

June 30, 2016

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**Re:** Joint Comments on Proposed Changes to Alternative Portfolio Standard Regulations (225 CMR 16.00)

Dear Director Judge:

On behalf of the undersigned organizations, we submit the following comments on the proposed changes to the MA Alternative Portfolio Standard Regulations (225 CMR 16.00, the “draft regulations”) to include renewable thermal in the Massachusetts Alternative Portfolio Standard (APS) pursuant to Chapter 251 of the Acts of 2014. For the purposes of these comments, our focus is on the inclusion of “Eligible Biomass Woody Fuel” and “Manufactured Biomass Fuel” in the draft regulations. Organizations may be submitting comments separately on other aspects of the proposed changes.

Our comments focus on four main areas of concern:

1. **Sustainability Standards:** Sustainability standards in the draft regulations are weak, including harvesting and types of wood, impact on soil carbon stocks, and the enforcement of the standards including the proposal of upfront minting of certificates.
2. **Greenhouse Gas Emissions:** The draft regulations will increase Greenhouse Gas Emissions in the Commonwealth, and DOER has failed to conduct a life-cycle analysis as it relates to the usage of wood chips and wood pellets and the implications of any increase in usage of this fuel source as encouraged and incentivized by the proposed regulatory changes.
3. **Toxics and Air Pollution:** The draft regulations fail to adequately address conventional air pollution and other toxic emissions impacts.
4. **Existing Law and the Enabling Statute:** The draft regulations do not comply with the enabling statute and other MA laws, including inconsistencies and conflicts with existing standards present in other MA regulations and programs.

## **Introduction**

The undersigned organizations do not support granting subsidies or incentives to burning trees or manufactured tree products for energy. The concentration of carbon dioxide in the atmosphere has now passed an important milestone of 400 parts per million. Burning biomass emits significantly more carbon pollution than burning fossil fuels per unit of energy, and harvesting trees for fuel reduces the ability of forests to take

carbon out of the atmosphere. The combination of factors creates a “carbon debt,” as characterized by the state-commissioned Manomet Study, which persists for years to decades.<sup>1</sup> As we are well on the way to runaway global warming that will have drastic consequences for the planet and all species, we should not be incentivizing any technologies that increase carbon pollution in the atmosphere.

In addition to this important context by which all policy recommendations in the Commonwealth should be reviewed, our comments demonstrate that the draft regulations themselves substantively fail to meet a number of requirements pursuant to Chapter 251 of the Acts of 2014, protections existent in the current RPS, and fall far below protections contained in other Massachusetts programs, regulations, and guidelines. DOER must remove “Eligible Biomass Woody Fuel” and “Manufactured Biomass Fuel” and the related proposed changes from the draft regulations until such time as these shortcomings are remedied.

## Sustainability Standards

### *The draft regulations do not protect forests*

The draft regulations do not contain assurances that woody biomass is produced sustainably from either an ecological or a carbon sequestration standpoint, particularly given the unenforceability of the provisions. Experience on the ground demonstrates DOER’s inability to enforce similar standards. The Partnership for Policy Integrity (PFPI) submitted a freedom of information request to the DOER to obtain records of wood supplied to biomass electricity units qualified for renewable energy credits under the RPS in Massachusetts. PFPI posted some of DOER’s data at <http://www.pfpi.net/wp-content/uploads/2016/06/Biomass-Asset-Report.xlsx>.

A number of observations about these data speak to the unenforceability of these rules:

- the sheer number of logging sites and their size (up to 20,000 acres)
- site distance (many are located in Maine), which makes verification extremely unlikely
- the impossibility of locating the sites without more precise geographic information such as GPS coordinates
- the large amounts of material harvested (some records refer to deliveries of tens of thousands of tons of wood chips)
- The designation of “residues”

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<sup>1</sup> Thomas Walker et al., Manomet Center for Conservation Sciences, *Biomass Sustainability and Carbon Policy Study* (2010) (hereinafter Manomet).

<sup>2</sup> From <http://www.dec.ny.gov/energy/65141.html>, New York State’s criteria for sustainably harvested biomass under

The designation of shipments of tens of thousands of tons of wood designated as “residues” – defined as tops and limbs left over from saw timber harvesting – is of especially questionable credibility. Certification of these materials as qualified fuels suggests the DOER lacks the time and resources to enforce any new rules concerning harvesting “sustainability” and the genesis and types of materials burned as biomass at facilities qualified for Alternative Portfolio subsidies in Massachusetts.

