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Memorandum

To: Tom Tarpey, Bay State Hydro Association

From: Bob Grace

Date: January 26, 2022

Re: Proposed Changes to the Massachusetts Class II Renewable Portfolio Standard

Executive Summary

The legacy Massachusetts hydroelectric fleet, which provides a range of benefits to the Commonwealth, includes 35 units totaling over 72 MW that currently rely on the Massachusetts Class II Renewable Portfolio Standard (MA-II RPS) to economically support and retain their continued operation. The Commonwealth's December 2020, [2050 Decarbonization Roadmap Energy Pathways](#) study presumes the continued contribution of 0.9 TWH per year from the Massachusetts hydroelectric fleet.

Since the establishment of the 3.6% cap on the MA-II target embedded in the initial regulations in 2009, several revisions to the requirement have been implemented. Changes included setting the future targets as a function of certified supply, increasing the size of eligible resources, relaxing eligibility standards, and capping the Alternative Compliance Payment.

Several of these changes have introduced impacts eroding the efficacy of the MA-II RPS in supporting continued operation of the Massachusetts hydroelectric fleet. Specifically, the adoption of a dynamic demand target adjustment, while for many years accomplishing its primary objective of mitigating "over reliance on ACP compliance at ratepayer expense", has introduced a degree of volatility and unpredictability in the market. The expansion of eligible hydro resources, and the relaxation of import capacity obligations have combined with market developments - MA-II qualified supply more than doubled between 2016 and 2019, with generators located in New York emerging as a major contributor to the total and the driver for the market swinging from shortage to surplus - to increase the likelihood that the 3.6% cap will be exceeded, throwing the market into surplus.

In order to ensure their continued operation and contribution to the above-referenced policy objectives, Massachusetts' legacy hydroelectric facilities require:

- i. an ongoing stream of revenues sufficient to cover ongoing costs (normal operations and maintenance expenses, taxes, insurance), reserves for volatile times, fund repairs, and return some modest return to owners; and
- ii. sufficient stability and predictability of future revenues sufficient to support investment in upgrades, repairs, major maintenance and overhauls, many of which have a multi-year payback, as well as environmental mitigation required by permitting agencies and certifying entities like LIHI (which may also add to operating costs and/or reduce revenues).

The memo summarizes an independent study conducted by Sustainable Energy Advantage, whose conclusions include:

- “Existing” RPS “maintenance” tiers are typically characterized by static demand targets and stable supply, resulting in relatively small variations in REC pricing (attributable to variations in annual production).
- For MA-II, however, policymakers have exercised discretion to make changes to both demand targets and supply eligibility, resulting in changes to market dynamics and REC pricing over time. These changes were implemented with good intent (maintain market demand and revenues for generators, reduce ACPs), and were effective initially at meeting their objectives, but with market changes and responses, this structure is now yielding unintended impacts.
- Sustained surplus conditions may result in MA-II REC prices below the level required to cover long-run costs at existing hydroelectric facilities, which include ongoing infrastructure investments related to safety and environmental standards.

This situation threatens the Commonwealth’s climate change objectives and the MA-II policy objective to provide sufficient certainty of revenue to support investments in upgrades, repairs, major maintenance, and environmental improvements that require many years to recoup.

Implications of an Increase to MA-II Target Cap

- An increase in the MA-II target cap would provide MA-II-eligible hydro owners more confidence than current rules that they can justify investing in keeping these plants operating into the future, preserving their contribution to RPS and GHG goals.
- In seeking such an adjustment, legacy hydro generators would not be seeking an increase in compensation, so much as seeking greater confidence that the floor won’t fall out from beneath them with a surplus-induced price crash.
- Importantly, for a number of reasons delineated in this memo, increasing the cap is unlikely to increase costs to ratepayers.

Background

The legacy Massachusetts hydroelectric fleet consists of approximately 50 units under 7.5 MW capacity (the Massachusetts Class II RPS qualification limit) totaling approximately 76.4 MW, of which 35 units totaling 72.324 MW are currently qualified for the Class II RPS.¹ This fleet provides a range of benefits to the Commonwealth. In addition to providing clean, renewable, emission free electric energy, these facilities also provide electric capacity, grid resiliency benefits and (in many cases) ancillary services; more predictable and available electric production for system operators than the more intermittent solar and wind resources being relied upon to displace the existing fossil fueled generators fleet; tax revenues to host municipalities; and maintained recreational facilities.

