



June 30, 2016

Massachusetts Department of Energy Resources
Attn: Samantha Meserve
100 Cambridge St., Suite 1020
Boston, MA 02114

RE: Comments from New England Wood Pellet LLC on the MA APS Renewable Heating and Cooling Draft Regulations

I am submitting these comments on behalf of New England Wood Pellet LLC, a manufacturer of wood pellet fuels headquartered in Jaffrey NH, with manufacturing plants in Jaffrey, Schuyler NY, Deposit NY, and Youngsville PA.

New England Wood Pellet is the largest manufacturer of wood pellet fuel in the northeast U.S. and ships approximately 12,000 tons per year for use in bulk central heating installations such as residential, commercial and institutional wood pellet boilers, the vast majority of it from the Jaffrey NH plant, which has an annual production capacity of about 90,000 tons. In 2015-2016, approximately 2,500-3,000 tons of this amount was utilized by Massachusetts wood pellet boiler installations.

Our comments are organized as follows:

- I) General comments on draft rulemaking
- II) Specific comments on draft regulation
- III) Specific comments on "Guideline on Biomass, Biogas and Biofuels"
- IV) Specific comments on "Guideline on Metering and Calculations – Parts 1 and 2"

I) General comments on draft rulemaking

We commend DOER staff for the considerable effort undertaken in drafting these regulations and the guideline documents. It is a complex regulatory undertaking to implement legislative intent in a clear and comprehensible manner that does not create unnecessary costs and burdens on potential thermal APS qualification. That said, the process by which these draft regulations were developed could have benefited greatly from greater stakeholder involvement and interaction with DOER staff. Aside from two stakeholder meetings held in late 2014, there has been virtually no opportunity for stakeholder input. Since the draft regulation was released, DOER has been unwilling to entertain questions seeking clarification on the draft regulation and guidelines documents, either at the two public hearings held or in a subsequent attempt to follow up with DOER staff. Unfortunately this leaves respondents unable to comment with full comprehension of DOER's intentions and/or rationale for the language and guidelines as drafted.

II) Specific comments on draft regulation

225 CMR 16.05(4)(d)(i):

1) Please define the term “clean wood”

2) This section requires that Eligible Woody Biomass Fuel “shall meet fuel quality specifications with regards to moisture, ash and chlorine content” but no specification is given for acceptable chlorine content in APS Guideline on Biomass, Liquid Biofuels and Biogas. We suggest the maximum permissible chlorine content be 300 parts per million, which is the chlorine specification in the Pellet Fuels Institute’s premium grade standard.

225 CMR 16.05(4)(d)(iii):

1) Whether or not a biomass unit can meet the requirement that “APS Renewable Thermal Generation Units shall reduce life-cycle greenhouse gas emissions by at least 50% compared to a high efficiency unit utilizing the fuel that is being displaced” is entirely dependent on how MA DOER calculates life cycle GHG emissions for the biomass fuel being used, and the fossil fuel being displaced. It is imperative that calculations of LCA’s for biomass fuels and fossil fuels be based on the same baseline assumptions. For example, if the LCA for wood pellet fuel takes into account diesel fuel used in harvest and transport of wood feedstocks to a pellet manufacturing plant, then the LCA for the heating oil or natural gas it displaces must also take into account the fossil fuel used in extraction and transport of crude oil or natural gas to a refining location. In the case of natural gas, it is imperative that the LCA take in to account new data showing significant leakage of methane during extraction and pipeline transport. It is essential that the process of developing LCA’s for biomass fuels and displaced fossil fuels be an open and transparent process with opportunity for stakeholder comment.

225 CMR 16.05(4)(d)(iv):

The term “commercially feasible technologies” is extremely important with respect to performance requirements that may be imposed on APS Renewable Thermal Generation Units. If performance requirements become too onerous and expensive to implement, they may have the effect of discouraging any participation by a qualified renewable thermal technology in the APS thermal incentive, and thus rendering it “commercially infeasible”. This may be especially true with biomass systems as they do not qualify for an AEC multiplier that is available to “non-emitting” technologies. The multiplier can be used by DOER to help other technologies become commercially feasible by enhancing the value of the incentive. We recommend that you include a definition of “commercially feasible technology” to be clear that the technical requirements cannot impose such significant additional costs that the added costs exceed the value of the incentive benefit of AEC qualification.

III) Specific comments on “Guideline on Biomass, Biogas and Biofuels”

3. Biomass Sustainability (pp. 3-4)

Please provide greater guidance on requirement that “fuel suppliers document chain of custody from the forest to the retail supplier and on to the end customer.” What degree of documentation are you looking for, and to whom and when is documentation submitted?

Mass Balance Approach (MBA) – This section does not provide clear guidance as to intent and implementation. In the case of a wood pellet fuel manufacturer, it is very important that the guideline provide clear guidance on how a manufacturer can provide assurance of sustainability of fuel sold through the application of the MBA provision.

