



"QUALITY SECOND TO NONE"

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2020 APS Minimum Standard Review

December 1, 2020

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Living in the Marshfield I am highly attuned to the threats posed by global warming. I simply cannot overlook the increased incidence of significant storms, invasive insects, and seasonal shift. Accordingly, I staunchly support the men and women on Beacon Hill who in 2008 signed into law the Global Warming Solutions Act thereby identifying Massachusetts as a nationwide. However, the goals set forth in this legislation present a challenge as we must make significant change to how we condition our buildings and transport our goods (and selves). I thus must extend my appreciation to the DOER as you are tasked with establishing the regulatory mechanisms that will create the change. Thank you also for recognizing the expectation set forth in 225 CMR 16.07(3) of the Alternative Portfolio Standard and engaging Daymark Energy Consultants. I am confident that this initiative will improve the APS and by consequence reduce the carbon emissions related to our heating sector.

I would however like to call the DOER's attention to a pair of issues that I found in my read of the Daymark report. It is my opinion that these mistakes merit consideration because they fundamentally change one of the overarching findings of the report. Daymark suggests in table 1 on page 5 that pellet boilers would earn \$1,900 worth of AEC's. When I divide this income by the cost of AECs (\$15) and assume a decade's earning it yields an annual consumption of only 3.1 tons per year. In my experience, pellet stoves (supplemental space



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heaters) commonly burn 3-5 tons per year. However, pellet boilers (which also typically heat a house's potable water) will consume significantly more. If I use a more appropriate annual fuel consumption, the system would have instead earned more than \$4,000 in AECs. This brings me to a further note.... Daymark chose to limit modern wood heating technologies AEC incomes to a decade to match those able to capture pre-minted AECs. However, by virtue of their "Intermediate" size pellet boilers are eligible to earn for AECs for their entire operational lifetime. A more appropriate comparison of ratepayer investment should award the pellet boiler 25 years of AECs...making the return more like \$10,000.

As a company listed on the DOER's Biomass Suppliers List and an owner of a pair of Froling 150Kw boilers I was disappointed to see that Daymark failed to consider dried wood chips in their report. I am puzzled by this omission as it appears to contradict the DOER support of our industry as demonstrated with the 2018 renewable fuel infrastructure grants. Perhaps it was an accidental oversight, but I hope the DOER can appreciate that not only are dried wood chips a product of the Commonwealth but their combustion, especially in systems larger than 100kW more cost effective than pellet systems.

Please find below my response to Eric Seltzer's November 5th invitation to comment on Daymark Energy Consultants October report.

1. What are the benefits of the APS program to ratepayers, including but not limited to economic, environmental, and societal benefits?

I wish to thank the DOER for your understanding of the carbon accounting related to wood heating. As demonstrated by the 2010 Manomet report this is a matter of considerable importance for the DOER. However, it was my understanding that 100% of the woody fuel involved in the APS (pellet and chip feedstock) has been characterized within the APS as "Non-Forest Derived Residues" (mill waste, utility derived, urban green waste). As such, these fuels were made available as a result of a cultural practice and needed to be reduced/removed from their place of harvest. Such feedstock is no longer (per the authors' acknowledgement)



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subject to the carbon accounting assessments within the Manomet study. We thus must look elsewhere to better understand the carbon emission dynamics of involving this feedstock.

Consequently, preordained fuel has several important characteristics worth noting:

1. This wood is a waste product and as such must be disposed of at a cost.
 - a. Upcycling this material in the APS reduces/eliminates this cost.
2. This material must be chipped prior to disposal
 - a. Waste wood chips have a very short half-life (burning = rotting timeframes)
3. Chipped material and non-forest derived wood waste was not considered by the Manomet study in their carbon modeling
4. Biological decomposition (rotting) wood releases exactly the same CO₂ and heat as thermal decomposition (burning) as they break the same bonds.
5. Fuel-related carbon accounting seldom involves a lifecycle analysis.
 - a. Extraction, refining and transportation of fossil fuels are not accounted for in typical conventional fuel carbon assessments. Using this model, wood fuel must be deemed carbon-neutral.

I believe it of further value to point out that unlike the conventional fuel industry, the wood fuel industry and its entire carbon cycle is contained within the Commonwealth. This truth also reflects that all the employment associated with supporting the modern wood heating industry is local to the Commonwealth. With the notable exception of Solar Hot Water, modern wood heating is the most grid-disconnected technology reflected within the APS. As such we are not subject to remote generation and their fractional renewability (ISONE suggests a maximum of 20% renewable generation – including biomass power).

3. Do you believe the APS program should prioritize technologies which provide the most benefits, such as greatest greenhouse gas emissions reductions?



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As a business owner I can appreciate that investments must be matched against their cost and that the best ROI should be supported. I therefore fully support the notion that the APS program should prioritize technologies that provide the most environmental & cultural benefits per ratepayer investment. However, as outlined in my earlier comments, I am deeply concerned that Day mark’s assessment inaccurately described the GHG benefits and ROI associated with modern wood heating. In particular, I believe it was lost on Daymark with modern wood heating systems fueled by unavoidably available feedstock (residues). I therefore strongly disagree with Day mark’s statement that “small renewable thermal systems achieve emissions reductions for the lowest cost compared to other renewable thermal and CHP systems.” Without question, renewably fueled modern wood heating systems should have been added to this list of favored technologies.

9. How could the APS program be improved to better influence residential or commercial purchasing behaviors?

As a listed company on the DOER’s biomass suppliers list, I am grateful for all that the Commonwealth has done to facilitate responsible wood heating. However, will simply never support this technology; choosing instead to conflate modern wood heating with utility-scale biomass power stations. That said I greatly appreciate the DOER’s recognition that modern wood heating technologies are merited for their use of local waste fuels, subsequent reduction in fossil fuel use, and remarkable carbon impacts. However, despite the promise of this technology the modern wood heating industry continues to be doggedly constrained by public misinformation. I would thus request that the DOER, perhaps in concert with the DCR, Mass Wildlife, and the Umass CEC establish a permanent position tasked with outreach and education.

Knowing full well that new heating systems often require prospective owners to borrow money, I would like to recommend that the DOER institute a minimum (basement) AEC value. Using the success of the SREC and SREC II programs as examples, I believe this programmatic



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endorsement and its subsequent reduction in AEC price volatility will allow lenders more comfort as they assess the risk of the loan. I recommend a minimum AEC value of \$15 a price that should be easily eclipsed should the DOER choose to reduce the AEC earning eligibility of gas fired CHP limiting the cost to ratepayers of this facilitation measure.

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

I support Day mark's assertion that the primary causal factor behind the collapse of AEC valuation is an oversupply in the market, largely attributable to gas-fired CHP systems. Curtailing this eligibility (perhaps via a fractional multiplier) will establish significant market space to allow AEC pricing to recover to a more meaningful level. That said, I think there is considerable merit in adding language associated with 225 CMR 21.00 regarding market oversupply. I humbly recommend adding language similar to the following:

If the Market Supply is greater than 100% in any Compliance Year before 2030, the APS Minimum Standard shall increase by 0.5% the following Compliance Year. If the Market Supply is greater than 120% in any Compliance Year before 2030, the CPS Minimum Standard shall increase by 0.75% the following Compliance Year. If the Department determines that an APS Minimum Standard adjustment is necessary, the Department shall provide public notice.