MA RPS:

In recognition of the benefits provided by the Commonwealth's and the region's legacy renewable energy fleet, the [Massachusetts Electric Utility Restructuring Act of 1997](#) (Restructuring Act) created the Renewable Portfolio Standard² (RPS), which - established the requirement to serve load with an increasing proportion of new renewable energy generation (now the RPS Class I Obligation, MA-I). The Restructuring Act also introduced the implicit intent that Massachusetts retain and build upon the inventory of existing facilities.³ A Class II RPS tier (MA-II) was established as part of the [Green Communities Act of 2008](#) and is codified at [M.G.L. c. 25A, § 11F](#), with the implicit intent to economically support and retain qualifying renewable resources. MA-II applies to eligible renewable energy facilities that *"began commercial operation before January 1, 1998."* DOER promulgated MA-II regulations⁴ in June 2009 to implement the Statute. DOER articulated the MA-II intent to provide *"financial incentives for the continued operation of qualified pre-1998 renewable generation units"*.⁵ MA-II was divided into distinct waste-to-energy (MA-II-WTE) and MA-II-non-WTE targets.⁶ DOER established at that time a 3.6% cap on the MA-II (non-WTE) percentage of load target based on a *load ratio share* method, i.e., applying Massachusetts' 40% share of the region's load applied to the average of 2000-2007 average energy production of biomass, hydroelectric and landfill gas generation. An Alternative Compliance Payment (ACP), which serves as a MA-II price cap, was established at \$25/MWH in 2009 escalating annually at the Consumer Price Index.

Since the establishment of the MA-II regulations in 2009, several revisions to the requirement have been implemented, as summarized in Table 1.

¹ Sources: MA DOER MA-II Qualification list accessed 10/16/2020, and summary of FERC licensed and exempt licenses.

² Chapter 164, Acts of 1997, Section 50, Section 11F.(a) & (b)

³ During its 2000 RPS design process, the Department of Energy Resources (DOER), while declining to establish a requirement at the time, interpreted that the Restructuring Act suggests legislative intent to maintain the level of existing renewables, and that it is good public policy to maintain the level of existing renewables sales to Massachusetts customers. (Department of Energy Resources 2000)

⁴ 225 CMR 15.00: Renewable Energy Portfolio Standard – Class II <https://www.mass.gov/doc/doer-tue-filing-documents/download>

⁵ <https://www.mass.gov/service-details/program-summaries>

⁶ For the remainder of this memo, use of MA-II is intended to refer to the non-WTE portion of the Class II RPS.

Table 1: Hydroelectric-Related Changes to MA-II Regulations Since Adoption

| Program Criteria | As Adopted | As Amended 2012-2014 | As Amended 2021 |
|-------------------------------|--|---|----------------------------|
| MA-II Demand Targets | 3.6% | Adoption of dynamic target adjustment, initially reduced but escalating with additional supply entry, capped at 3.6%. | |
| Capacity Eligibility | ≤ 5 MW | ≤ 7.5 MW | |
| Environmental Standards | Low Impact Hydro Institute (LIHI) Certification required | LIHI certification or DOER determination that appropriate environmental safeguards have been met | |
| Imports (Capacity Obligation) | | Capacity mustn't be committed to market other than ISO-NE | Remove capacity obligation |
| ACP | \$25/MWh, escalating @CPI | | Capped at \$35/MWh |

Several of these changes have introduced impacts eroding the efficacy of the MA-II RPS in supporting continued operation of the Massachusetts hydroelectric fleet, including:

- the adoption of the dynamic demand target adjustment, while for many years accomplishing its primary objective of mitigating “over reliance on ACP compliance at ratepayer expense”⁷, has introduced a degree of volatility and unpredictability in the market (as discussed further below); and
- the expansion of eligible hydro resources and the relaxation of import capacity obligations have combined with market developments to increase the likelihood that the 3.6% cap will be exceeded, throwing the market into surplus.

