



PFPI Comments on DOER's latest changes to APS bioenergy regulations

December 1, 2017

Michael Judge
Director, Renewables Division
Massachusetts Department of Energy Resources
100 Cambridge Street, Suite 1020
Boston, MA 02114

Submitted via email to thermal.doer@state.ma.us

Re: Comments on Final Draft Alternative Portfolio Standard Regulations (225 CMR 16.00) and Related Guidelines

Dear Mr. Judge,

The Partnership for Policy Integrity (PFPI) is a non-profit organization based in Pelham, Massachusetts that uses science, legal action, and strategic communications to promote sound energy policy and to help citizens enact science-based policies that protect air, water, ecosystems, and the climate.

PFPI has been actively engaged throughout the rule-making process implementing expansion of the MA Alternate Energy Portfolio Standard (APS) by the State Legislature in 2014 and 2016. PFPI participated in pre-rulemaking stakeholder meetings and submitted written comments to DOER in 2014 and 2015. Together with a broad range of local, state, and national organizations, PFPI submitted detailed written comments on previous drafts of the regulations and associated guidelines in 2016 and 2017, testified at public hearings, and has provided extensive information to the Department concerning the proposed regulations.

Upon review of the amended draft regulation and guidelines that DOER submitted to the Legislature on October 13, 2017, PFPI identified extensive and substantive changes that the public has not had an opportunity to review and comment on, including new issues that we do not recall being raised during the public comment period.

We are disappointed that the Department has not responded to requests made by PFPI and other organizations to open a formal public comment period on the final draft regulations, as well as on new and revised guidelines that DOER posted on November 15, 2017.

We are therefore submitting comments on both the final draft regulation and the final draft guidelines for the Department's consideration. This document is additive to the comments submitted by PFPI *et al.* in response to previous versions of the regulations issued by DOER in 2016 and 2017.

Sincerely,

A handwritten signature in black ink that reads "Mary S Booth". The signature is written in a cursive, flowing style.

Mary S. Booth, Ph.D.
President

Cc:

Matthew A. Beaton, Secretary, Executive Office of Energy and Environmental Affairs
Hon. Maura Healey, Massachusetts Attorney General
Judith Judson, Commissioner, Massachusetts Department of Energy Resources
Martin Suuberg, Commissioner, Massachusetts Department of Environmental Protection

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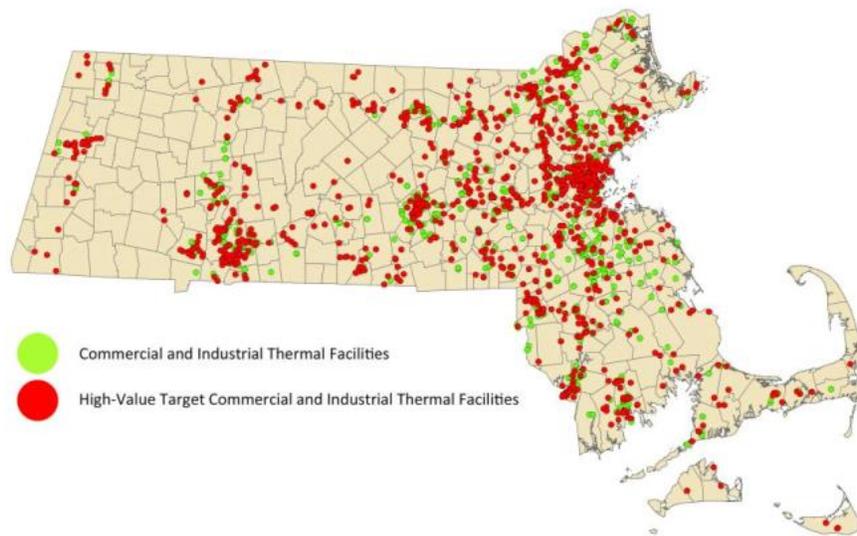
Introduction

Despite the overwhelming support voiced by dozens of organizations and individuals throughout the public comment process for stronger, more protective environmental and health standards regarding biomass, the changes incorporated in the final draft Alternative Portfolio Standard (APS) regulation (225 CMR 16.00) and guidelines submitted 11/15/2017 are substantially weaker than previous versions released in 2016 and 2017.

We are concerned that DOER plans to finalize the draft regulation without providing a formal opportunity for the public to review and comment on the revisions. PFPI attended all the public meetings and heard all the spoken testimony. We have reviewed the majority of the written testimony that was submitted. DOER made extensive and substantial changes in the final draft regulations that were not discussed during the public comment periods nor do we recall any requests made during the public process for DOER to so dramatically weaken the standards.

