Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs
Department of Energy Resources

Clean Peak Energy Portfolio Standard
DEMAND RESPONSE RESOURCE GUIDELINE
July 19, 2021

Pursuant to the Clean Peak Energy Standard Regulations at 225 CMR 21.00

This Guideline clarifies the method by which the Department of Energy Resources (Department) determines Demand Response Resource Eligibility.

All determinations of eligibility are made by the Department. The Department retains the sole right to determine if a resource meets the requirements to qualify or continue to participate. Failure to comply with this guideline may result in suspension or revocation of Statement of Qualification.

Any and all information provided to the Department may be a public record.

1. Interconnection

a. Provisions in the CPS Statute and Regulations

The CPS statute at M.G.L. Chapter 25A, Section 3[1] defines the following:

"Clean peak resource", 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.

"Demand response resource", 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.

225 CMR 21.05(1)(a) requires the following:

The Clean Peak Resource shall be interconnected with or offset load otherwise served by the Distribution System, or shall be interconnected with the Transmission System in the Commonwealth of Massachusetts. Clean Peak Resources must demonstrate that they generate, dispatch, or discharge electricity to the electric distribution system in Massachusetts.

225 CMR 21.05(1)(a)(3) requires the following:

Demand Response Resources must demonstrate that changes to electric usage from their normal consumption patterns are measurable and verifiable.

[1] CPS was established by Chapter 227 of the Acts of 2018, available at https://malegislature.gov/Laws/SessionLaws/Acts/2018/Chapter227.

b. Determinations

Per the definition of a Clean Peak Resource, a Demand Response Resource must reduce load on the electric distribution system, and as such, it must be served by the electric distribution system.

2. Generation is Ineligible to Qualify as a Demand Response Resource

a. Provisions in the CPS Statute and Regulations

The CPS statute at M.G.L. Chapter 25A, Section 3 defines the following:

"Clean peak resource", 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.

"Demand response resource", 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.

225 CMR 21.05(1)(a)(3)(a) requires the following:

A facility that generates electricity, including a Qualified RPS Resource, shall not be considered a Demand Response Resource.

b. Determinations

The definition of a Demand Response Resource is specific to changes in *usage* and *consumption*. Generation is not a form of usage or consumption, and thus is ineligible to qualify in the Clean Peak Energy Portfolio Standard as a Demand Response Resource. A non-exhaustive list of such ineligible generation includes; backup generators, combined heat and power plants, and renewable energy generators.

3. Commercial Operation Date

a. Provisions in the CPS Statute and Regulations

The CPS statute at M.G.L. Chapter 25A, Section 3 defines the following:

"Clean peak resource", 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.

"Demand response resource", 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.

225 CMR 21.02 defines the following:

Commercial Operation Date. The date that a Clean Peak Resource first produces or provides electrical energy for sale. In the case of a Clean Peak Resource that is connected to the End-use Customer's side of the electric meter, the date on which the local Distribution Company grants approval for the Clean Peak Resource to interconnect with the grid. In the case of a Demand Response Resource, the date on which the resource first changes electric usage.

b. Determinations

With respect to Demand Response Resources, the Commercial Operation Date defined in the regulation should be applied specifically to the equipment that enables the Clean Peak-specific demand response. Equipment installed on or January 1, 2019 shall not be considered an Existing Resource subject to the Existing Resource Multiplier.

4. Energy Storage Systems as Demand Response

a. Provisions in the CPS Statute and Regulations

The CPS statute at M.G.L. Chapter 25A, Section 9 defines the following:

"Demand response resource", 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

b. Determinations

Energy storage which changes the demand profile of electric usage by end-use customers can be qualified to participate in the Clean Peak Energy Portfolio Standard as a Demand Response Resource. Energy storage which is issued a statement of qualification as a Demand Response Resource is not Qualified Energy Storage, is not subject to the requirements of Qualified Energy Storage, and does not enable existing Class I/II RPS resources to become eligible because only Qualified Energy Storage can enable their eligibility.

Electric energy storage systems which can provide their electric performance data shall need to provide all performance data in a format accepted by the Production Tracking System (PTS).

The consideration of measurement and verification of thermal energy storage systems which change electric usage of end-use customers from normal consumption patterns will be discussed by a Clean Peak Energy Portfolio Standard working group and may be updated in guideline and PTS reporting requirements.

5. Electric Distribution Company (EDC) Active Demand Response (ADR) Programs

a. Provisions in the CPS Statute and Regulations

The CPS statute at M.G.L. Chapter 25A, Section 8 defines the following:

"Demand response resource", 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.

225 CMR 21.05 (1)(a)(3) requires the following:

Demand Response Resources: Demand Response Resources must demonstrate that changes to electric usage from their normal consumption patterns are measurable and verifiable.

b. Determinations

Aggregations of demand response resources which are dispatched by an EDC as part of a retail customer Active Demand Response program can be eligible to receive a statement of qualification. The entire aggregation must consist of otherwise eligible resources, for example there can be no generation included in the aggregation.