MA Climate Policy:

[*An Act Creating A Next-Generation Roadmap for Massachusetts Climate Policy*](#), passed by the Massachusetts legislature and signed into law by Governor Baker on March 26, 2021, requires the EEA Secretary to set interim greenhouse gas emissions for 2030 at least 50% below the 1990 baseline, a 2040 emissions limit at least 75% below the 1990 level, and a 2050 emissions limit that achieves at least net zero statewide greenhouse gas emissions. The Commonwealth’s December [2050 Decarbonization Roadmap Energy Pathways](#) study presumes the continued contribution of 0.9 TWh per year from the Massachusetts hydroelectric fleet.⁸

Legacy Hydroelectric Revenue Needs

In order to ensure their continued operation and contribution to the above-referenced policy objectives, Massachusetts’ legacy hydroelectric facilities require:

- an ongoing stream of revenues sufficient to cover ongoing costs (normal operations and maintenance expenses, taxes, insurance), reserves for volatile times, fund repairs, and return some modest return to owners; and

⁷ Department of Energy Resources, *Evaluation of the Massachusetts RPS Class II Program: Market Analysis, Reliance on ACP Mechanism, and Policy Recommendations*, December 31, 2012

⁸⁸ (Massachusetts Executive Office of Energy & Environmental Affairs 2020, 113)

- ii. sufficient stability and predictability of future revenues sufficient to support investment in upgrades, repairs, major maintenance and overhauls, many of which have a multi-year payback, as well as environmental mitigation required by permitting agencies and certifying entities like LIHI (which may also add to operating costs and/or reduce revenues).

Importantly, as detailed in a 2016 report commissioned by DOER, *“many of the older hydroelectric projects in Massachusetts have reached a stage when they must incur substantial rehabilitation costs (due to typical mechanical and civil lifespan issues) to maintain or restore the design generation capacity of the facility. Such life cycle costs must be considered as part of overall project economics.”*⁹

These power plants receive revenues from wholesale markets – energy, capacity, some ancillary services – and renewable energy credits (RECs) for RPS tiers for which they are eligible. In recent years, with historically low wholesale energy prices and falling capacity prices, many facility owners have struggled to cover their operating costs, focusing increasing importance on the level, predictability and reliability of REC revenues as a policy support. At a time when the non-carbon-emitting, clean energy benefits of these hydroelectric plants are most highly valued, the Commonwealth currently maintains only one policy mechanism in place to provide support for the majority of the Commonwealth’s legacy hydro fleet predating the Restructuring Act in the Massachusetts competitive marketplace: the MA Class II RPS.¹⁰

Analysis of MA Class II RPS Support for Legacy Hydroelectric Facilities in Massachusetts

Recent dynamics of the MA-II market have led to:

- decreasing revenue;
- increasing revenue volatility, uncertainty and unpredictability; and
- expectations of increasing revenue risk which undermines the ability for hydro owners to justify repair and rehabilitation investments necessary to keep projects operating into the future.

Bay State Hydro Association commissioned from Sustainable Energy Advantage (SEA) an independent analysis of the MA-II marketplace to provide a factual basis to inform its members of the causes of recent price trends and expectations for the future under current RPS regulations, which was completed in March 2021. Figure 1 summarizes the results of this analysis.

Key points depicted in the figure and findings of the SEA study are summarized as follows:

- The initial MA-II target was set at 3.6% of load, but anticipated supply did not immediately materialize.
- As a result, DOER reduced targets (by administrative determination) for 2013-2015, and for compliance years beginning in 2016, the MA-II target was set annual by DOER according to a supply-demand responsive formula tied to market conditions.
- Unequal distribution of supply led to banking of excess compliance between 2013 and 2017.

⁹ (GZA GeoEnvironmental, Inc 2016, p. 2)

¹⁰ The exception is the 11.3 MW of Small Hydroelectric Net Metering Facilities (per the [MassACA](#) as of 1/9/2022) currently supported under the Massachusetts Small Hydroelectric Net Metering Program (220 CMR 18.11). Up to 60 MW of Small Hydroelectric Net Metering Facilities of up to 2 MW capacity may participate in the Massachusetts Small Hydroelectric Net Metering Program and receive compensation at the basic service kilowatt-hour charge (at the applicable rate class of the interconnecting customer) in the ISO-NE load zone where the Host Customer is located.

