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To: Environmental Protection Agency

Submitted electronically to a-and-r-docket@epa.gov

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Attention: Docket ID No. EPA-HQ-OAR-2009-0734

Regarding: Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces, and New Residential Masonry Heaters
The Need for a Higher Quality Pellet Fuel Standard and Certification

ABSTRACT

The Massachusetts Department of Energy Resources (DOER) appreciates the opportunity to comment on the Environmental Protection Agency's proposed New Source Performance Standards (NSPS) for wood heaters. DOER will focus its comments largely on the question pertaining to a pellet fuel standard. The Environmental Protection Agency (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". EPA asks for specific comments on this decision and the PFI program.¹

The DOER believes the PFI standard is a good start, but should be used as a basis to establish a better and more comprehensive required standard by the EPA. In particular DOER refers to the European EN plus standard, and its higher quality requirements, carbon balance calculation, forest management and trace element contamination specifications.

¹79 FR 6364

INTRODUCTION

Many families in Massachusetts and across the U.S. rely on wood-burning devices to heat their homes, making it vitally important that manufacturers provide the cleanest and best technology to meet this need. Worldwide, large strides have been made to improve the performance of wood-burning devices, making them cleaner and more efficient, benefiting consumers and public health. Unfortunately, the U.S. has lagged behind, in part due to outdated standards. EPA's proposed rule will begin to bring U.S. standards in line with those already in place in Europe, bringing much needed protection of public health and improving the market for energy efficient wood-burning devices.

BETTER EFFICIENCY AND LOWER EMISSIONS ARE GOOD FOR CONSUMERS

The proposed NSPS will provide economic benefits to consumers and manufacturers as well. Typically, cleaner burning units are more energy efficient, which lowers the long-term cost of ownership due to reduced fuel use. Current central heating units have efficiencies as low as 28 percent (e.g., outdoor wood boilers) and typical woodstoves are about 60 percent efficient. Since the European Union placed more stringent emission limits on solid wood-fueled units, the average efficiency has increased from 55 percent to more than 90 percent. By reducing fuel use by about one-third, in the United States, this would save the average U.S. homeowner with a woodstove about \$300 per year. Many U.S. manufacturers already produce cleaner burning units and will benefit from the NSPS. However, without this rule there is no incentive for others to improve technology standards.

Massachusetts' energy programs are increasingly focusing on renewable heating technologies, such as wood pellet and chip boilers, furnaces, and stoves, as a way to offer consumers an alternative to high-cost fossil fuels, and to realize important greenhouse gas reductions and economic benefits. In particular, the DOER is preparing to add these technologies to the Massachusetts Alternative Portfolio Standard. This effort will hugely benefit from clear standards in terms of emissions and fuel quality.

LOWER EMISSION LEVELS ARE ACHIEVABLE

DOER generally supports the proposed emission standards; however we ask that EPA make the final Phase 1 standards **more stringent** for space heaters and central heaters. We know from the

wood stove change-out programs² we administer in collaboration with the Massachusetts Department of Environmental Protection (MassDEP) and the Massachusetts Clean Energy Center (MassCEC) that woodstoves that go beyond the proposed Phase 1 standards are widely available. Since many cleaner burning wood stoves already are available in the market, we have set emissions requirements in the Massachusetts change-out program that are more stringent than the proposed NSPS (3.5 g/hr PM for non-catalytic and 2.0 g/hr PM for catalytic versus proposed NSPS phase 1 4.5 g/hr PM).³

DOER also supports the proposed improvements to the certification test procedures and requirements for using certified pellet fuel to ensure that real-world exposures are reduced. Specifically, DOER wants to call out the recent cold to hot test method recently developed by the Brookhaven National Lab (referenced in the EPA proposal) to test the whole real life duty cycle, and propose that EPA adopts test procedures based on this methodology.

MOVING THE MARKET TO PELLETT BOILERS

DOER does want to flag that **whole house wood pellet boilers** are becoming more and more prevalent in the United States. These boilers are very clean burning, fully automated and equipped with bulk pellet fuel and thermal storage to increase their energy efficiency. They provide even higher energy efficiencies, air quality benefits, and greenhouse gas reductions. Massachusetts is poised to incentivize these appliances, which leads us to especially support EPA's development of emission standards for this category of hydronic heating devices.

PELLET FUEL QUALITY INCLUDES FOREST MANAGEMENT

A robust federal pellet (and chip) standard should incorporate requirements about the resources used to manufacture the fuel, since that directly influences criteria pollutant and greenhouse gas emissions, as well as the sustainability of forest management practices.