We have additional concerns regarding enforcement of the rules on what fuels people actually burn in qualified units. The DOER proposes to use “upfront minting” to provide purchasers with ten years of alternative energy credits upon purchase of their units. With regard to allowable fuels burned after receipt of this lump sum, the draft regulations state,

*“Facilities seeking qualification as APS Renewable Thermal Generation Units using woody biomass will be required to only use fuel from a supplier on the Department’s list of suppliers for the duration of the APS qualification of the thermal energy generating unit, and keep records to demonstrate compliance with this requirement.” ... “Fuel suppliers will need to document the chain of custody from the forest to the retail supplier and on to the end customer.”*

MassCEC is to act as an “independent verifier” to assure that units are operating in line with the useful thermal output initially approximated when the subsidy is granted. We are skeptical whether meaningful follow-up will be conducted, particularly to ascertain if operators are actually purchasing “qualified” fuels. Currently, DOER’s website recommends pellets certified by the Pellet Fuels Institute, an organization that has certified massive pellet production facilities in Georgia, for instance. Upfront minting and lack of enforcement are an invitation to game the system and use fuels from distant states where DOER has no jurisdiction or authority.

### ***The draft regulations do not protect forest soils***

The previous set of regulations for biomass qualified under the RPS program acknowledged soil nutrient status, restricting the amount of residues that could be removed on nutrient-poor soils. Puzzlingly, the draft APS regulations do not acknowledge the considerable amount of work that went into creating the prior regulations, and do not take impacts on soil nutrient status into account for determinations of qualified biomass. Additionally, more than 50 percent of total ecosystem carbon may be stored in soils, and logging releases much of this carbon, some immediately and more over time. The draft regulations do not provide accounting for impacts on soil carbon stocks, a major omission from lifecycle carbon totals.

## Greenhouse Gas Emissions:

### *The draft regulations do not ensure GHG's are reduced, and could increase emissions over meaningful timeframes*

The claimed climate benefits of biomass energy depend on ensuring that forests harvested for biomass do not undergo loss of forest cover, conversion to non-forest uses, or depletion of carbon stocks over time. However, the draft regulations do not ensure that biomass-producing forests remain intact over time. The regulations ignore this issue, despite numerous options for keeping forests intact, such as conservation easements, full fee purchase, and robust zoning incentives and regulations. An example of a state policy on biomass that *does* acknowledge the importance of forest regrowth can be found in New York, where the state's "Sustainable Harvested Biomass" policy (DAR-12) mandates that for the purposes of defining sustainable biomass under the Regional Greenhouse Gas Initiative, the Department of Environmental Conservation must be persuaded that the biomass is obtained from land that has a plan and/or sustainability certification, and that will remain in a forested state for 100 years or a time period sufficient to re-sequester the CO<sub>2</sub> released through the combustion of the biomass.<sup>2</sup> The inclusion of unlimited amounts of wood from land clearing for development in the definition of Non-Forest-Derived Residues that qualify as eligible sources for fuel is a fatal flaw in the regulations. This virtually assures that the fuel will not meet the 50% GHG reduction statutory mandate, since development-related losses of carbon storage are permanent. Furthermore, it creates an incentive for more extensive land clearing on

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<sup>2</sup> From <http://www.dec.ny.gov/energy/65141.html>, New York State's criteria for sustainably harvested biomass under RGGI:

1) Certification Criterion: In order to demonstrate to the Department that a given fuel source satisfies the Certification Criterion, the AAR of a CO<sub>2</sub> budget unit must provide sufficient documentation to the Department. The documentation should demonstrate that the biomass is obtained from land that has:

- (a) a United States Department of Agriculture (USDA) Forest Service Forest Stewardship Plan in place, and a harvest plan. The harvest plan must be approved by a forester<sup>1</sup> prior to harvest, and be based upon the New York State Renewable Portfolio Standard (RPS) approved template<sup>2</sup> and recommended Best Management Practices (BMPs); or
- (b) been issued a Certificate of Approval pursuant to Section 480-A of the Real Property Tax Law (RPTL); or
- (c) been certified by a Department-approved non-governmental forest certification body, such as Forest Stewardship Council (FSC), Sustainable Forestry Initiative (SFI) or American Tree Farm (ATF).