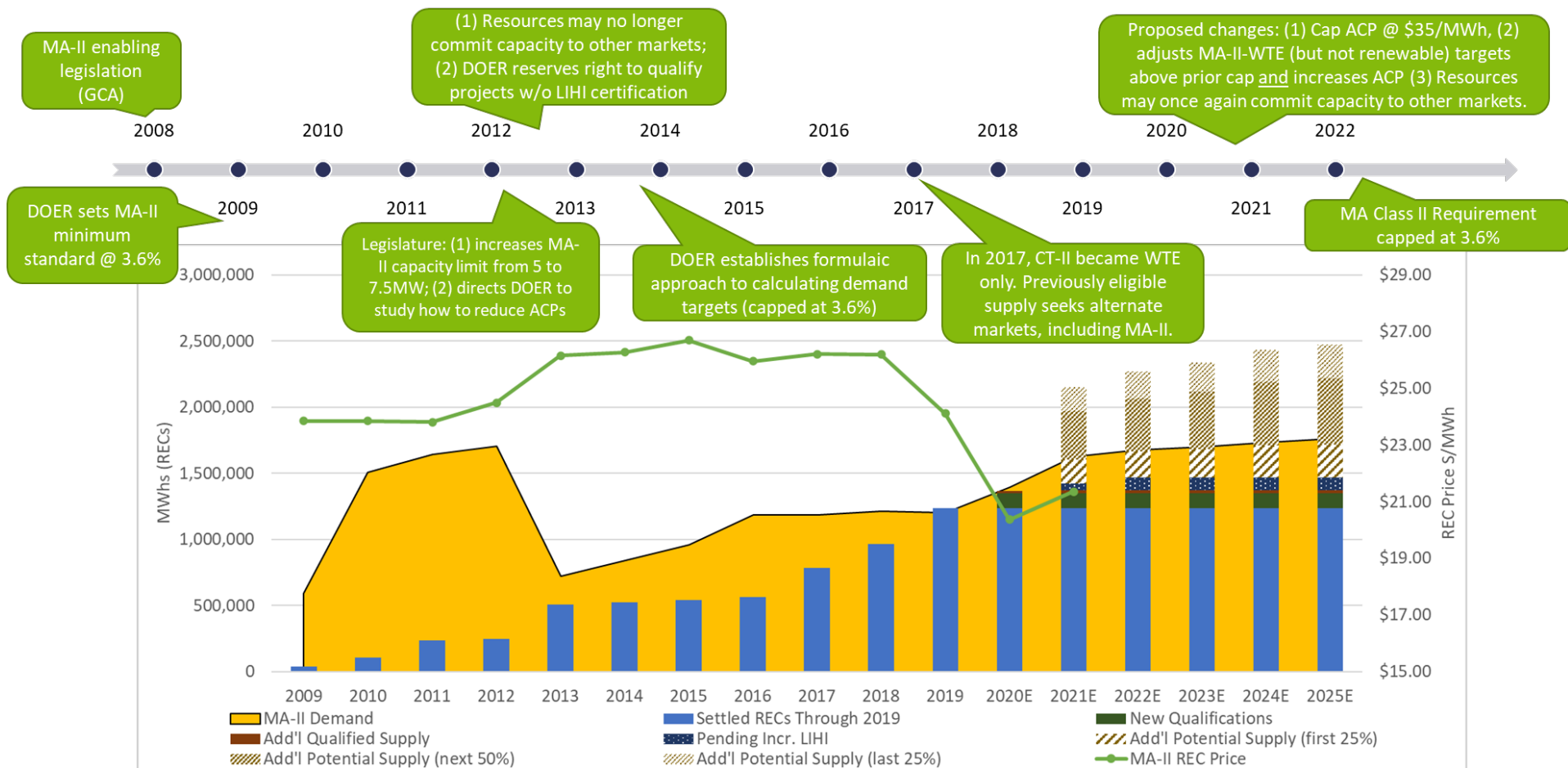


Figure 1: Evolution of the Massachusetts Class II Market - Supply vs. Demand and Price History and Projections

(Source: Sustainable Energy Advantage analysis, 2021)