There's a lot of funding at stake. In 2012, DOER commissioned a study that identified a large number of commercial and industrial thermal energy users in MA that might be induced to switch to "renewable" heating or co-generation of heat and power if incentives were provided. Observing that more than half use natural gas, DOER noted that the remainder burn other fuels that could be replaced with renewable energy. This is in addition to potential residential demand.

Figure 3 – Geographical distribution of industrial thermal energy users in Massachusetts (Source: MassDEP, Emission units database, November 2012)



The Legislature's intent when it expanded the APS in 2014 was to promote low- or zero-emission renewable heating technologies, not to create an end-run around the Renewable Portfolio Standard (RPS) regulations that were promulgated in 2012 – but this is what the proposed APS regulations will do.

The final draft regulation and related guidelines pertaining to biomass eligibility in the APS stray so far from the letter and intent of the law, and from the Commonwealth's overarching goal of reducing greenhouse gas emissions, that we once again urge DOER to remove the biomass provisions from the draft regulation entirely.

DOER Has Made Extensive Changes with Insufficient Opportunity for Public Review

DOER has not provided sufficient time or opportunity for members of the public to provide meaningful input on the final draft APS regulations and related guidelines. Many of the extensive changes made in the final draft regulations appear to be for the benefit of the biomass industry and were not discussed during the public process.

In an email to stakeholders dated 11/16/17, Commissioner Judson invited stakeholders to submit written comments on several new and revised guidance documents by December 1, but stated that "The Department anticipates filing the regulation with the Secretary of State on December 15, 2017, which should result in the final promulgation of the regulation on December 29, 2017." It appears from this statement that the Department intends to finalize the proposed regulation by the end of the year regardless of what comments it receives.

Furthermore, the Department has not responded to formal requests from PFPI and others to hold a public comment period on the revised draft regulations that were posted on October 13 and are about to be finalized, which contain new provisions and extensive and substantial changes.

Changes made at the eleventh hour with little or no opportunity for public review include two new guidelines, one on biomass reporting procedures and the other on metering and calculations for fuel cell generating units, posted on 11/15/16, and the addition of a whole new technology that can qualify for subsidies: compost heat exchange systems (225 CMR 16.05(1)(a)6.viii). While this technology may offer environmental benefits, it still produces GHG emissions and merits a thorough public review.

There are numerous other changes, large and small, scattered throughout the draft regulation and seven accompanying guidelines. Since these documents all interrelate, last minute changes to one document may require adjustments to others. This further underscores PFPI's concern, raised in previous comments, that DOER has in numerous instances inappropriately used guidelines in place of regulations.

In the rush to modify and finalize the regulation by the end of the year, the draft regulation and guidelines are replete with inaccurate references, misaligned section numbering, typos, and other errors. For instance, PFPI flagged numerous errors in the *Guideline on Reduction of Greenhouse Gases for Eligible Renewable Thermal Generation Units Using Eligible Woody Biomass* Excel spreadsheet for calculating net carbon emissions from bioenergy, including errors where changes were made in the regulations but not in the GHG calculations spreadsheet.

Finally, the regulation and guidelines, as written, are confusing and open to various interpretations. Vague or ambiguous regulations are practically unenforceable. A properly conducted public review process would help the Department to identify and correct drafting errors and clarify language that is confusing.

Revised Regulations Increase Subsidies for Polluting Biomass Units

Eligible units now can be almost entirely subsidized by public funds

Initially, the receipt of a MA Clean Energy Center grant to install a unit prevented receipt of additional subsidies in the form of alternative energy credits (AECs). Previous versions of the draft regulations, published in 2016 and 2017, raised the allowable level of State agency grant or incentive support for units getting AECs from 0% to 50%. The final draft regulations, published October 13, 2017, **increase the allowable level to 80% of a generating unit’s construction and installation costs.** (225 CMR 16.05(1)(a)6.d). This is a waste of public funds.

Requirement to burn “only” eligible biomass has been eliminated

Throughout the legislative and rulemaking process, the definition of sustainable forestry and what sources should qualify as “eligible biomass woody fuel” has been a point of contention (see below).

Previous versions of the draft regulation that underwent public review required eligible woody biomass RTGUs to use “**Only eligible biomass woody fuel**” as their source materials (225 CMR 16.05(4)(g); Table on Fuel Quality Specifications). But the final draft regulation submitted on 10/13/17 eliminated this requirement, as shown in the redlined table at page 23 of the Regulation, where the requirement to burn “only” eligible fuel has been crossed out.