2) Carbon Re-sequestration Criterion: The Carbon Re-sequestration Criterion may be demonstrated via a legally binding permanent conservation easement, or some other Department-approved land-use instrument, that documents that forest-based, woody biomass and unadulterated wood and wood residues are from forest land that will be maintained in a forested state for:

- (a) A time period, as supported by a demonstration to the Department, that is sufficient to re-sequester the CO<sub>2</sub> that was released through the combustion of the biomass. For purposes of making this demonstration to the Department, the AAR may take into account forest lands that are not specifically included in the harvest of the biomass, provided such lands meet the Certification Criterion; or
- (b) 100 years, with no additional demonstration to the Department.

development sites, rather than requiring good designs that retain natural vegetation to the maximum extent practicable.

Carbon pollution from the bioenergy component of the APS program will likely be exacerbated because DOER promotes the use of pellets as a way of reducing particulate matter emissions, compared to burning green wood. However, wood pellets force a tradeoff between reducing conventional air pollution and increasing carbon pollution, because simple conservation of mass principles dictate that lifecycle GHGs from pellet manufacture and combustion are significantly higher per unit of useful thermal energy than carbon emissions from burning green wood chips. Pellet manufacture generally relies on harvesting whole trees for feedstock (rather than forestry or sawmill residues), and further involves substantial additional carbon emissions associated with grinding wood, drying it, and extruding it into pellet. By the metric of DOER's latest credible analysis of net lifecycle emissions of thermal bioenergy, the Manomet Study, the proposed regulations significantly underestimate carbon emissions because the study did *not* include an analysis of the lifecycle carbon emissions from wood pellets. Thus, in order to ensure that biomass meets the reduction requirements of the statute, the state must conduct a lifecycle greenhouse gas emission analysis for the types of fuels promoted by the regulations that acknowledges the assumptions upon which the analysis depend (such as forest regrowth) and provides an enforceable means of ensuring these assumptions are fulfilled.

A further requirement for determination of net lifecycle carbon emissions from bioenergy is a specified timeframe for the analysis. At the time of combustion, carbon emissions from all types of woody biomass are similar, and all exceed emissions from fossil fuels, per unit of energy produced. Only over time are net emissions assumed to be offset, either by time itself (in the case of forestry residues produced during sawtimber harvesting, and which are assumed to produce carbon dioxide over time if they are left to decay onsite) or by forest regrowth (in the case of trees harvested for biomass fuel that, but for this demand, would continue growing and sequestering carbon from the atmosphere). *The failure of the draft regulations to specify a timeframe by which the lifecycle emissions from biomass are supposed to be reduced by 50 percent, relative to emissions that would occur from burning the fossil fuel being replaced, invalidates the claim that bioenergy emissions are "reduced."* It is analogous to the state telling a banking customer that they will earn a certain dollar amount as interest on a certificate of deposit, but not telling them how long they must leave the CD untouched to earn that amount, implying that the interest is gained instantaneously.

## Toxics and Air Pollution: The Regulations Will Increase Emissions

### *DOER's allowable emission rates for particulate matter are weak and do not match protections in other programs*

Pellet and chip boilers generally emit more particulate matter per unit energy than fossil fuel boilers. The effects of particulate pollution on respiratory and cardiac health are well-known and characterized by a linear response that extends below the current EPA health threshold. The draft regulations thus subsidize a technology, wood burning, that is one of the largest sources of air pollution in the U.S., and that causes people to get sick and die. Natural experiments, such as the example of how traffic restrictions during the Atlanta Olympics led to decreased particulate levels and lower hospitalization rates for asthma<sup>3</sup>, confirm that reducing pollution pays dividends virtually immediately in improved health and reduced medical costs. Conversely, pollution episodes are accompanied by increased rates of respiratory and cardiac incidents. Regional air quality monitoring does not reflect the intense patches of air pollution that can develop in certain areas, so that air quality is very poorly characterized at the local level. For an asthmatic, the pollution emitted by even a “well controlled” biomass burner in the neighborhood can hospitalize an individual, particularly if it is adding to the existing burden of air pollution.