- For 2017, 97% of MA-II supply originated in MA. Of that amount, 92% was generated by hydro.
- By 2019, new MA-II qualifications enabled supply to equilibrate with demand. MA-II qualified supply more than doubled between 2016 and 2019, with generators located in New York emerging as a major contributor to the total and the driver for the market swinging from shortage to surplus.
- These changes in supply triggered the MA-II target being adjusted to the point it hit the 3.6% target cap in Compliance Year 2022.
- However, additional supply was qualified by DOER in 2020, with significant additional supply in the qualification pipeline, including over 15 MW of projects capable of producing about 95,000 MWh/year of Low Impact Hydro Institute (LIHI) pending applications as of March 2021. Furthermore, from a pool of New England and New York hydro projects seeking FERC relicensing by 2025 capable of producing roughly 420,000 MWh/year, and FERC-exempt projects capable of producing roughly 585,000 MWh/year, many additional projects could seek LIHI certification enabling their participation in MA-II.¹¹
- MA-II is part of an interconnected regional RPS marketplace, with interactions depicted in Figure 2.
 - The CT-II RPS Tier eligibility changed by statute in 2017 to only allow waste-to-energy. Previously eligible supply sought alternate markets, including MA-II, thereby increasing available supply.
 - CT-I allows hydro up to 5 MW that coverts to run-of-river (RoR) after 2003 to qualify, and a modest amount of legacy supply has shifted to this market over time (if not for this change, the increase in MA-II supply depicted in **Figure 1** would have been greater).

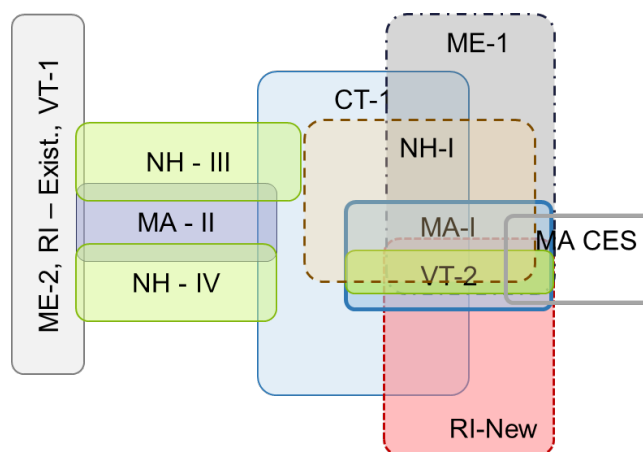


Figure 2: MA-II interactions with other regional RPS Tiers

(Source: Sustainable Energy Advantage)

- Following the changes in the MA-II supply-demand balance, REC prices have dropped from a trend of following just under the ACP, and also became more volatile, as can be seen from Figure 3. The figure shows that MA-II REC prices declined as DOER announces that demand “caps out” in 2020, while qualified supply continues to increase. The MA-II REC price decline is sharper over time when considered as a % of ACP rate. REC price volatility is increasing (see error band for 2019 vintage RECs) as supply catches up with demand, and the market anticipates moving from shortage to surplus and the potential uncertainty of even greater supply.

¹¹ An indeterminate proportion of this total pool of unqualified supply would be able to meet MA-II eligibility and delivery requirements,