Fuel quality specifications	Pellets	Chips
Calorific value	Greater than 8,000 Btu per pound	Greater than or equal to 5,950 <u>500</u> Btu per pound
Moisture	Less than or equal to 8 percent	Less than or equal to 35 percent
Ash content by weight	Less than or equal to 1 percent	Less than or equal to 1.5 percent
Chip size (percent retained by a half inch mesh screen)	Not applicable	75 percent or adhere to <u>manufacturer’s protocol</u>
Chlorides	Less than or equal to 300 parts per million	Not applicable
Source materials-	Only-Eligible-Biomass-Woody-Fuel	

While elsewhere the regulation states that units “must utilize” Eligible Biomass Woody Fuel (16.05(1)(a)6.v), new language in the Regulation states that units using Eligible Biomass Woody Fuel are

only required to use a “minimum percentage” of Eligible Biomass Woody Fuel derived from Forest Derived Residues, Forest-Derived Thinnings, Forest Salvage, or residues derived from wood products manufacturing consisting of Clean Wood, as defined in the definition of Eligible Biomass Woody Fuel in 225 CMR 16.02.” with the percentage to be set in the guideline. The guideline added a new section, “Eligible Biomass Woody Fuel Feedstock Requirements,” which states “On an annual basis, a minimum of 30% of the Eligible Biomass Woody Fuel used by RTGUs shall be sourced” from these categories (*Guideline on Biomass, Biogas, and Biofuels for Eligible Renewable Thermal Generation Units*, Section 10). While 30% is currently set as the percentage, it appears that DOER can change this at any time by changing the “guideline.”

Comparing the fuels listed above and the definition of “Eligible Biomass Woody Fuel” in the regulation reveals that certain non-forest derived residues are not included in the “minimum 30%” list (specifically “residues” from land use change, wood waste, and agricultural wood waste (225 CMR 16.02 “Eligible Biomass Woody Fuel” (d)Non-Forest-Derived Residues: 2, 3, and 4)). It thus appears that use of these materials would be limited to a maximum of 70% fuel input. This provision thus *restricts use of one of the least controversial type* of biomass fuel, the type least likely to have a large net carbon impact, or cause damage to forests, ie, “3. Wood waste: Pruned branches, stumps, and whole trees removed during the normal course of maintenance of public or private roads, highways, driveways, utility lines, rights of way, and parks.” Additionally, while DOER listed *potentially* lower-impact biomass fuels like energy crops and agricultural residues as “eligible biomass” (16.02, Definitions), the section listing “Eligible APS Renewable Thermal Generation Unit technologies and standards” (16.05(1)(a)6.v) makes it clear that the only type of biomass unit eligible for APS credits are those burning “woody” fuel.

The elimination of the requirement that wood-burning units burn “only” eligible woody fuels (as shown in table above) is especially troubling, because the regulation states “i. An APS Renewable Thermal Generation Unit shall earn APS Alternative Energy Attributes for each MWh of net Useful Thermal Energy generated on a quarterly basis” (225 CMR 16.05(1)(a)6.b.i) and thus does not appear to restrict subsidies to energy generated by burning eligible fuels. The regulation should state that units are prohibited from burning any ineligible fuels and the requirement that units burn only eligible fuels should be restored in the regulation to avoid misinterpretation.

Making things more confusing, DOER has an additional requirement in the Guideline that the “Minimum combined percentage of Forest Derived Residues, Non-Forest Derived Residues, and Forest Salvage” meet a certain percentage of 35%, 50%, or 55%, depending on the fuel being displaced (this is discussed in more detail below). This is a different requirement that appears to have been put in place to inform biomass producers of what they need to say to get a passing grade on GHG emissions. In fact as we know, a tiny fraction of wood pellets are made from “residues” – for instance, a recent paper analyzing feedstocks used by pellet mills in Maine found, “Of the feedstock from forestry operations, only 2% of the volume came from tops and limbs (i.e., “harvest residues”), the remainder was classified as pulpwood (76%) or small diameter trees (22%)” (*Buchholz, T., J. S. Gunn and D. S. Saah (2017). “Greenhouse gas emissions of local wood pellet heat from northeastern US forests.” Energy 141: 483-491*). Thus, if we see pellet producers bringing in numbers claiming they use a high proportion residues, we are going to know they are probably not being forthcoming about the real sources of feedstock.