As an example, New England Wood Pellet uses a very large percentage of primary and secondary wood product manufacturing residues in its pellet feedstock (from 80-100% depending on time of year at Jaffrey NH facility). These are chips, shavings, grindings and sawdust from companies that manufacture lumber, furniture, flooring, cabinetry and millwork. These non-forest residues are exempt from any documentation of sustainability, per language in this section: “Non-forest derived woody biomass (as defined in 225 CMR 16.00) is considered to meet the sustainability requirements, so for these resources no further sustainability demonstration is required.” The balance of our feedstock need is comprised of bark-on and bark-free roundwood bole chips derived from forestry thinning operations, which would be subject to sustainability documentation under this section. New England Wood Pellet will be pleased to provide annual documentation of all sources of feedstock to MA DOER. The proportional volume of total annual production that is derived from exempt non-forest residues is approximately 72,000-90,000 tons per year. This far exceeds the quantity of bulk pellet fuel we currently ship to Massachusetts facilities (about 2,500-3,000 tons per year), and it is highly unlikely that so much new bulk demand for pellets from APS qualified units will ever come close to approaching this quantity. Under the Mass Balance Approach, we contend that our bole chip suppliers should not be required to document sustainability and chain of custody because this feedstock represents such a small percentage of our blended wood resources. It is not that they cannot or will not comply, it just seems like an unnecessary exercise for our bole chips suppliers when the vast majority of our feedstock blend is exempt. We are looking for clarification and amplification on how the Mass Balance Approach will apply to sustainability documentation for manufacturers of wood pellet fuel with blended feedstocks from multiple sources, such as New England Wood Pellet.

5. System Performance (pp. 5-6)

On page 6, table 2, there are requirements for biomass systems. One requirement is that start up is by an automatic (i.e. electric ignition) system. This requirement is acceptable for smaller units, however, this does not make sense for larger units used in large district energy systems or for serving large process loads as industrial facilities. For large systems, the fireboxes are large, and the systems are designed to run constantly at high percentages of their rated capacity. These systems are designed to specifically keep owners from turning them on and off, and cycling these systems in this way would actually increase emissions. It is recommended that this requirement either have a size cutoff (e.g. 1 MMBTU) or that owners be directed to follow manufacturer operational instructions that were used when the system was tested to show compliance with emission requirements. This requirement, as written now, also seems to be in conflict with the modulation/shut off item, which requires that the system “modulate to lower output **and/or** turn itself off.....”.

Table 2 “Performance Requirements,” we recommend that the requirement for ASME certification of the pressurized portion of the system be removed. In lieu of this, MA DOER should simply require boilers to meet the then current requirements of the Massachusetts Department of Public Safety. 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.

6. Qualifying a Central Wood Heating System (p. 7)

On page 7, item 6B, the requirement for EPA method testing leads to tests that require significantly larger stack diameters than are used for boilers in the 1-3 mmBtu/hr input range. Is there DOER guidance on appropriate methods to compensate for this?

7. Thermal Storage Requirements (pp. 7-8)

The current design of the regulations tends towards a default assumption that all biomass hydronic systems would benefit from thermal storage. In reality a number of biomass boilers currently being produced are designed to operate within MA DOER's emissions and efficiency constraints without any thermal storage.

8. Qualifying an APS Renewable Thermal Generation Unit (RTGU) using Eligible Biomass Woody Fuel for Installation Without Thermal Storage (p. 8)

Instead of requiring thermal storage as a default for biomass thermal systems, New England Wood Pellet recommends that the requirements of section 8 be applied to all biomass boiler systems with the following changes (proposed changes in **bold**):

A) Modulating below **30%** of maximum capacity

B) Maintaining emissions rate of less than 0.08 lb PM2.5/MMBtu input for wood pellets or **0.10 lb** PM2.5/MMBtu input for wood chips at the system's minimum tested capacity

C) Maintaining thermal efficiency (HHV) of $\geq 85\%$ for wood pellets or \geq **65%** for wood chips at the system's minimum tested capacity.

Our proposed 30% modulation limit is based on the fact that while some systems are able to modulate to 20% of maximum capacity, in practice, running boilers at this modulation level is very rarely required and not recommended.

"0.01 lb PM2.5/MMBtu input for wood chips" is unrealistic and inconsistent with other sections of the Guideline which specify 0.10 lb PM2.5/MMBtu input for such systems. In fact, we think this was probably a typo.

A 65% thermal efficiency level for wood chip systems is a realistic technically feasible efficiency level for most steam-based biomass systems, many of which would otherwise be arbitrarily and unnecessarily excluded from eligibility from this program under the current proposed 75% efficiency threshold.

A 65% thermal efficiency based on HHV is the minimum efficiency that qualifies for an investment tax credit in the Biomass Thermal Utilization Act of 2015 (S. 727 and H.R. 1145, currently under consideration by the 114th Congress). This efficiency level was thoroughly vetted by a broad range of stakeholders in the development of this legislation.