Sustainable forest management is of particular importance to Massachusetts, as it is to other states.

²<http://www.masscec.com/news/patrick-administration-announces-1-million-new-round-popular-woodstove-trade-program>

³<http://www.masscec.com/content/commonwealth-woodstove-change-out-stove-professionals>

In August 2012 the Massachusetts DOER issued final regulations on the eligibility of power generating projects using woody biomass in the state's Renewable Portfolio Standard (RPS).⁴ The regulations were enacted after two years of evaluation, public input, and careful considerations of how best to utilize woody biomass resources for energy, in a manner which is consistent with the Commonwealth's commitments to reduce greenhouse gas (GHG) emissions and to protect the broad range of human and ecological services of the forests. One of the important revisions to the RPS regulations was the careful consideration of the Biomass Sustainability and Carbon Policy Study by a team led by the Manomet Center for Conservation Sciences.⁵

Today, the Massachusetts Legislature is considering a proposed Bill that would add renewable heating and cooling technologies to the state's Alternative Portfolio Standard.⁶ The technologies under consideration include biomass, used in efficient and clean burning pellet or chip installations to heat industrial, commercial or residential buildings. In keeping with the precedent set by the RPS regulations for woody biomass, the proposed Bill includes the need for the DOER to set air emission standards and guarantee the biomass originates from sustainably managed forests, among other requirements. The proposed new Section 11F1/2. (b) reads (emphasis added):

“The [DOER] shall set: (1) emission performance standards that are **protective of public health**, including standards for eligible biomass, bio-gas and liquid bio-fuel technologies that limit eligibility only to best-in-class commercially-feasible technologies, inclusive of energy conversion and emissions controls, with regard to reducing emissions of particulate matter sized 2.5 microns or less as well as carbon monoxide and other air pollutants; (2) [...]; and, (4) in consultation with the department of conservation and recreation, and requirements for forest-derived biomass fuel be provided by means of **sustainable forestry practices**, and that the department adopt any existing or new biomass **fuel sustainability standards** if deemed appropriate by the department after a public comment process. [...]

⁴<http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/biomass/renewable-portfolio-standard-biomass-policy.html>

⁵<http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/biomass/biomass-sustainability-and-carbon-policy-study.html>

⁶ S1970, An Act relative to credit for thermal energy generated with renewable fuels, Currently before the Senate Ways & Means Committee, <https://malegislature.gov/Bills/188/Senate/S1970>

If and when this statutory change is enacted, DOER will need to develop regulations in accordance with these requirements, while at the same time create a framework that is both manageable for the customer and the vendor community. Especially for residential customers installing a biomass heater, it may be very burdensome to have to comply with reporting requirements such as the ones included in the Massachusetts RPS. A federal fuel quality standard aiming to protect both ambient air quality as well as forest sustainability could be instrumental for our efforts, since it would provide DOER with a clear and transparent tool to refer to in the regulatory implementation of the new APS statute without imposing a heavy administrative burden on customers. It would also support clean biomass heating market growth in the many other states currently starting to include or examining the inclusion of biomass in their portfolio standards.

It is important to emphasize that, based on the stakeholder community's feedback; customers are looking for high quality standards even in the absence of a statutory requirement. In other words, not addressing this issue would risk keeping an important market barrier in place.

PELLET FUEL QUALITY NEEDS TO BE CERTIFIED

A guaranteed pellet fuel quality is very important for a number of reasons, especially as the market for more efficient and clean wood heaters is expected to grow. Fuel quality is a central issue for the further development of pellet markets. Specifically, the residential heating sector depends on reliable fuel quality since it is crucial for a reliable and economic use of small-scale pellet heating systems. The importance of quality standards and assurance was made obvious in Germany and Austria where the early introduction of pellet-related standards and certification systems certainly was a stimulating factor for the dynamic development of residential pellet heating markets.⁷

The key parameters that need to be specified in an unambiguous way for wood fuel are:

- Moisture content
- Ash content
- Dimensions
- Origin

⁷ European Pellet Standards, Intelligent Energy Europe, 2009, <http://www.pelletsatlas.info/>

Contaminations in the fuel lead to immediate problems with combustion systems caused by the slagging of ash. Low durability and high content of fines can lead to significant handling problems, higher emissions and system failure. Particularly bulk pellet supply is very sensitive to pellet quality.