The draft regulations state, at page 17-18 of the redline pdf, that qualifying facilities shall represent “commercially feasible” technologies meeting standards that are protective of public health:

*(iv) System Performance. APS Renewable Thermal Generation Units shall meet fuel conversion efficiency performance standards achievable by best-in-class commercially-feasible technologies*

*and,*

*(v) Emission Performance Standards. APS Renewable Thermal Generation Units shall meet air emission performance standards that are protective of public health, including standards for particulate matter sized 2.5 microns or less and carbon monoxide, as detailed in the Department's APS Guideline on Biomass, Liquid Biofuels and Biogas.*

However, the emission guidelines that are set in the draft regulations do not meet these criteria. As specified in the guidelines, the allowable emissions rate for PM<sub>2.5</sub> is 0.08 lb/MMBtu for pellets and 0.10 lb/MMBtu for chips:

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<sup>3</sup> Friedman M.S., et al. 2001. Impact of changes in transportation and commuting behaviors during the 1996 Summer Olympic games in Atlanta on air quality and childhood asthma. *Journal of the American Medical Association* 285:897-905.

**Table 1. Air emission limits for biomass fuel boilers and furnaces at nominal output**

Systems less than 3 MMBtu/hr heat input. In a project that combines several heaters that on their own are below the threshold, these heaters have to meet the emission limits for units less than 3 MMBtu/h heat input.			
	Pellets / Liquid Biofuels / Biogas	Chips	Cordwood
Particulate emissions (PM)	<0.08 lb PM <sub>2.5</sub> /MMBtu <sub>input</sub> at nominal output (equivalent to <0.10 lb PM <sub>2.5</sub> /MMBtu <sub>output</sub> at 80% thermal efficiency)	<0.10 lb PM <sub>2.5</sub> /MMBtu <sub>input</sub> heat input at nominal output (equivalent to <0.125 lb PM <sub>2.5</sub> /MMBtu <sub>output</sub> at 80% thermal efficiency)	Reserved
Carbon monoxide (CO)	270 ppm @ 7% O <sub>2</sub>	270 ppm @ 7% O <sub>2</sub>	Reserved

In contrast, the “SAPHIRE” renewable thermal program in Massachusetts contains more stringent requirements for boilers at “sensitive receptor sites”:

### 2.3 Wood Chip Boiler

#### 2.3a Performance Criteria

*For wood chip boilers ranging from 200,000 BTU/hr to 3 MMBTU/hr rated heat input;*

- < 0.15 lb/MMBTU/hr PM<sub>2.5</sub> based on heat input
- >80% Efficiency

*For wood chip boilers ranging from 3 MMBTU/hr to 10 MMBTU/hr rated heat input;*

- < 0.10 lb/MMBTU/hr PM<sub>2.5</sub>
- < 0.30 lb/MMBTU/hr NO<sub>x</sub>
- < 0.27 lb/MMBTU/hr CO
- > 80% Efficiency

*All wood chip boilers at sensitive receptor sites including: schools, hospitals and nursing homes, boilers must meet the above criteria for NO<sub>x</sub>, CO and efficiency, and will be held to a PM<sub>2.5</sub> limit of 0.03 lb/MMBTU.<sup>4</sup>*

In this case, the Commonwealth has specified standards in the SAPHIRE program that are more protective than specified in the draft APS regulations. The regulations allow 0.08 lb/MMBtu while the SAPHIRE program allows much less, 0.03 lb PM/MMBtu at sensitive sites. Units that emit 0.03 lb/MMBtu PM are certainly “commercially feasible” under the draft regulations. DOER should explain why the weakening of standards from the SAPHIRE program to the draft regulations does not violate MEPA or trigger a MEPA review. Further, in the context of these overly lax PM<sub>2.5</sub> standards, the term “commercially feasible” is impermissibly vague. The term should be replaced with the

<sup>4</sup> Massachusetts Department of Energy Resources. 2014. SAPHIRE Schools Renewable Thermal Program. Program opportunity notice (PON):2014-000-002. Phase 2: Project Implementation Assistance (1. Technical Requirements and Instructions). Available at <http://www.mass.gov/eea/docs/doer/renewables/thermal/project-implementation-assistance.zip>.

term “commercially available”, and it should be made clear that this term is inclusive of units available in Europe.