Biomass CHP units can get electricity credits from both APS and RPS, and also get thermal APS credits, allowing unprecedented double-dipping

The final draft regulation allows an RPS Class I Renewable Generation Unit to also qualify as an APS Alternative Generation Unit, provided it meets the eligibility criteria (225 CMR 16.05(1)(f)). The related guideline allows a Combined Heat and Power (CHP) Renewable Thermal Generation Unit (RTGU) that qualifies both as a RPS Class I generator and as an APS CHP system **to earn** both RPS and APS credits for the net MWh of electricity generated, in addition to APS credits for the net MWh of useful heat generated by the unit (*Guideline on Metering and Calculations, Part 2, Section 3(A)*).

Furthermore, the final draft regulation provides a formula for allocating APS Alternative Energy Credits to CHP plants based on electricity and heat generated. The credits in this case are based on the fact that the unit is a CHP unit, not the fact that it may burn biomass. Thus, the regulation does not restrict subsidies at a biomass CHP unit to energy from burning eligible fuel – it allocates subsidies to all electricity and power, as specified in 225 CMR 16.05(1)(a)2.b.i.

In summary, under the final draft regulation, an eligible CHP system using woody biomass fuel can be nearly 100% funded by public money for the system cost, then it can get subsidies under both the APS and the RPS for electricity generation (providing it meets the RPS efficiency and fuel sourcing criteria), then *also* get APS subsidies for thermal energy. **Biomass units are the only APS-qualified renewables that generate electricity and heat, meaning they're the only technology to benefit from this.** Currently, RPS Class I credits are around \$12 - \$15, and APS credits are \$21 - \$22.

Coal and other fossil fueled plants may be able to receive credits for co-firing solid biomass

The final draft regulation grants credits for co-firing biogas or biofuels with natural gas or other liquid fuels (225 CMR 16.05(2)). The regulation does **not disallow** coal and other fossil-fueled CHP plants from co-firing solid biomass. Whether or not solid fuels co-firing is covered, there are no efficiency requirements for co-firing units – all the unit has to do is co-fire biomass to qualify for APS credits.

Revised Regulations Undercount Greenhouse Gas Emissions and Incentivize Whole Tree Harvesting

Biomass CHP plants that do not qualify for RPS can collect APS credits for both heat and electricity, an end-run around RPS protections that will increase GHG emissions

The 2012 bioenergy revisions to the Massachusetts RPS set a minimum efficiency standard of 50% for biomass CHP plants to be eligible to receive renewable electricity credits. The efficiency standard is an **essential requirement** for reducing net GHG emissions from bioenergy CHP plants, because it ensures that more energy is extracted per unit of fuel burned.

The APS does not contain a minimum efficiency standard for biomass CHP. Nonetheless, the proposed regulation still allows biomass CHP units to collect APS credits for both the electricity and the heat they

generate. This means that a biomass CHP plant could (at current prices) collect more than twice as much in Alternative Energy Credits as from Renewable Portfolio Standard credits, all while making an end run around the RPS standard and increasing GHG emissions. Through these proposed APS regulations, DOER has effectively gutted the RPS standard, which was based on the findings of the Manomet study and developed through an open and transparent public process.

DOER also made a big change with no opportunity for public comment when it eliminated the following requirement for lifecycle accounting for CHP plants from the draft regulation: *“The average emissions rate will include all net carbon dioxide emissions related to combustion, gasification, fuel processing, and sequestration, whether or not such activities occur at the Generation Unit or another location. In the case of a CHP Unit under 225 CMR 16.05(1)(a)2., the emissions rate shall also include net carbon emissions associated with the thermal delivery”*). As we comment below, the GHG calculation spreadsheet was altered from the version approved for the RPS, with no explanation, by eliminating the section that counts fossil fuel emissions from biomass processing.

Furthermore, as PFPI has previously commented, DOER has arbitrarily established a 30-year timeframe for assessing whether biomass provides a 50% reduction in GHG emissions compared to fossil fuels. In contrast, the RPS regulation has a timeframe of 20 years. The climate crisis has only intensified since 2012 when the RPS standard was adopted, and the heating sector is now the second largest source of GHG emissions in MA, surpassing emissions from the electricity sector. Yet this regulation will **incentivize** conversion to biomass for residential and commercial/industrial heating, which will in turn **demonstrably increase GHG emissions in MA**. This directly conflicts with both the enabling statute and the emissions reduction goals set forth in the MA Global Warming Solutions Act.