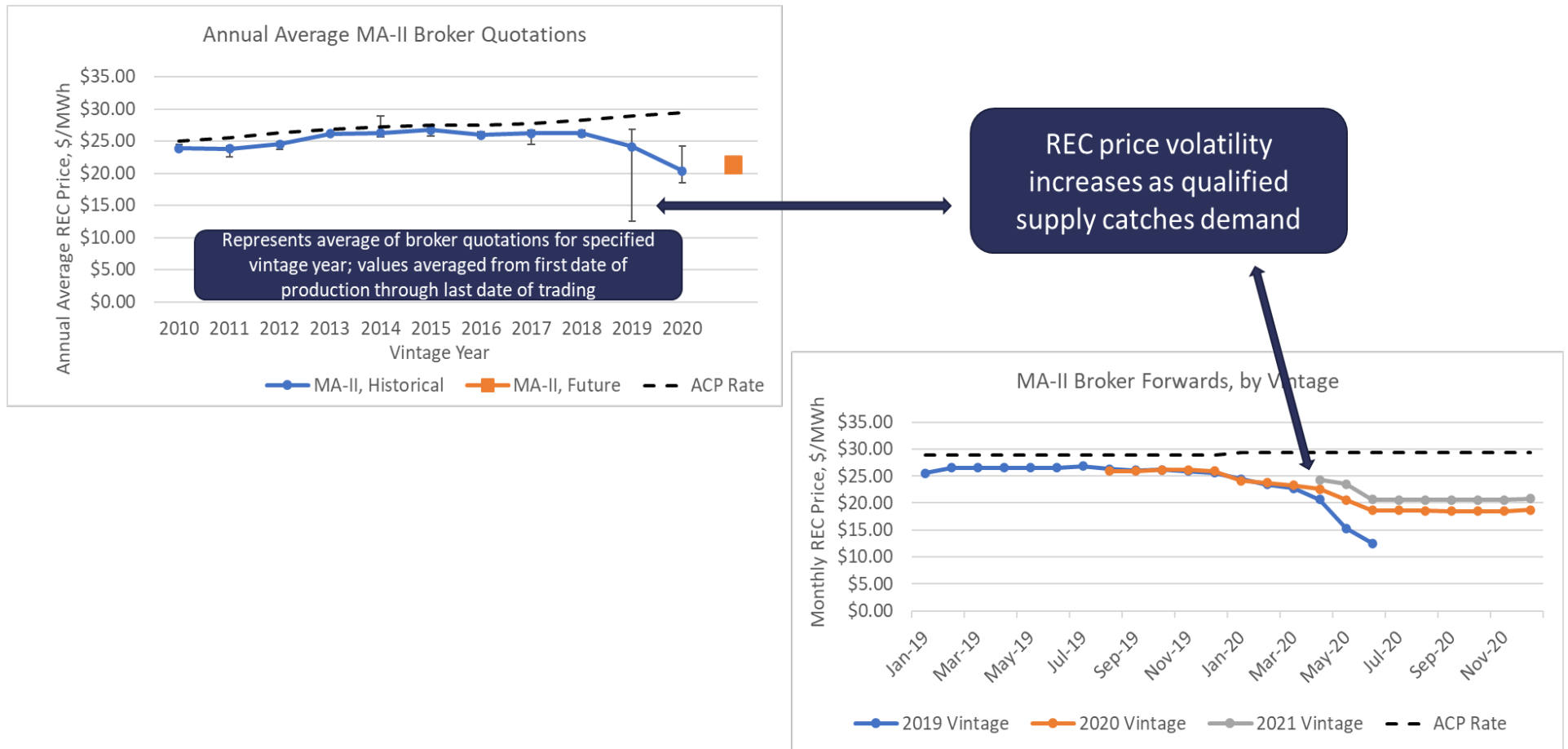


Figure 3: MA-II REC Price Dynamics
(Source: Sustainable Energy Advantage)

The SEA study's conclusions include:

- “Existing” RPS “maintenance” tiers are typically characterized by static demand targets and stable supply, resulting in relatively small variations in REC pricing (attributable to variations in annual production).¹²
- For MA-II, however, policymakers have exercised discretion to make changes to both demand targets and supply eligibility, resulting in changes to market dynamics and REC pricing over time. These changes were implemented with good intent (maintain market demand and revenues for generators, reduce ACPs), and were effective initially at meeting their objectives, but with market changes and responses, this structure is now yielding unintended impacts.
- **2019 – 2020:** Qualified supply caught up to and then exceeded MA-II demand. As a result, MA-II REC price volatility increased dramatically. REC prices reacted, with bids dipping to as low as \$12/MWh during compliance year 2019.
- **2021:** Market characterized by significant uncertainty. Qualified supply appears to lag annualized demand by a small margin, but the pending availability of large volumes of potentially eligible – but not yet qualified – supply created a perception of potentially-material surplus and resulting REC price volatility.
- **2022 – 2025:** This regional (ISO-NE & NYISO) assessment of potentially eligible incremental resources shows the potential for systemic, long-term surplus. If only 25% of other potentially eligible supply becomes LIHI eligible and becomes MA-II qualified, then the market could be characterized by long-term surplus and materially lower REC prices.
- Sustained surplus conditions may result in MA-II REC prices below the level required to cover long-run costs at existing hydroelectric facilities, which include ongoing infrastructure investments related to safety and environmental standards.