Emissions from uncontrolled small thermal units can be significant, as demonstrated by the example below, which compares PM emissions from a 2.9 MMBtu/hr unit (not required to use controls) and a 3 MMBtu/hr unit, which would presumably be required by DEP to use a fabric filter for PM control. Such a filter should be able to reduce filterable PM emissions to 0.012 lb/MMBtu, DEP's presumptive BACT standard for larger biomass facilities. As shown by the table below, the smaller uncontrolled unit would emit 6.45 times the particulate matter of the larger unit.

Burner size (MMBtu)	Efficiency	Emissions rate (lb/MMBtu, heat output basis)	Emissions rate (lb/MMBtu, heat input basis)	Potential to emit PM (lb/yr)
2.9	0.8	0.1	0.08	2,032
3	0.8	0.015	0.012	315

DEP and DOER should at least require an electrostatic precipitator for units that are smaller than the 3 MMBtu/hr permitting threshold.

There is an inconsistency in the guideline document regarding the allowable emissions from chip-fueled units. At page 6 the allowable emissions are specified as 0.1 lb/MMBtu. At page 8 the emission rate is referred to as being one-tenth that amount, at 0.01 lb/MMBtu (which is actually close to the emission rate that could be achieved if chip-fired units were required to use external emission controls). It is also problematic that the emission standards do not have an averaging period specified. Emissions standards should be required to be met on an hourly basis as the longest timeframe for assessment.

It appears that the restriction of eligible fuels to pellets and chips that have been dried to a 30% moisture content, combined with the high allowable particulate matter emissions, is designed to allow units to avoid the expense of adequate, commercially available, commonly used pollution controls. The state should reduce the PM<sub>2.5</sub> emission rate to 0.03 lb/MMBtu for all units, given that a rate half this value can be achieved using emissions controls. The state’s prior acknowledgement that units near “sensitive populations” should meet the 0.03 lb/MMBtu standard shows this is a minimum standard that should be met, since sensitive populations can occur anywhere.

## *The proposed regulations do not protect against the use of pellets contaminated with heavy metals*

Pellets can contain considerable amounts of heavy metals. A 2013 study found large variation and some high values for heavy metals in wood pellets sampled from a variety of manufacturers.<sup>5</sup> At page 55, the study calls out the “inability to track pellet material”:

*“Some heavy metals (such as As, Cu and Cr) were found to be higher in several wood pellet samples. High concentrations of these heavy metals in wood pellets indicate the likely use of preservative-treated wood. It is possible that some CCA-treated scrap wood might have been included in pellet production. The information gathered from the manufacturers of the wood pellets suggested that some of them used recycled wood products, wood waste and wood residues. The inability to track the pellet material from “cradle to grave” limits the capacity to determine if the elevated levels result from use of treated wood products, harvesting practices or elemental composition.”*

Table 3.5, at page 50 of the NYSERDA study shows surprisingly high levels of heavy metals in some of the wood pellets they sampled:

### **3.5 Summary of Pellet and Chip Concentrations in Wood**

Tables 5 and 6 summarize the component concentrations in wood. For components that were analyzed from ash, wood concentrations were calculated by dividing the ash analysis by the ash content.

**Table 5: Variation in Wood Pellet Component Concentrations (mg/kg of wood) With Mean, Median, Standard Deviation, Maximum and Minimum Values.**

Element	Mean	Median	Std Dev	Maximum	Minimum
Cl <sup>-</sup>	36.6	21	48.9	413	6.5
SO <sub>4</sub> <sup>2-</sup>	222	220	76	530	23
S	73.9	73	25.5	175	7.6
Hg	0.00736	0.0012	0.0432	0.44	0.0004
Li	0.772	0.57	0.696	4.7	0.035
Na	60.0	30	113	973	8.4
Mg	216	188	155	1620	58
Al	60.2	31	127	1360	4.9
K	777	709	840	9833	167
Ca	1139	916	1399	16000	303
V	0.151	0.085	0.235	2.1	0.011
Cr	1.46	0.58	3.45	27	0.083
Mn	91.1	78	71.1	702	22
Fe	91.7	48	171	1460	9.5
Co	0.077	0.054	0.117	1.2	0.0044
Ni	0.520	0.36	0.823	8.3	0.017
Cu	2.72	1.50	5.01	46	0.36
Zn	9.28	7.2	8.92	90	1.2
As	0.31	0.040	1.58	15	0.0016
Se	0.0340	0.023	0.0434	0.37	0.00011
Rb	2.00	1.7	1.92	18	0.29
Sr	8.38	6.5	9.21	101	2.9
Cd	0.00501	0.0029	0.0126	0.14	8.9E-05
Sb	0.032	0.0063	0.137	1.5	0.00043
Ba	17.9	14	25.8	292	1.9
Tl	0.00111	0.00041	0.00171	0.011	0.0000
Pb	0.81	0.34	1.65	11.0	0.040

<sup>5</sup> New York State Energy Research and Development Authority, *Elemental Analysis of Wood Fuels* 41 (2013).

