BTEC
Biomass Thermal Energy Council

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June 30, 2016

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

ATTN: Samantha Meserve

RE: BTEC Comments on the draft Massachusetts APS regulations for renewable heating and cooling

Dear Ms. Meserve,

The Biomass Thermal Energy Council (BTEC) appreciates the opportunity to share our perspective on the Massachusetts Alternative Portfolio Standard's Renewable Heating and Cooling Draft Regulations. BTEC is an association of biomass fuel producers, appliance manufacturers and distributors, supply chain companies and non-profit organizations that view biomass thermal energy as a renewable, responsible, clean and energy-efficient pathway to meeting America's energy needs.

Comments by the Biomass Thermal Energy Council

a.) In section 8, "Qualifying an APS Renewable Thermal Generation Unit (RTGU) using Eligible Biomass Woody Fuel for Installation Without Thermal Storage," (page 8) BTEC respectfully requests that the number 20% under Section 8. A. be changed to 30%, as this is a standard value for all US and European boiler testing. Further, BTEC respectfully requests that it be clarified that thermal storage as discussed in the rules only applies to hydronic systems, and specifically does not apply to steam systems. In addition, BTEC recommends that MA DOER avoid a "one size fits all" thermal storage sizing policy, and any thermal storage sizing policies be based on lead boiler size (for multiple boiler systems) rather than the total installed boiler capacity. Hydronic system design, and thermal storage sizing approaches should allow for a reasonable flexibility based on manufacturer design differences and recommendations. This is standard regulatory practice reflected, for example, in the U.S. EPA Boiler MACT rule among other examples.

Moisture Content and Fuel Quality Requirements

In addition, section 8 contains a table of standards for eligible fuels. A general comment is that it is most appropriate for DOER to focus on ensuring that emissions from biomass equipment are low, and that efficient conversion technologies are used. With the emissions requirements of <0.08 lb/mmBtu(input) for pellets and <0.10 lb/mmBtu(input) for chips, DOER achieves their goal of encouraging clean and efficient thermal biomass technologies. BTEC respectfully requests that DOER require fuel to meet manufacturer requirements for their specific biomass units, which are then tested to show compliance with emission requirements. Should DOER insist that there be requirements for moisture content, ash, calorific value, and conversion efficiency, then the following changes are recommended.

a.) The pellet standard for moisture is listed as 6%, and the guideline states that compliance with the DOER pellet standard "can be demonstrated through certification against standards such as PFI Premium." However, PFI Premium requires pellet moisture to be ≤8%. Therefore, even PFI Premium certification would not be enough to meet the DOER standard.

b.) The requirement for wood chips is that they be less than 30% moisture (wb). It is not understood why this value is identified. If the biomass system meets the emission requirements, then why is the moisture content important? The fact is that emissions from green chips at 40-50% moisture are often lower than emissions from lower moisture content systems, and green chip systems do not have an issue meeting the emissions requirements. Additionally, active offsite drying of fuel, which is typically needed to reach the 30% moisture value, actually results in greater total life cycle emissions and energy use. If a value is to be identified, it is recommended that "less than or equal to 50% moisture content (wb)" be used, along with a minimum efficiency value of 65% HHV. This lower efficiency minimum will allow for wood systems to offset fossil fuel used at higher pressure steam applications which have necessarily higher flue gas temperatures (for fossil fuel or biomass systems), and thus lower HHV efficiencies (true for both fossil fue or biomass systems). Please note that, as is shown by well documented testing, LHV efficiencies of green chip systems are identical to those of systems using lower moisture content fuel.

i. This specific moisture content restriction on wood chip fuels used is not based on any known complete data set for commercial biomass systems, and specifically excludes the most efficient form of the biomass resource, green chips, which have the lowest carbon footprint, lowest total emissions, and highest overall system efficiency of any bulk biomass fuel. Further, due to the economic advantages of green chips, these projects are likely to show greater benefit in many cases than projects with dry chips, and removing this fuel from the incentive programs removes impetus for biomass system owners to install costly backend control equipment on wood chip systems. Importantly, removing this residual from consideration penalizes the existing forest products industry in MA, particularly smaller producers, at a time when economic times are difficult.