Events and circumstances following the SEA study demonstrate additional perceived challenges and risks associated with the current MA-II regulations. Following the MA-II 3.6% target cap being hit for 2022, DOER subsequently reduced the target for 2023 to 3.4721%.¹³ The determination of this reduced target used the formula in the MA-II regulations adjusting targets 3 years out based on changes occurring between 3 and 4 years prior. Specifically:

$$\text{Minimum Standard}_{CY} = \text{Minimum Standard}_{CY-1} + (\text{Settled Attributes}_{CY-3} / \text{Total Electrical Energy Sales}_{CY-3}) - (\text{Settled Attributes}_{CY-4} / \text{Total Electrical Energy Sales}_{CY-4})$$

The target for 2023 was reduced because settled RECs fell between 2019 and 2020 by 6.82%, while load also fell by 2.31% (due to the COVID-19 pandemic). This result highlights two features of the formula: its sensitivity to changes in load (more on that, later) and to supply volatility. Notably, though, in 2020 New York and New England experienced historic drought conditions not seen since the 1960s.¹⁴ As past weather conditions have no correlation with future weather conditions, these circumstances reveal an unintended impact of the current MA-II regulations that leads to further risk and price volatility.

In summary, the current MA-II RPS policy, while providing revenue support to the existing fleet of Massachusetts and regional legacy hydroelectric plants, has moved into a new phase due to evolving circumstances revealing unintended consequences, characterized by declining REC prices, increased REC price volatility, and fact-based

¹² Maintenance tier programs are intended to provide just enough financial incentive to keep the existing fleet of renewable resources in reliable operation. (Tabors Caramanis Rudkevich, *Avoided Energy Supply Costs in New England: 2015 Report*, March 25, 2016, p. 5-48)

¹³ See DOER's annual target [Determination](#).

¹⁴ source: see [2020 Drought Early Warning System report](#) posted on NOAA's www.Drought.gov

perceptions of volatility/risk. This environment fails to provide the price signals and expectations of revenue stability (which an RPS maintenance tier should be designed to provide) sufficient to justify investments in rehabilitation needed to maintain or restore the design generation capacity of facilities, or address new environmental enhancements, fish passage retrofit requirements, or compensate for reduced generation resulting from such new requirements. This situation threatens to cause the MA-II policy to fall short of its policy objectives, the Commonwealth's climate change goals, and providing sufficient certainty of revenue to support investments in upgrade, repairs, major maintenance and overhauls that require many years to repay.

Proposed Policy "Fix"

Based on the analysis of observed and expected market dynamics described above, it would appear appropriate for the Commonwealth to allow the MA-II dynamic demand target formula to produce a result above the administratively-determined cap of 3.6%, i.e., to increase the cap to a higher percentage or eliminate it altogether (although with a 'failsafe' interim cap, the reaching of which would trigger a reevaluation). The following arguments explain why the initial 3.6% cap should be recalculated:

Adjustment to account for changes in load.

- DOER's 3.6% Class II non-WTE Standard was calculated (per DOER Determination Feb. 5, 2009) based on data received from ISO New England for generation from eligible units in ISO-NE and adjacent control areas from 2000-2007, and from load over that same period.
- Load decreased since the calculation was made. If the load (the denominator in the percentage calculation in the Determination) were to be updated and baseline recalculated, the Class II non-WTE target would increase.
- In an analogous situation and supported by an identical rationale, DOER (as a result of its recent regulations review process) recently adopted changes to the Class II regulations, which included increasing the MA-II-WTE target from 3.5% to 3.7% to reflect changes in retail load since the requirement was first established in 2009, firming up demand to exceed supply and thereby maintain MA-II-WTE REC prices near the ACP.¹⁵
- This argument can be equally applied Class II non-WTE, resulting in an increase to the 3.6% target. Utilizing the same calculation used by DOER for MA-II-WTE, the proportionate impact would be to increase the MA-II target to 3.8%

Adjustment to account for expansion of eligibility.

- At the time of the determination of the 3.6% target in 2012, eligible hydro was capped at 5 MW. As noted in Table 1, subsequently, pursuant to the 2012 Act Relative to Competitively Priced Electricity in the Commonwealth, the cap on eligible hydro was increased to 7.5 MW.
- While not reflecting the rationale by which DOER arrived at the 3.6% target, the change in law and regulation effectively expanded eligibility and altered the potential supply-demand balance.
- To maintain the initially-intended balance, the same amount should be added to the maximum demand (the percentage cap) as to the eligible supply.
- To date, 18 generation projects in excess of 5 MW (16 hydroelectric plants, 1 wind plant and 1 landfill gas plant) totaling 115.2 MW have been certified for MA-II.
- If a quantity comparable to the estimated annual production of this additional supply (at an assumed 40% average capacity factor) were added to the production used in the DOER calculation, the 3.6% target cap would be boosted by 0.8% to 4.4%.