Currently, there is no national standard that prevents use of contaminated wood in pellet manufacture. The MA website promoting use of pellets as fuel observes: <sup>6</sup>

*“If you own a pellet stove, it’s important to know that not all wood pellets are the same. When you purchase bagged pellets, look for products that have been tested by an independent laboratory and certified by the Pellet Fuels Institute (PFI) Standards Program. All pellets that are certified will have a PFI label on the front lower third of the bag. Currently, twelve pellet manufacturing facilities in the U.S. participate in the voluntary certification.”*

As there is currently no compulsory pellet standard, it is difficult to ensure that people won’t burn contaminated pellets. DOER has commented on the risk presented by contaminated materials in pellets. In a 2014 letter to EPA, DOER said:

*“The EPA has reviewed the existing voluntary industry pellet fuel standard of the Pellet Fuel Institute (PFI) and believes it is ‘a good program that obviates the need for the EPA to develop our own program at this time’.*

*The DOER disagrees, and rather views the PFI standard as a good start that does not obviate the need for EPA to take additional steps. DOER recommends instead using the PFI standard as a basis to establish a better and more comprehensive required standard at the federal level.”*

Given the lack of certification oversight of the APS wood quality standards, how will MA DOER ensure that people do not burn contaminated materials? It further seems that the more popular and lucrative the pellet market is, the more likely the use of contaminated wood becomes.

### **Existing Law and the Enabling Statute: Failures To Comply**

The draft regulations do not comply with the enabling statute and other MA laws, including inconsistencies and conflicts with existing standards present in other MA regulations and programs.

### **DOER Did Not Meet the Process Requirements of the Statute**

DOER is required to engage in a public comment process regarding its regulations for sustainable biomass production standards. Mass. Gen. Laws ch. 25A § 11F1/2(b)(v) (“[F]uel shall be provided by means of sustainable forestry practices; provided, however,

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<sup>6</sup> <http://www.mass.gov/eea/energy-utilities-clean-tech/home-heating/wood/wood-dealers-and-prices.html>

that the department shall adopt any . . . sustainability standards . . . *after a public comment process.*") (emphasis added). DOER's proposed regulation implementing this statute provides that "Forest Derived Residues and Thinnings shall only be sourced from forests meeting sustainable forestry management practices, as independently verified according to the specifications in the Department's *APS Guideline on Biomass, Liquid Biofuels and Biogas.*" Draft Regulations, 225 CMR 16.05(4)(d). The Guideline itself, however, states that it is "effective immediately upon issuance," and provides no public comment process. *See* Department of Energy Resources, *Guideline on Biomass, Biogas, and Biofuels* 1 (June 8, 2016). As DOER's approach to verifying sustainable forest management practices is contained in the Guideline, it is a violation of the statute's plain language and spirit to fail to provide an opportunity for comment on the document.

Therefore, subsections "(a) Eligible Biomass Woody Fuel" and "(c) Manufactured Biomass Fuel" must be removed from the proposed regulation's definition of "Eligible Biomass Fuel" until such a time as DOER (in consultation with DCR) has fully defined and codified the standards for "sustainable forestry practices" and has held the proper public involvement process.

The following sections must be removed from the definition of "Eligible Biomass Woody Fuel" until the above public involvement process has been satisfactorily completed:

- (a) Forest-Derived Residues
- (b) Forest-Derived Thinnings
- (c) Forest Salvage
- (d) (3) Land use change - non-agricultural
- (d) (4) Land use change - agricultural
- (d) (5) Wood Waste

### ***DOER's Rules Contain Substantive Flaws***

The relevant statute includes specific language regarding performance criteria for biomass that must be met for it to qualify as an alternative energy-generating source. It is clear that the statute intends to closely control the conditions under which biomass may qualify as a renewable energy. The DOER guidelines do not meet this mandate.