DOER “reduces” GHG emissions by not counting fossil fuels burned for biomass manufacture and transport

Life-cycle emissions include **all** emissions associated with growing, harvesting, processing, transporting, and burning biomass fuel. Emissions of fossil fuels burned during biomass manufacturing and transport can add another 20-30% to the CO₂ emitted from the stack when the fuel is burned.

The APS legislation expressly requires life-cycle emissions to be counted. It states, “(ii) for eligible biomass, biogas and liquid biofuel technologies, a requirement of 50 per cent reduction **in life-cycle greenhouse gas emissions** compared to a high efficiency unit utilizing the fuel that is being displaced or, for a new load, a high-efficiency natural gas unit, if natural gas is available at reasonable cost to the site or otherwise the fuel that is most likely to be utilized.”

The draft *Guideline on Reduction of Greenhouse Gases for Eligible Renewable Thermal Generation Units Using Eligible Woody Biomass* includes a worksheet for the calculation of lifecycle greenhouse gas analysis that was adapted from the RPS spreadsheet. However, in the APS spreadsheet, there is no place to include the life-cycle emissions from fossil fuels burned during biomass fuel processing – DOER has **deleted** the section. This will cause emissions from pellets to be significantly undercounted.

Life Cycle Greenhouse Gas Analysis			
Biomass Lifecycle Stack Emissions from Generation Unit			
Fuel Input	0		
	#N/A	MMBTU_input annually	#N/A
Bio-Product Credit	If Merchantable Bio-Products, provide under separate cover, a documentation of the embedded proportion and permanence of the input biomass fuel carbon in the Bio-Product.		
		% input carbon permanently embedded	
CO2 Emissions	216.4	lbs CO2/MMBTU_input	
	#N/A	tons CO2 annually	
Biomass Fuel Processing Stack Emissions			
Provide, under separate cover, the Lifecycle GHG Analysis for Biomass Fuel Processing and enter result below			
			tons CO2 annually
Conventional Lifecycle Stack Emissions Displaced			
Electric Generation	Natural Gas - Combined Cycle	If not NGCC, chose other from drop-down list	
	0	MWh annually	
	1100	lbs CO2/MWh	
Thermal Boiler	0	tons CO2 annually	
	Natural Gas, new	chose from drop-down list (if a new load, enter "Natural Gas, new")	
	0	MMBTU_out	
	85%	Boiler Efficiency (standard assumption)	
		Boiler Efficiency (optional user input)	
	0	MMBTU_in	
	158.1	lbs CO2/MMBTU	
0	tons CO2 annually		

Below is the comparable sheet from the APS regulations, which was adapted from the RPS sheet (in fact the “properties” tab on the spreadsheet shows it was authored by Dwayne Breger, a DOER employee, in 2010 and has been subsequently adapted for the APS). In this case, there is no place to include the life-cycle emissions – DOER has **deleted** the section. This will cause emissions from pellets to be undercounted by about 25%.

Life Cycle Greenhouse Gas Analysis			
Biomass Lifecycle Stack Emissions from Generation Unit			
Fuel Input	Green Wood Chips		
	1	dry tons	
CO2 Emissions	8.5	MMBTU_input annually	
	218.3	lbs CO2/MMBTU_input	
	0.93	tons CO2 annually	
Conventional Lifecycle Stack Emissions Displaced			
Thermal Boiler	Natural Gas	chose from drop-down list	
	13.6	MMBTU_out	
	80%	Boiler Efficiency (standard assumption)	
		Boiler Efficiency (optional user input)	
	17.00	MMBTU_in	
	158.1	lbs CO2/MMBTU	
	1.34	tons CO2 annually	
For Combined Heat and Power units only, enter the following			
Electric Generation	Natural Gas - Combined Cycle	If not NGCC, chose other from drop-down list	
	0	MWh annually	
	1100	lbs CO2/MWh	
	0	tons CO2 annually	

Furthermore, in the final draft regulation, DOER deleted language requiring biomass units to have emissions that do not exceed emissions from natural gas units and struck out the requirement for lifecycle emission accounting (225 CMR 16.05(1)(e)). DOER replaced the provision with an entirely different scheme for calculating net carbon dioxide emissions rate. Neither of these changes – which are critical to compliance with the statute - has been subject to public comment or review.