Particulate matter/emissions requirements

a.) Given the lack of a recognized American standard for the measurement of PM 2.5 for biomass systems, BTEC recommends that MA DOER accept EN 303-5 test results which demonstrate a **total** PM measurement of less than 0.08 lb/MMBtu for pellet systems or 0.10 lb/MMBtu for chip systems. This would be simpler and less error-prone than requiring measurements for dust, volatile organic compounds and fuel water, energy, and hydrogen content (as specified in footnote 3 on page 7 of the "Guideline on Biomass, Biogas, and Biofuels"). It is impossible for PM 2.5 measurements to be higher than total PM measurements, so for systems certified to EN 303-5 total PM measurements should be sufficient.

b.) Table 1. in section 5. “System Performance” does not specify particulate or carbon monoxide emissions for cordwood systems (this section is noted as “Reserved”). BTEC supports the inclusion of cordwood systems in the APS and urges MA DOER to set emissions requirements appropriate to a range of efficient cordwood systems including those which are automatically fed.

c.) MA DOER may receive advice to reduce the allowable $PM_{2.5}$ limit to 0.03 lb/MMBTu for sensitive sites. However, requiring correct stack design which meets EPA screening principles will have a far larger influence on overall PM levels in the immediate vicinity of those sites than imposing a 0.03 lb/MMBTu limit on those sites. Because of this, BTEC recommends that $PM_{2.5}$ limits for sensitive site installations be kept at 0.08 or 0.1 lb/MMBtu.

Fuel sourcing (certification)

a.) In section 3. “Biomass Sustainability,” the discussion of the mass balance approach utilized is unclear (p. 3-4). Specifically, if wood pellets or other fuels are sourced from 80% non-forest derived woody biomass and 20% forest-derived woody biomass, it is unclear what certification of sustainability is required.

Other comments

a.) In section 5, “System Performance” in Table 2 “Performance Requirements,” the first cell of the second row, entitled “StaRTGUp” (should read “Startup”) specifies automatic/electric ignition for biomass units of all sizes (p. 6). BTEC recommends a threshold above which automatic ignition is not required. This is because for these larger systems, emissions and efficiency performance can degrade upon shutting off and restarting, and these systems are designed to require a minimum of shutoffs and restarts.

b.) In section 5, “System Performance” in Table 2 “Performance Requirements,” BTEC recommends that the requirement for ASME certification of the pressurized portion of the system be removed (p. 6). In lieu of this, MA DOER should simply require boilers to meet the requirements of the Massachusetts Department of Public Safety in this respect. Regulations restricting boilers to only ASME certification have been amended to include European certifications in New Hampshire and Vermont, and Massachusetts may also amend its regulations to reflect this in the future.

Errata:

1. In section 3. “Biomass Sustainability,” part A “Licensed Forester Attestation,” “Chain of custody is documented through bills of **laden**” should read “Chain of custody is documented through bills of **lading**” (p. 3).
2. In section 5, “System Performance” in Table 2 “Performance Requirements,” the first cell of the second row, entitled “**StaRTGUp**” should read “**Startup**” (p. 6).
3. In section 8. “Qualifying an APS Renewable Thermal Generation Unit (RTGU) using Eligible Biomass Woody Fuel for Installation Without Thermal Storage,” subsection B) currently reads “Maintaining

emissions rate of less than 0.08 lb $PM_{2.5}$/$MMBtu_{input}$ for wood pellets or **0.01** lb $PM_{2.5}$/$MMBtu_{input}$ for wood chips at the system's minimum tested capacity" but should read "Maintaining emissions rate of less than 0.08 lb $PM_{2.5}$/$MMBtu_{input}$ for wood pellets or **0.10** lb $PM_{2.5}$/$MMBtu_{input}$ for wood chips at the system's minimum tested capacity"

Once again, BTEC wishes to express its support of the Alternative Portfolio Standard Renewable Heating and Cooling Draft Regulations, and we thank the Department of Energy Resources for the opportunity to submit comments. The residential and commercial use of biomass for heating continues to grow across the country, and we hope that these new regulations will help to strengthen that trend. Should you have any questions or comments, please do not hesitate to contact me.

Sincerely,

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