The statute contains detailed restrictions on biomass's eligibility for the APS in recognition of the very narrow and specific conditions under which carbon pollution from burning biomass can be considered to be offset. Biomass emits more carbon dioxide in combustion than fossil fuels, creating a significant "carbon debt" that must be ameliorated through forest regrowth. *See* Manomet, *supra* note 1, at 6. The size of the

carbon debt will depend on the type of fuel being replaced by biomass, the emissions profile of the specific biomass being burned, the efficiency of the conversion technology, and the long-term forest management practices at the site from which the biomass originated. *Id.* at 6–8. In recognition of the fact that biomass can be more harmful than the dirty fossil fuels it replaces if these conditions are not carefully controlled, the statute places explicit restrictions on each factor and charges DOER with implementation of these restrictions.

***The Draft Regulations fail to include any means by which the intensity of emissions from eligible biomass can be ascertained***

The regulations require that biomass fuels “shall be low emission.” Ch. 25A § 11F1/2(a)(iv). Given that biomass “[g]enerally emits more greenhouse gases than fossil fuels per unit of energy produced,” Manomet, *supra* note 1, at 6, and that net carbon emissions from burning biomass are highly dependent on the source of the biomass and by comparison to the fuel it is replacing, the legislation’s requirement that biomass fuels “shall be low emission” mandates an analysis of net lifecycle emissions over time and a rubric by which to judge biomass against the fuels it replaces. The statute provides additional evidence of the legislature’s intent to strictly limit the eligible sources of biomass, stating that “standards for eligible biomass [must] limit eligibility only to best-in-class commercially feasible technologies.” Ch. 25A § 11F1/2(b)(i). In order to implement this section, the proposed draft regulations must compare the emissions profiles of different biomass source-technology combinations, require use of only combinations with very low net emission, and prohibit use of those that do not qualify as “low emission.” This distinction is absent from the draft regulations.

***The Draft Regulations fail to implement the statute’s specified emissions reductions***

The statute further specifies that eligible biomass shall produce a “50 percent reduction” in lifecycle GHG emissions as compared to a “high efficiency unit” burning the fuel it replaces or a high-efficiency natural gas unit. *Id.* § 11F1/2(b)(ii). This provision mandates a contextualized and long-term analysis of the net carbon emissions from burning biomass. See discussion at 4-6, *supra*. Assuming ideal conditions are met – among these, most importantly, that trees harvested for biomass fuels are replaced by other trees that are allowed to *fully* regrow – the Manomet Study found net carbon emissions from biomass only achieve *parity* with emissions from similar-sized fossil-fueled units at some point from 5 years to over 90 years after use, and this process necessarily depends on the size of the initial debt and local conditions that may—or may not—reduce it. Only after parity is reached can bioenergy units begin to show a carbon “benefit” relative to

fossil-fueled units, and achieving a 50 percent reduction in net lifecycle carbon emissions relative to fossil-fueled units takes longer. Manomet, *supra* note 1, at 6–8.

Currently, the regulations only require that at least 50% of the biomass mix come from sustainably produced forest residues and thinnings. Draft Regulations, 225 CMR 16.05 (4)(d)(iii). This arbitrary condition fails to reflect any credible scientific findings on the carbon intensity of biomass, particularly of manufactured biomass fuels including pellets. Biomass emissions science is highly nuanced and contextualized, and this simplistic, one-year snapshot cannot possibly ensure that the statute’s 50% GHG emissions reduction requirement is achieved.

***The Draft Regulations fail to include adequate efficiency standards.***

Biomass “shall . . . use efficient energy conversion technologies,” and DOER will provide “fuel conversion efficiency performance standards achievable by best-in-class commercially-feasible technologies.” Ch. 25A § 11F1/2(a)(iv), (b)(iii). This requirement recognizes that conversion efficiency affects the size of the upfront carbon debt and therefore controls whether biomass can ever reach a 50% reduction in GHG emissions. The Department’s Draft Regulations include efficiency requirements by reference to the separately issued Guideline, but it is not clear that this Guideline requires best-in-class technology. See Draft Regulations, 225 CMR 16.05 (4)(d)(ii); *Guideline on Biomass, Biogas, and Biofuels, supra*, at 3–4.