¹⁵ In Compliance Years 2021 through 2025, the RPS Class II Waste Energy Minimum Standard was increased from 3.5% to be equal to 3.7% of electrical energy sales; thereafter it will revert to 3.5%. See: <https://www.mass.gov/service-details/rps-class-i-ii-rulemaking> and <https://www.mass.gov/doc/doer-tue-filing-documents/download>.

Influx of New York Imports

- Similarly, in establishing the 3.6% target, DOER only considered legacy renewable generation located within ISO New England.
- As summarized in **Table 2**, of the 381.1 MW qualified for MA-II as of late 2020, about 36% was located in and imported from New York, with nearly all of the New York supply qualified since 2019.
- As above, to maintain the initially-intended balance, the same amount should be added to the maximum demand (the percentage cap) as to the eligible supply.
- If a comparable quantity to the estimated annual production of this additional supply (at an assumed 40% average capacity factor) were added to the production used in the DOER calculation, the 3.6% target cap would be boosted by 0.9% to 4.5%.

Table 2: Summary of MA-II Qualified Supply (as of October 16, 2020)

| Technology | Qualified MW, ISO-NE | Qualified MW, NY | Qualified MW, Canada | Qualified MW, Total |
|---------------------------------|----------------------|------------------|----------------------|---------------------------------|
| Hydroelectric | 228.4 | 126.4 | 0 | 354.7 |
| Hydrokinetic | 0.085 | 0 | 0 | 0.085 |
| Landfill Gas | 9.0 | 11.2 | 0 | 20.2 |
| PV | 0.1 | 0 | 0 | 0.1 |
| Wind | 6.0 | 0 | 0 | 6.0 |
| Total | 243.5 | 137.6 | 0 | 381.1 |
| Qualified since 1/1/2017 | | | | 164.6 (43% of total) |

Together, all of the above impacts could militate for an increase as high as:

Table 3: Potential MA-II Cap Increases

| Adjustment Rationale | Percentage Increase |
|--|---------------------|
| Load Decline | +0.2% |
| Eligibility Expansion | +0.8% |
| NY Imports | +0.9% |
| Maximum Potential Cumulative Adjustment | +1.9% |
| Adjusted Target Cap | +5.5% |

Implications of an Increase to MA-II Target Cap

- An increase in the MA-II target cap would provide MA-II-eligible hydro owners more confidence than current rules that they can justify investing in keeping these plants operating into the future, preserving their contribution to RPS and GHG goals.
- In seeking such an adjustment, legacy hydro generators would not be seeking an increase in compensation, so much as seeking greater confidence that the floor won't fall out from beneath them with a surplus-induced price crash.
- Importantly, increasing the cap is unlikely to increase costs to ratepayers, for several reasons:
 - o There is no evidence that there would be a flood of additional supply beyond that identified in **Figure 1**. And any increase could utilize a failsafe cap of (for example) 4.5% which if reached could trigger a revisiting of the approach.
 - o Every MWh of incremental MA-II will be that much less that has to be achieved through other means in getting to ultimate GWSA goals, because any attrition will need to be made up with new resources at a potentially higher cost (Class I ACP of \$40/MWh versus MA-II ACP escalating to \$35).
 - o Massachusetts and other New England States are coming around to the realization of the comparable value of different renewable and clean energy resources, as a head-to-head procurement of legacy and new resources is envisioned in some versions of the Forward Clean Energy Market (FCEM) and Integrated Clean Energy and Carbon Market (ICCM) proposals currently being evaluated by NESCOE, NEPOOL and ISO New England, which would allow resources providing comparable GHG benefits to be compensated comparably.¹⁶
 - o Finally, there are ancillary cost savings implicit in maintaining less intermittent hydro generation versus losing that supply and replacing it with more intermittent solar or wind generation when combined with the costs of integration through required greater operating reserves and/or energy storage.

¹⁶ See New England States [New England Energy Vision for a Clean, Affordable, and Reliable 21st Century Regional Electric Grid](#) tech conferences; [NEPOOL Future Grid Study](#) process; and ISO-NE commissions studies of FCEM/ICCM & hybrid w/carbon pricing options by The Analysis Group.