Revised regulations redefine trees as “residues,” encouraging unlimited use of whole trees for fuel and underestimating GHG emissions

The final revised regulation expands the definition of “Eligible Biomass Woody Fuel – Forest-Derived Residues (Residues)” to include “trees collaterally damaged...during the normal course of harvesting material” and “trees and portions of trees harvested for the purpose [sic] of the restoration and management of habitat for rare & endangered species” (225 CMR 16.02). This is a significant change that has not undergone public review and comment.

Science recognizes that burning whole trees liquidates forest carbon into the atmosphere and decreases the ability of the forest to take up new CO₂ for long periods. The point of burning residues as fuel is that residues are material generated by regular harvesting *that would otherwise decompose*. The net CO₂ impact of burning residues for fuel depends on how fast they are assumed to decompose in nature (the faster that would occur, the less additional impact from burning them instead). DOER picked a very “fast” decomposition function in the GHG calculation Excel tool that is appropriate for small branches and leaves, not whole trees (which if cut, can remain in the forest and store carbon for decades).

The “collateral damage” provision opens the category of residues to unlimited amounts of whole trees “accidentally” damaged. The second new provision, “trees and portions of tree harvested for restoration and management” also allows unlimited amounts of whole trees treated as residues. Defining whole trees as fast-decomposing “residues” makes an end-run around protections and causes DOER’s greenhouse gas calculator to underestimate actual emissions. These materials should be honestly accounted for in the GHG accounting as thinnings, not as residues.

Wood from land clearing is treated as low carbon “residue,” even though international carbon accounting protocols consider this high net-carbon fuel

DOER also expanded the definition of “Non-Forest Derived Residues” in the latest version of the regulations to include “Agricultural wood waste: Pruned branches, stumps, and whole trees resulting from maintenance activities directly related to the production of an agricultural product” (225 CMR 16.02).

With each iteration of the proposed regulations, DOER has expanded the types of materials that qualify as “residues.” Previously, over the objections of environmental groups and some scientists, DOER qualified wood removed during land-clearing for agriculture as “residues”; now, DOER has expanded it to include biomass from “maintenance” activities. In fact, international carbon accounting protocols prohibit treating biomass sourced from land-clearing as “carbon neutral” or “low carbon.” A land use change where forest is converted to agriculture, road construction, or urbanization should be treated as a full emission of carbon, because the trees will never grow back. Nobody should be profiting or collecting subsidies when trees are removed to clear land for agriculture. The MA rules are inconsistent with international protocols to which the U.S. is a party.

DOER must adjust the fuel content requirements to reflect the expanded definition of “residues” in the revised draft regulations

Pursuant to 225 CMR 16.05 (k), “The Department shall establish and maintain a list of suppliers of Eligible Biomass Woody Fuel on its website... Suppliers will be classified into one of three classes based on the percentage of residues contained in the fuel distributed to Generation Units and the fuel being displaced by the Generation Unit, as follows:

Class	Fuel being displaced	Minimum combined percentage of Forest Derived Residues, Non-Forest Derived Residues, and Forest Salvage
Class I	Natural gas, electric resistance, propane, fuel oil #6, fuel oil #2	55%
Class II	Electric resistance, propane, fuel oil #6, fuel oil #2	50%
Class III	Fuel oil #6, fuel oil #2	35%

The regulation identifies the “Minimum combined percentage of Forest Derived Residues, Non-Forest Derived Residues, and Forest Salvage” required to displace Class I, Class II, and Class III fuels. These percentages have not been changed from the previous draft regulation and guidelines filed on 6/2/17. However, the **definitions** of Forest Derived Residues and Non-Forest Derived Residues have since been expanded to include unlimited amounts of whole trees – trees “collaterally damaged,” trees harvested for restoration and management, and trees removed for agricultural activities. **These materials should be accounted for in the GHG accounting either as thinnings or as full emission of carbon, not as residues.** The fuel content requirements listed in the regulation and the *Guideline on Biomass, Biogas, and Biofuels for Renewable Thermal Generation Units* (Section 6, Table 1) must either be adjusted to reflect the changes in the definitions, or simply eliminated, since the regulations, as currently drafted, are worthless for accurate GHG accounting.

Revised Regulations Increase Risks to Health and the Environment

DOER is now allowing green wood chips as eligible fuel, thus increasing air pollution

Throughout the public process, DOER repeatedly emphasized that burning green wood chips was inefficient and polluting, and would not be allowed under these regulations. However, the revised draft guidelines now allow green chips as an eligible fuel.

The new provision allowing burning high moisture content green chips is not found in the draft regulation but rather tucked away in various new and revised guidelines (*Guideline on Metering Part 1; Biomass Reporting Procedures; Guideline on Biomass*).