Additionally, the technologies which qualify as “best in class” will necessarily evolve over time. In order for the Guideline to satisfy this statutory requirement, the Department must include a way to update the Guideline as technology evolves.

***The Draft Regulations do not ensure the use of sustainable forestry practices.***

Biomass facilities shall use fuel “that is produced by means of sustainable forestry practices.” Ch. 25A § 11F1/2(a)(iv). Through reference to a guidelines document, the regulations look to third-party certifications of biomass suppliers that sustainable forestry practices were used. See *Guideline on Biomass, Biogas, and Biofuels, supra*, at 3–4. Sustainable forestry practices occur in the long-term and cannot be measured in a one-year snapshot. Additionally, the Guideline’s reliance on third-party certifications, without a verification mechanism by the Department, is an abdication of its responsibilities.

***The Draft Regulations allow for illegal exceptions to the statutory requirements.***

The statute sets minimum requirements for eligible biomass from which DOER and generators may not deviate. Therefore, the Guideline’s assertion that “The Department

may permit an exception from any provision of the Guideline for good cause” is unfounded. *Id.* at 9. DOER may not allow a biomass generator to deviate from the statute’s low emissions, high efficiency and sustainability mandates.

***Additional portions of the Draft Regulations may be impermissibly vague***

DOER should refine the definition of “Useful Thermal Energy” to provide clearer guidance. Draft Regulations, 225 CMR 16.02. In addition, section 16.05(1)(a)(6) lacks clarity. DOER should rewrite the section in plain language so that it can be more easily followed and understood.

The regulations seem to include consideration of carbon offsets. *See, e.g., id.* at 16.05(1)(e). Valid carbon offsets for biomass are highly dependent on local conditions, and the regulations must reflect this nuance. However, DOER should also recognize that the GWSA requires annual aggregate CO<sub>2</sub> emissions reductions to be ensured by regulation. Due to its front-loaded GHG emissions and potentially extensive lag time for any GHG benefits, policies encouraging the use of biomass may hinder the Commonwealth’s achievement of yearly emissions reduction mandates.

***The proposed APS regulations do not conform to the requirement, as affirmed in court, that state actions track and reduce GHG’s under the Global Warming Solutions Act***

A recent SJC ruling requires that the state adopt regulations, pursuant to the Global Warming Solutions Act, that establish limits on multiple greenhouse gas emissions sources *and that such limits must decline on an annual basis*. *Kain v. Dept. of Env’tl Prot.*, SJC-11961, Slip op. (May 17, 2016). The proposed changes could result in significant new sources of and increases in carbon dioxide emissions prior to the state having adopted the required regulations. In fact, unlike wind or solar where the emissions will decrease linearly as more people take advantage of the subsidy, with biomass, emissions will increase with increased adoption of the technology, since the greater the need for fuel, the more likely it is that sources of biomass with reduced lifecycle emissions will be exhausted and trees will increasingly be harvested for fuel.

**Conclusion**

With GHG levels measured in 2016 at over 400 PPM for the first time ever in Antarctica, it is now clear that all local actions truly have global implications. The Commonwealth has been a worldwide leader in ensuring that biomass power is not developed irresponsibly, so it is unfortunate that MA has now proposed a program that could significantly increase GHG emissions, air pollutants, and forest destruction throughout the Northeast and beyond. The wood pellet industry, in association with the coal industry, has proposed that aging coal boilers nationwide can comply with the Clean Power Plan by converting existing units to burn biomass, including wood pellets, because

the emissions under these scenarios are currently invisible to the framework that regulates fossil-fired electrical generating units. In this context, the promotion of wood pellets for thermal bioenergy contributes to an ever-increasing demand on forests – our only scalable means of carbon sequestration – while also placing an ever-increasing burden on these same forests to produce “carbon free” energy. Promotion of the pellet industry in the Northeast could have serious consequences for the climate, forests, and habitats nationwide. The draft regulations contribute to this scenario by undermining existing protections in the Commonwealth and developing policies that promote the usage of biomass and wood pellets.

As noted, the draft regulations should be revised to remove "(a) Eligible Biomass Woody Fuel" and "(c) Manufactured Biomass Fuel" from the program until such time as the DOER has corrected the flaws evident in the draft regulations and conducted the necessary analysis and review to ensure that new programs comply with existing law and do not undermine the state's goals under the Global Warming Solutions Act.

Thank you for your consideration,

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