The ADR resources and/or aggregations must be able to provide sufficient performance measurement data in a format accepted by the PTS. Reported performance data shall be based upon actual operational data available to the EDC.

6. Electric Vehicle Supply Equipment (EVSE)

a. Provisions in the CPS Statute and Regulations

The CPS statute at M.G.L. Chapter 25A, Section 8 defines the following:

"Demand response resource", 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.

225 CMR 21.05(1)(a)(3) requires the following:

Demand Response Resources: Demand Response Resources must demonstrate that changes to electric usage from their normal consumption patterns are measurable and verifiable.

b. Determinations

EVSE will be measured and verified according to a static baseline. The static baseline will be that 35% of daily energy consumption by the EVSE would have occurred within the Seasonal

Clean Peak Window.[2] The EVSE shall provide 15-minute interval data to the PTS. The PTS will calculate the eligible number of certificates generated as follows:

$$CPEC\ eligible\ kWh = (0.35\ x\ Total\ kWh\ in\ 24\ hour\ day) - (Total\ kWh\ consumed\ within\ Seasonal\ Clean\ Peak\ Window)$$

Where the CPEC eligible kWh calculation result is negative, it will be zeroed out on a daily basis (e.g. negative certificates will not carry forward).

~~In order for an EVSE to demonstrate that it has changed its usage from a normal consumption pattern during the Seasonal Peak Periods, it must demonstrate that: 1) a vehicle was plugged in during the Seasonal Peak Period and 2) the vehicle could have otherwise charged during the period and instead delayed charging until a period after the Seasonal Peak Period.~~

An EVSE may report energy dispatched from the vehicle as a negative to increase the number of certificates generated. If an EVSE dispatches from the vehicle, the negative value will not reduce the Total kWh in 24 hour day when calculating CPEC eligible kWh.

The resource must be able to provide sufficient data ~~to demonstrate 1) and 2) above~~ in a format which meets ~~Production Tracking System (~~PTS~~)~~ reporting requirements ~~requirements for all charge events at the EVSE~~.

~~The PTS will calculate the performance of the EVSE charging event for Clean Peak Certificate production purposes by determining: 1) the percent of the Seasonal Peak Period in which the electric vehicle was plugged in and not charging and 2) the power and energy of the charge event following the Seasonal Peak Period.~~

7. Electric Water Heater Demand Response

b. Provisions in the CPS Statute and Regulations

The CPS statute at M.G.L. Chapter 25A, Section 8 defines the following:

"Demand response resource", 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.

225 CMR 21.05-(1)-(a)(-3) requires the following:

[2] 35% was determined as the average EVSE load coincident with Seasonal Peak Window hours from the U.U. DRIVE Grid Integration Technical team and Integrated Systems Analysis Technical Team "Summary Report on EVs at Scale and the U.S. Electric Power System," available at https://www.energy.gov/sites/prod/files/2019/12/f69/GITT%20ISATT%20EVs%20at%20Scale%20Grid%20Summary%20Report%20FINAL%20Nov2019.pdf as well as the National Renewable Energy Laboratory "Electric Vehicle Charging Implications for Utility Ratemaking in Colorado" https://www.nrel.gov/docs/fy19osti/73303.pdf.

Demand Response Resources: Demand Response Resources must demonstrate that changes to electric usage from their normal consumption patterns are measurable and verifiable.

c. Determinations

Electric water heaters may be measured and verified according to a static baseline. The static baseline shall be that 17% of daily energy consumption by the Water Heater would have occurred within the Seasonal Clean Peak Window.[3] The Water Heater shall provide 15-minute interval data to the PTS. The PTS will calculate the eligible number of certificates generated as follows:

$$CPEC\ eligible\ kWh = (0.17\ x\ Total\ kWh\ in\ 24\ hour\ day) - (Total\ kWh\ consumed\ within\ Seasonal\ Clean\ Peak\ Window)$$

Where the CPEC eligible kWh calculation is negative, it will be zeroed out on a daily basis (e.g. negative certificates will not carry forward).

The resource must be able to provide sufficient data in a format which meets PTS reporting.

8. Load Curtailment Demand Response

c. Provisions in the CPS Statute and Regulations

The CPS statute at M.G.L. Chapter 25A, Section 8 defines the following:

"Demand response resource", 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.

225 CMR 21.05-(1)-(a)-(3) requires the following:

Demand Response Resources: Demand Response Resources must demonstrate that changes to electric usage from their normal consumption patterns are measurable and verifiable.

d. Determinations

Load curtailment (including whole-building) which is dispatched on an infrequent basis may participate in Clean Peak Energy Portfolio Standard as a Demand Response Resource with an active baseline approach.

---

[3] 17% was determined as the average electric water heater load coincident with Seasonal Peak Window hours from the Regional End-Use Metering Project by the Office of Energy Resources of the Bonneville Power Administration at 53, available at https://www.osti.gov/biblio/5242541. 17% is also representative of a flat 4 hours of Seasonal Peak Window hours per 24 hour day (4/24 = 0.1667).