One problem with burning green chips is that even if the particulate matter (PM) emissions are controlled using an “emission control device,” emissions of carbon monoxide and hazardous air

pollutants (dioxins, benzene, formaldehyde, PAH's – all emitted by burning biomass) can be elevated due to poor combustion conditions.

The draft regulation states that boilers and furnaces of less than 3M Btu per hour using an emissions control device do not have to meet fuel quality requirements, but must not exceed the applicable PM emission limit (225 CMR 16.05(4)(g)). However, the regulation does not require these units to also meet the carbon monoxide limit in that section.

Revisions to the *Guideline on Biomass* that were posted on 11/15/17 state that “At this time, the Department will not prescreen suppliers of green wood chips, as information regarding biomass sustainability and greenhouse gas reduction will be collected from each individual RTGU” (Section 6, “Biomass Suppliers List”). It is unclear from our review of the new *Biomass Reporting Procedures* guideline posted on 11/15/17 that sufficient information will be collected to determine biomass sustainability and greenhouse gas reductions. The forms do not even collect information about the moisture content of green wood chips supplied or purchased.

Furthermore, DOER is not requiring emissions testing, allowing operators to instead rely on manufacturers' claims about emission rates from units as proof of “compliance.” However, as PFPI et al. pointed out in our comments of 8/7/17, many of the manufacturers' compliance tests are conducted in Europe using dried wood chips. The units are not capable of meeting the promised emissions levels unless they burn the same fuels used during the tests. By allowing green chips, DOER is increasing the likelihood that toxic emissions from biomass units will be much higher than has been represented.

“Sustainable Forestry Management” provision is meaningless and unenforceable

DOER made the definition of “sustainable forestry management” longer in the final draft regulation, but it still does not address the issues that PFPI and others raised in our previous comments. In contrast to the sustainability measures of the RPS, which restricted the amount of nutrient-containing forestry residues that could be removed from soil types identified on state soil maps, there is not a single quantifiable metric included in the APS guidance. Simply put, they are unenforceable because there is nothing to enforce. Not even the central tenet of “sustainable” management - that forest harvesting within a management area is maintained at a level lower than growth - is included. Further, the definition does not live up to the Forest Guild guidance that is cited elsewhere, which advises against removing *any* residues in certain ecosystems.

DOER regulations do not meet EPA emissions and thermal storage requirements

In our 8/7/17 comments, PFPI *et al.* detailed the ways that the proposed APS regulation falls short of EPA's New Source Performance Standards for biomass units. These provisions were not corrected in the final draft regulation.

In addition, the final draft regulation does not meet EPA's legal requirements with regard to thermal storage. Thermal storage significantly reduces boiler cycling and thus reduces air pollution and CO₂ from wood-burning boilers. DOER's thermal storage requirements do not meet EPA's “Standards of

Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces”¹ (SoP). EPA states:

“The minimum size thermal storage for boilers **less than** 85,000 BTU/hr is 119 gallons or 2.0 gallons per 1,000 BTU/hr, whichever is less. For boilers greater than 85,000 BTU/hr, the minimum heat storage is 2.0 gallons per 1,000 BTU/hr.)”

The table in 225 CMR 16.05(4)(g)5, Thermal Storage, shows the DOER requirements:

54. Thermal Storage. Generation Units shall minimize any significant deterioration of efficiency or air emissions performance due to cycling by applying correctly sized and insulated thermal storage ~~unless the system can maintain efficiency and air emissions performance at low capacity without thermal storage.~~ Thermal storage shall meet the following size thresholds:

Lead boiler system size (heat inputoutput)	Thermal storage required
Less than 80,000 Btu per hour	80 gallons
Between 80,000 Btu per hour and 119,000 Btu per hour	1 gallon per 1,000 Btu per hour
Between 119,000 Btu per hour and 1,000,000 Btu per hour	119 gallons
Greater than 1,000,000 Btu per hour	2 gallons per 1,000 Btu per hour

~~An Owner or Operator of a Generation Unit that may apply for an exception from the requirements in 225 CMR 16.06(4)(g)4 if it can ~~can~~ demonstrate to the Department that an inclusion of thermal storage would deteriorate the efficiency or air emissions performance of the Generation Unit, or the system can maintain efficiency and air emissions performance at low capacity without thermal storage may apply for an exception from the requirements in 225 CMR 16.06(4)(g)4.~~

PFPI developed the following table to summarize how the DOER requirement for thermal storage falls short of the EPA requirement. For medium to large units, DOER’s thermal storage requirement is **less than 10% of the EPA requirement**. Why would MA want to provide incentives to units that would not be legal under EPA rules?