New England Wood Pellet recommends the removal of the thermal storage requirement as it is unnecessary to achieving program goals while adding cost burdens to applicants. However, if MA DOER should retain that requirement, Table 2. "Performance Requirements" in section 5 "System

Performance,” should be modified so that the Thermal Storage requirement reads “Required for hydronic systems only unless the manufacturer has submitted independent third party test results documenting that the heating system meets MassCEC’s requirements (see below for more information).

In addition, New England Wood Pellet recommends that MA DOER avoid a “one size fits all” thermal storage sizing policy, which is not shown by data to correlate to improved emissions performance, and thermal storage sizing policies be based on lead boiler size (for multiple boiler system installations) rather than the total installed boiler capacity. 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.

Finally, if the thermal storage requirement is maintained, the regulations should specify whether pipe capacity and system water are included in thermal storage capacity calculations or whether those calculations refer to tank capacity only.

Particulate matter/emissions requirements

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.

Others have suggested that DOER reduce the allowable PM2.5 limit for any qualifying biomass system to 0.03 lb/MMBTu, the current threshold required for “sensitive sites”. However, requiring correct stack design that 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, which in many cases will necessitate expensive back end emission controls that are not commercially feasible at this time, especially for smaller systems. Because of this, we recommend that PM2.5 limits be kept at 0.08 or 0.1 lb/MMBTu.

9. Biomass Fuel Quality (p. 8)

On Page 8, there are 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. New England Wood Pellet 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 $\leq 8\%$. 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. 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 fuel 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.

Finally, as stated previously, the regulation requires a chlorine standard, but no such standard is specified in this section.

IV) Specific comments on “Guideline on Metering and Calculations – Parts 1 and 2”

- 1. On pages 8 and 9 there is discussion of items that could pertain to district energy systems, and clarification is requested. Regarding number 10) General Guidance for Locating BTU Meters, 10) (C) states that when the RTGU is located more than 500 ft from the point of connection with a thermal load, the Btu meter(s) must be located within 30 ft from the point of connection to the thermal load. Could it be clarified as to exactly what scenario this is covering, and that the connection point for a district heating system is in the central plant? It is important to note that either a fossil fuel system or RTGU system would see the same losses in the district heating lines, and that the connection point for the RTGU is in the central plant. Regarding the discussion of the same item in 6) Parasitic Energy and the note under number 10), these items identify that pumping energy to transfer heat between the central RTGU and each remote building should be counted as parasitic energy or grid energy. Could it be clarified as to what scenario this would be applied? Please remember that a fossil system serving this same district energy system has the same pumping requirements, and that the RTGU is simply supplying heat to this same system.

2. On page 12, it states that Section 3 of the Guideline on Biomass identifies a method and protocol for fuel metering. However, no method or protocol for fuel metering exists here, unless it is implied that the method is to sum the bills of lading for fuel deliveries for any time period. If this is not what was intended by DOER, please clarify the methods for fuel metering, specifically for pellets and chips. The answer to this question is specifically needed for implementation of the metering of “intermediate” systems.
3. On page 12, the DAS is required to provide “remote electronic access” to the metered data, however, this requirement is unclear as to the definition of “remote.” New England Wood Pellet believes the spirit of this requirement is that the data be easily exportable to a PC or other data analysis device, as opposed to a meter which simply reports totals on a small LCD screen, requiring that the Meter Reader copy down the numbers using pencil and paper. We strongly agree that the metered data should be easy to export to a CSV or similar file on a PC using an electronic communication link, however, we caution that this should not be construed as a requirement to have the metering system be connected to the Internet or “the Cloud.” Many facilities have stringent IT policies which would make it difficult to have an Internet-connected meter. Furthermore, an Internet connection is unnecessary for AEC purposes because the metered data will not be used in real time for building monitoring, but rather, will be used by the Meter Reader to periodically verify net useful heat.
4. On page 12, it states that meters must be “revenue grade accuracy,” however, this is not defined anywhere in the guidelines or draft rules. The guideline goes on to specify accuracies for each type of metering technology. It appears that the term “revenue grade” by itself is a meaningless term which has no regulatory effect in this case. New England Wood Pellet recommends removing the term “revenue grade” from the regulations and/or guidelines, or defining it.
5. In Table 3, it should not be necessary to specify or exclude specific flow metering technologies, provided that the overall “Btu Meter Field Accuracy” is maintained as specified. There are other flow metering technologies that provide similar accuracies to the technologies specified, and which are significantly less expensive. Also, there are certain situations where a mag meter has issues due to water quality, and there are sometimes issues with proper installation of acoustic meters. The accuracy of Btu metering is certainly impacted by the accuracy of the flow meter, but this is not the most beneficial place to spend additional dollars on Btu metering. The accuracy of the temperature sensors, recording equipment, and delta Ts of the system are much larger drivers of system accuracy.

On behalf of New England Wood Pellet, thank you for the opportunity to submit these comments. I would be pleased to discuss them further with DOER staff.

Sincerely,



Charles R. Niebling
Consultant to New England Wood Pellet LLC
niebling@rentk.com, 603-965-5434