The resource must provide documentation of the intended baseline approach for the resource at the time it applies for a Statement of Qualification.[4] The Department retains sole discretion in determining whether the proposed baseline approach is sufficient to provide verifiable data sufficient to generate Clean Peak Energy Certificates.

The applicant must retain all pertinent records of the facility, and all data used in calculating the resource performance. The applicant must provide these materials to the Department and/or the PTS upon an audit request.

The Department may require annual certifications by the resource owner or designee that all calculations were performed in accordance with the approved baseline methodology.

The applicant will be responsible for performing the baseline calculation, and reporting the resulting curtailed energy to the PTS in a format accepted by the PTS.

9. Building Thermal Mass and Thermal Storage Demand Response

d. Provisions in the CPS Statute and Regulations

The CPS statute at M.G.L. Chapter 25A, Section 8 defines the following:

"Demand response resource", 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

[4] Exemplary baseline model:

Demand response resource's load reduction in each 15-minute interval of an Event is calculated as the difference between its *Adjusted Baseline* and its metered load. The *Adjusted Baseline* is calculated as the *Baseline* + a *Symmetric Adjustment* based on average load during the hour that is one hour prior to the start of the Event. The *Baseline* for each 15-minute interval will be a rolling value equal to the average metered load for that interval in the last 10 business days within the most recent 30 days, excluding days on which there was an *Event* or a scheduled or forced curtailment. If 10 such days are not available in the most recent 30 days, then meter data from the most recent *Event* or curtailment days will be used in the calculation. *Events* occur when the DR resource voluntarily curtails load; *Events* are self-identified by the DR resource sponsor on a daily basis.
The facility will report 0s for all non-event intervals, and will report the kWh curtailed, as calculated by the adjusted baseline for all Event intervals.

The formulas below lay out the calculation described above.
Load ReductionHour X = **Σ** Load ReductionIntervals 1 - 4
Load ReductionInterval X = Adjusted Baseline Interval X – Metered Load Interval X
Adjusted Baseline Interval X = Baseline Interval X + Symmetric Adjustment Event X
Baseline Interval X = Average (Metered Load Interval X, last 10 Business Days)
Last 10 Business Days = most recent 10 business days in the last 30 days, excluding days with Events or scheduled or forced curtailments
Event = a voluntary curtailment during Clean Peak hours that is identified by the end of the Event day.

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.

225 CMR 21.05-(1)-(a)-(3) requires the following:

Demand Response Resources: Demand Response Resources must demonstrate that changes to electric usage from their normal consumption patterns are measurable and verifiable.

e. Determinations

Building thermal mass, and alternative thermal storage systems, used to enable a shift in the time of HVAC operations may qualify to participate in the Clean Peak Energy Portfolio Standard as a Demand Response Resource.

The resource must provide documentation of the intended baseline approach for the resource at the time it applies for a Statement of Qualification.[5] The Department retains sole discretion in determining whether the proposed baseline approach is sufficient to provide verifiable data sufficient to generate Clean Peak Energy Certificates.

The applicant must retain all pertinent records of the facility, and all data used in calculating the resource performance. The applicant must provide these materials to the Department and/or the PTS upon an audit request.

The Department may require annual certifications by the resource owner or designee that all calculations were performed in accordance with the approved baseline methodology.

The applicant will be responsible for performing the baseline calculation, and reporting the resulting energy shifted out of the Seasonal Peak Window to the PTS in a format accepted by the PTS.

~~7.~~10. Metering

a. Provisions in the CPS Statute and Regulations

225 CMR 21.05(2) requires the following:

Metering. A Clean Peak Resource shall meter and report fifteen (15) minute interval performance in compliance with standards and protocols as established by a third-party Program Administrator designated by the Department. The Department may grant an exception to the fifteen (15) minute interval and designate a shorter or longer interval on a case-by-case basis. The Program Administrator shall be the designated independent third-party meter reader, as defined in Rule 2.5(j) of the NEPOOL GIS Operating Rules, or any successor rule. All standards and metering protocols shall be subject to review and approval by the Department. A Clean Peak Resource shall submit metered data to the Program Administrator for all hours of the previous month.

225 CMR 21.05(1)(a)(3) requires the following:

[5] For example, following baseline and measurement guidelines established in ASHRAE 14 Category C.

<u>Demand Response Resources:</u> Demand Response Resources must demonstrate that changes to electric usage from their normal consumption patterns are measurable and verifiable.

b. <u>Determinations</u>

The Program Administrator will be the sole metering and data verification provider, utilizing a PTS to support the Clean Peak Standard. As such, once a resource is qualified to participate in the CPS, all reporting will go through the Program Administrator's PTS. The Department and the Program Administrator are collaborating on the design of the specific reporting requirements and guidelines for all resources but at the minimum, each qualified Clean Peak Resource must provide fifteen-minute interval data for the entire preceding month of performance. The fifteen-minute interval data must be submitted monthly, or more frequently as permitted, to the PTS unless an exception has been granted by the Department to allow for a shorter or longer interval.