¹ At <https://www.federalregister.gov/documents/2015/03/16/2015-03733/standards-of-performance-for-new-residential-wood-heaters-new-residential-hydronic-heaters-and>

Boiler output (Btu)	minimum EPA thermal storage req (gal)	DOER thermal storage req (gal)	DOER as % of EPA req
50,000	100	80	80%
80,000	119	80	67%
119,000	238	119	50%
800,000	1,600	119	7%
1,100,000	2,200	2,200	100%

DOER has further weakened the thermal storage requirement by leaving an essentially open-ended, criteria-less exemption provision (225 CMR 16.05(4)(g)4, System Performance). Previously, exceptions to the thermal storage requirement required submitting third party test results to document compliance with a standard. In the final draft regulation, DOER deleted this requirement, making it the arbiter of end-runs against the statute’s intent

Proposed biomass reporting procedures are inadequate

DOER has not provided sufficient time to review the new guideline that was posted on 11/15/17, *Massachusetts Alternative Energy Portfolio Standard Biomass Reporting Procedures*. Based upon PFPI’s preliminary review, the proposed reporting procedures are inadequate for the purpose of documenting compliance with statutory requirements.

The *Biomass Reporting Procedures* require biomass suppliers applying to be included on DOER’s Biomass Suppliers List to submit information about the types and percentages of eligible biomass woody fuel in their feedstock mix, including “to the extent known” the source and location of the harvests. These breakdowns would be used by DOER to classify what Fuel Class the supplier would provide – Class I, II or III – and, presumably, compliance with the new 30% minimum content provisions that have now been added.

It appears that the guidelines require that a facility making biomass fuel to attest that some portion of its fuel meet the requirements – but not all. Page 2 of the *Reporting Procedures* guideline states:

Biomass Supplier and Distributor Reporting Requirements

*On a quarterly basis, biomass distributors will need to submit to the Department Form 3- Biomass Distributors’ Fuel Report and biomass suppliers will need to submit Form 4- Biomass Suppliers’ Fuel Report. The Department will notify all fuel suppliers and distributors of the volume of fuel they must verify each quarter, based on reports submitted by Generation Units. **Suppliers and distributors will only be held responsible for verifying enough feedstock to meet the total fuel reported by Generation Units. Suppliers of wood pellets will need to verify feedstock equivalent to 2 times the amount of fuel reported by Generation Units. Suppliers of dry wood chips will need to verify feedstock equivalent to 1.5 times the amount of fuel reported by Generation Units.***

There is no means of ensuring that the RTGUs certified in MA receive just those dry wood chips or pellets that were made with “sustainably harvested” wood. Taking for example a pellet manufacturer that produces 100,000 tons of pellets per year produced by clearcutting forests in Maine, is DOER going to tell them that for the three APS-certified units in Massachusetts they supply, they need to demonstrate that 2% of their feedstock is sourced from DOER’s “eligible” categories? If this is indeed the case, how is the requirement that units burn only eligible fuels to be met?

We could be incorrect in our assessment... and if we’d had more than few days to review these documents, we might understand them better. But DOER has continued to make major changes to the regulations outside of public review, and to ignore the substantive input that’s been offered.

Conclusion

With the final draft APS regulation and guidelines for biomass, DOER has strayed even further from the requirements of the enabling law and introduced new and substantial program modifications for which the public will have to pay. Unfortunately, DOER has denied the public the right to comment.

In developing its complex labyrinth of regulations and guidelines, the Department has gone to great lengths to shoehorn as much forest biomass as possible into the APS program, despite the objections of dozens of environmental, public health and consumer organizations and countless Massachusetts residents.

While the Legislature authorized the inclusion of forest biomass in the APS renewable thermal program, it did not give the Department a free hand to develop the program – the enabling law includes strict provisions for what, if any, biomass technologies could be deemed eligible. Overall, the proposed regulation amounts to a waste of scarce taxpayer and ratepayer resources for a highly polluting and greenhouse-gas intensive technology – funds that would be far more productively spent on clean energy technologies and energy efficiency that actually reduce heat trapping emissions of greenhouse gases. Unjustified subsidy overpayments undermine the capacity of the Commonwealth to achieve genuine emission reductions in the heating sector. Massachusetts residents deserve better.