CLEAResult®

December 4, 2020

Samantha Meserve
Department of Energy Resources
100 Cambridge Street
Suite 1020
Boston, MA 02114

Dear Ms. Meserve,

The Clean Energy Markets team at CLEAResult helps renewable and clean energy project developers, owners, operators, and utilities monetize the capacity and renewable commodities from their projects. An active participant in the New England Renewable Energy Certificate ("REC") and Alternative Portfolio Standard ("APS") programs, as well as the ISO-NE Forward Capacity Market, our team has vast experience qualifying and managing the commodities for hundreds of solar, combined heat and power ("CHP"), anaerobic digesters, air source heat pumps, and energy efficiency projects in these markets since their inception. CLEAResult is responsible for the administrative and operational tasks associated with managing capacity, REC, and APS obligations, as well as monitoring market developments and rule changes. This includes managing all client inventory, sales, and NEPOOL-GIS accounts, as well as emissions and generation data calculations and entry. We implement all aspects of the sales process for our clients, from negotiations and contracting, to fulfillment of trades and collections. We actively monitor and analyze each market to guide our strategy. After representing many projects in the APS market for over ten years, we have become concerned with the recent price volatility caused by the imbalance of supply and demand. Consequently, we believe improvements can be made to the program and we respectfully submit comments as part of DOER's request for feedback from stakeholders on the 2020 APS Minimum Standard Review. We have focused on a select few questions to respond where we have the best insight and data from our experience in this program.

4. From 2015 through the present, what have been the average quarterly Alternative Energy Certificates (AEC) sale prices?

	Average Quarterly Price of MA APS Credits by Vintage								
Quarter	2015	2016	2017	2018	2019	2020	2021	2022	2023
2015 Q1	$21.00	$21.75							
2015 Q2	$21.15	$21.75							
2015 Q3	$21.51								
2015 Q4	$21.88								
2016 Q1	$21.64	$21.00							

2016 Q2	$21.50	$21.75							
2016 Q3		$21.75							
2016 Q4		$21.75							
2017 Q1		$21.72	$21.75						
2017 Q2		$21.50	$21.76	$21.99					
2017 Q3			$21.80	$22.01					
2017 Q4			$21.81	$21.99					
2018 Q1			$21.63	$21.76					
2018 Q2			$17.59	$19.02	$19.03				
2018 Q3				$16.65	$18.68	$17.58			
2018 Q4				$17.49	$18.40	$18.90			
2019 Q1				$19.30	$19.71	$19.53			
2019 Q2				$18.55	$19.38	$19.70	$20.00		
2019 Q3					$16.41	$18.71	$20.00		
2019 Q4					$13.45	$17.08	$19.86		
2020 Q1					$7.54	$11.44	$17.39	$17.00	
2020 Q2					$3.00	$6.74	$13.62	$17.00	
2020 Q3						$4.76	$10.78	$16.46	$18.06
2020 Q4						$3.79	$8.01	$16.25	$18.06

5. Is the current APS minimum standard and the annual rate of increase adequate? Please include details and any data supporting why or why not, where possible.

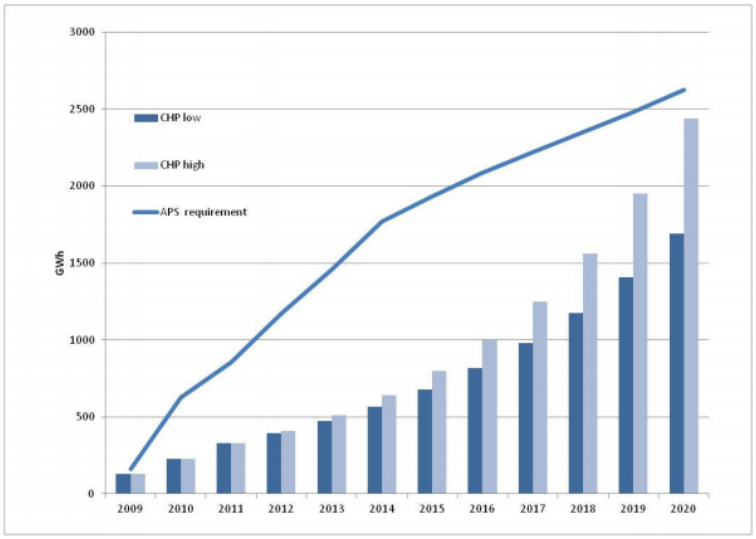
The current APS minimum standard and annual rate of increase are not adequate since demand for these credits has been imbalanced with supply for the lifetime of the program. An article from 2014, "Credit Where Credit Is Due: Renewable Thermal Energy Heats Up[1]", acknowledges the market's deficiencies in the initial years, noting "The technologies made eligible for APS credits in 2008 (mainly combined heat and power systems) had consistently failed to provide enough electricity to meet the annual compliance requirements. There were never enough credits produced to allow retail electricity suppliers to buy enough to meet the mandated minimum percentage of their total annual electricity sales."

