attorney General respectfully requests that the DOER adopt the above recommendations prior to promulgating the final CPS regulations.

Respectfully submitted,

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