A December 2012 report, "Heating and Cooling in the Massachusetts Alternative Portfolio Standard[2]" from the Massachusetts Clean Energy Center and Meister Consultants Group also reflected the program's supply shortages. This research led to program expansion to incorporate thermal technologies. Interestingly, the report shows that CHP alone was not projected be sufficient to meet the minimum standard, even at a high growth scenario, as shown in Figure 8 from the report. It states, "The APS is currently undersubscribed, creating a high dependency on Alternative Compliance Payments, which is not desirable. This analysis shows that there is room to include additional technologies to qualify under the minimum standard of the APS, though depending upon the technologies incorporated – and the growth rate of those technologies – the APS market will likely become quickly constrained, potentially leading to a crash in AEC prices and a halt to further development….However, incorporating multiple, new

[1] https://www.mintz.com/newsletter/2014/Advisories/4269-0914-NAT-ET/4269-0914-NAT-ET.pdf
[2] https://www.mass.gov/doc/heating-and-cooling-in-aps/download

useful thermal technologies without crashing AEC prices, would likely require APS policy adjustments to either the minimum standard (e.g. increasing the minimum standard) or the eligibility term of systems (e.g. limiting the term of eligibility of any particular installed system)…However, in only one of the six modeled scenario combinations did the current APS minimum standard allow for enough room to accommodate addition of new technologies…In all other scenarios, the preliminary conclusions are that the current minimum standard will be insufficient in accommodating new technologies in the near term." It should not be surprising that, with the addition of the new technologies, the market became flooded and the report's prediction of a crash in AEC prices has come to fruition.

Figure 8 – Projected CHP growth compared to APS minimum standard



The Massachusetts 2017 Renewable Portfolio Standard (RPS) and Alternative Portfolio Standard (APS) Annual Compliance Report[3] also noted the historic supply shortages, reflected by the significant use of Alternative Compliance Payments to comply with program requirements. It also speaks to the influx of new supply where, "The number of Alternative Energy Certificates (AECs) increased by 113% from 2016, primarily due to the issuance of back-dated AECs (to January 1, 2015) with the adoption of the revised APS regulations in December." The Daymark Report also shows an oversupplied market in most of its scenarios.

The AEC market was historically undersupplied, so it made sense to apply an adjustment to the eligible technologies to increase supply. However, this overcorrected, resulting in the market becoming oversupplied and causing prices to drastically decline. Neither scenario is ideal for current or future eligible projects and has created volatility in pricing. Another supply side correction is not advisable. As suggested in the 2012 report, an increase in the minimum standard is necessary to bring the market into balance. CLEAResult recommends changing the minimum standard to a floating standard that can be designed to automatically increase as a set percentage of the preceding year's generation. Alternatively, DOER could model a new minimum standard based on the formula to determine the compliance obligation for the Solar Carve-Out. This calculation is done every year and incorporates the prior year's estimated generation, volume of the obligation met through Alternative Compliance Payments, and the volume of banked credits, rather than just a set percentage to increase over time. This would automatically correct for oversupply or deficiencies as well as adjust for recent market conditions.

7. Are there modifications to the APS program that could be made to reduce the volatility of the APS market?

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[3] https://www.mass.gov/doc/rps-aps-annual-report-2017/download

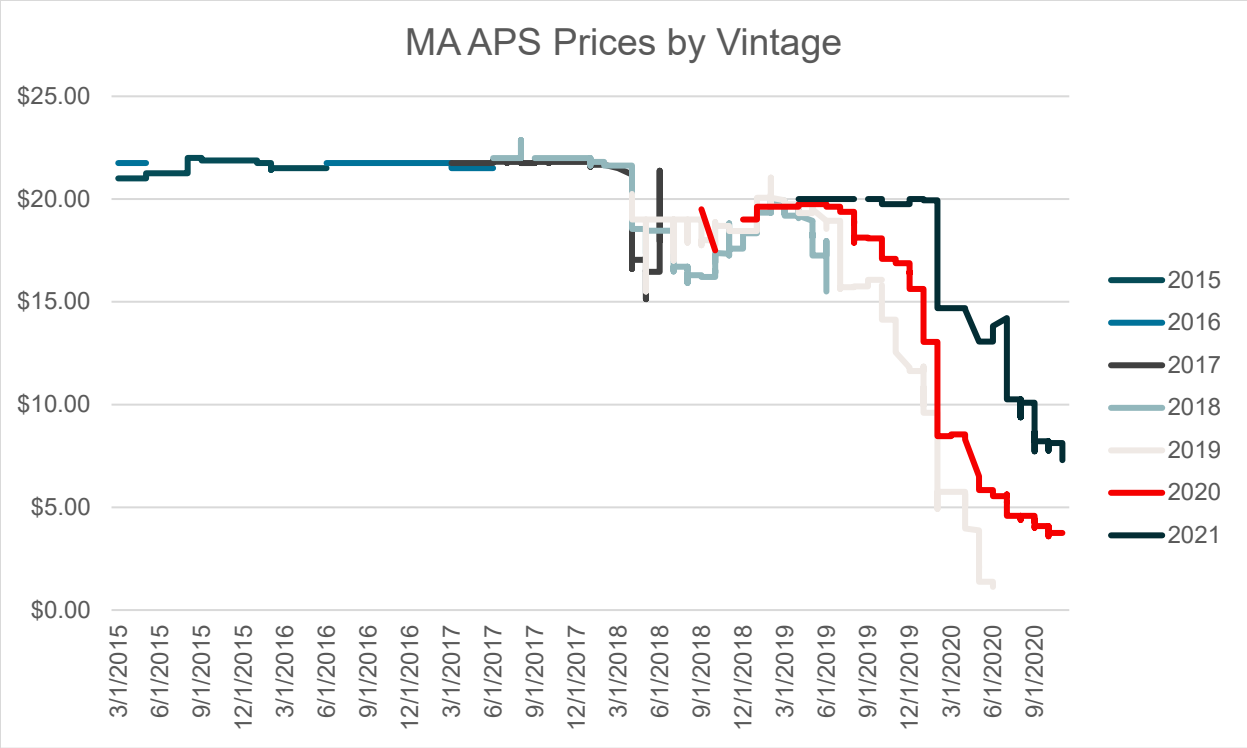
Yes. The minimum standard should be revised per our response to question 5. Although we do not want to set a standard that creates unnecessary reliance on Alternative Compliance Payments in an undersupply scenario, the current low prices and volatility caused by the oversupply are also not ideal.

The best strategy to mitigate volatility is to change the volume of credits demanded. The Daymark Report suggested mitigating the volume of credits supplied by adding or removing eligible technologies or changing multipliers including issuing fractional shares of credits, but we believe this would just create a new source of uncertainty in the volume of credits projects could receive in the future and is not advisable.

12. Is there any additional information you believe DOER should consider in its 2020 APS Minimum Standard Review?

The Daymark Report has several flaws in its assessment of the beneficial impact of CHP. Some of the data used also seems inconsistent with DOER data. Page 25 says “Over the last three years, DOER has seen an average increase in natural gas CHP capacity of 45 MW per year,” yet DOER’s own APS Qualified Alternative Energy Units list shows new CHP totaling 84 MW with an effective date in 2017, 8 MW in 2018, and 11 MW in 2019, an average increase of 34 MW during the last three years. It is not clear what data was used to determine the 45 MW per year because that does not seem consistent with DOER’s data. The report also states that modeling was conducted at 100 kW, 633 kW, and 3,326 kW sizes, per page 44 and Table 17: Combined Heat & Power System Cost Assumptions. However, page 48 shows Table 21: 300 kW CHP system. It is unclear if 100 kW or 300 kW were used in the assessment and should be reviewed to ensure modeled systems are representative of the true project mix. The other two CHP sizes analyzed in Tables 22 and 23 match page 44. We also reject the idea that “CHP provides no emissions benefits” on page 6. We recognize that CHP uses fossil fuels and emits greenhouse gases. However, it is highly efficient and reduces both the carbon footprint and fuel use of a facility, when compared with heat from a traditional boiler and electricity from the grid. Since the facility produces electricity on site, CHP, like other distributed generation projects, also avoids transmission and distribution losses. Less fuel output is burned to produce both heat and electricity, therefore reducing greenhouse gas emissions, including CO_2 and other pollutants like NO_X and SO_2.

We also question the AEC pricing assumption as well as the overall market assessment of the Daymark Report. Page 6 states, “If business as usual continues, supply will quickly out pace demand,” and page 5 gives an assumption of $15 per AEC assumption used in the analysis. These statements are out of date since supply has been outpacing demand since April 2018 and $15 has not reflected a current market price in over a year or longer, depending on the vintage of the credit. It is important to consider a more detailed price assessment and not just the quarterly average prices as well. The graph below shows historic pricing as high and flat during the period of undersupply. The first fluctuations begin in April 2018, coincident with the opening of the Q4 2017 AEC trading period and start of the oversupply period. Prices become more volatile and decline over time after this date. The market needs adjustments to its demand to reduce volatility and bring about price certainty. Current pricing threatens development of new projects of all technology types and impacts existing projects that depend on these revenues as they continue to operate their systems, so changes must be made to adjust demand.



After review of the Daymark Report and based on our own experience in the APS market, CLEAResult supports revisions to the calculation for the APS Minimum Standard. We believe there are some flaws in the program design that have resulted in supply and demand imbalances, causing price volatility, and creating uncertainty for project developers. Rather than continue to adjust supply by revising eligibilities or adding further uncertainty with multipliers and fractional credits, we believe the best strategy to mitigate these issues is to adjust the APS minimum standard requirement. This could be accomplished as either a percentage increase on prior year supply instead of load or factoring in other market conditions into the equation, similar to the Solar Carve Out minimum standard.

Sincerely,

Lisa Barrett

Lisa Barrett

Program Manager

Clean Energy Markets