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”.⁸

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.

THE EXAMPLE OF THE EUROPEAN “ENPLUS” CERTIFICATION

Compared to the PFI standard, the European ENplus standard sets higher quality requirements, a carbon balance calculation, as well as forest management and trace element contamination specifications. DOER asks that EPA closely investigate the ENplus standard and certification. In particular, DOER points to the ENplus provisions pertaining to percent by weight ash content and the prohibition of using bark in the production of wood pellets.

The European voluntary ENplus quality certification aims to replace numerous national European standards and certifications by one uniform system based on the EN 14961-2 standard for wood pellets.⁹ The ENplus system has been adopted by the European Pellet Council in January 2011 and enjoys the support of large parts of the European pellet sector. A key advantage of ENplus is that the pellet quality is managed throughout the entire supply chain, including production, storage and transport all the way to the end consumer. The ownership of the ENplus trade mark rests with the European Biomass Association AEBIOM, which hosts the European Pellet Council.

⁸79 FR 6364

⁹<http://www.enplus-pellets.eu/>

The Pellet Fuel Institute standard and ENplus certification share many similarities.¹⁰ Both include an accredited auditing structure and third party oversight of quality assurance and quality control (QA/QC) practices at the facility. They both have three grades with similar grade criteria.

ENplus specifies that the use of chemically treated wood is not allowed. The only exception is wood that was externally treated with wood preservatives against insect attacks. Similarly, PFI excludes “any feed stock material (cellulosic or otherwise) that contains any bonding agent, resin, preservative, surface coating or other finish, or any other chemical compound that has been added to the material”.¹¹ De minimis levels are however acceptable, without clearly defining what exactly constitutes a “de minimis” level.

Table 1- Classification according to EN 14961-1 (included in ENplus)

| A1 | A2 | B |
|--|---|---|
| 1.1.3 Stem wood 1.2.1 Chemically untreated residues from the wood processing industry | 1.1.1 Whole trees without roots 1.1.3 Stem wood 1.1.4 Logging residues 1.2.1.5 Bark ¹⁾ 1.2.1 Chemically untreated by-products and residues from the wood processing industry | 1.1 Forest, plantation and other virgin wood 1.2.1 Chemically untreated ²⁾ by-products and residues from the wood processing industry 1.3.1 Chemically untreated ²⁾ used wood ³⁾ |

¹⁾ From sawmill activities and cork residues.

²⁾ Chemically treated by-products and residues from the wood processing industry as well as chemically treated used wood can be used if no heavy metals or halogenated organic compounds are contained.

³⁾ Demolition wood is excluded. Demolition wood is used wood arising from demolition of buildings or civil engineering installations.

Table 2- Comparing key fuel specifications of PFI¹² and ENplus¹³

| | PFI Premium | ENplus A1 | PFI Standard | ENplus A2 | PFI Utility | ENplus B |
|---------------------|--------------------|------------------|---------------------|------------------|--------------------|-----------------|
| Ash (%) | < 1.0 | < 0.7 | < 2.0 | < 1.5 | < 6.0 | < 3.0 |
| Moisture (%) | < 8.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 |

¹⁰ Chris Wiberg, PFI, 11/8/2012, <http://www.nescaum.org/documents/national-educational-forum-on-the-residential-wood-heater-nsp/documents/meeting-presentations-pellets/wiberg-pellet.pptx/>

¹¹ PFI, 2011, <http://pelletheat.org/wp-content/uploads/2011/11/QA-QC-Handbook-November-2011.pdf>

¹² PFI, 2011, <http://pelletheat.org/wp-content/uploads/2011/11/PFI-Standard-Specification-November-2011.pdf>

¹³ ENplus handbook 2.0, April 2012, <http://www.enplus-pellets.eu/wp-content/uploads/2012/01/ENplus-Handbook-2.0.pdf>

Importantly, ENplus includes detailed specifications for nitrogen, sulphur, chlorine and a list of metals in accordance with EN14961-2. The PFI standard does not.

In an analysis of the chemical composition of 23 wood chip samples and 132 wood pellet samples manufactured in the United States and Canada, the New York State Energy and Research Development Authority (NYSERDA) found most of the wood pellets tested would meet U.S. voluntary standards but would likely not meet standards for residential use in European markets.¹⁴ The pellet samples came from locations across northern New York and New England and encompassed 100 different manufacturers, with some duplicate sampling. Some pellet samples had unusually high concentrations of several heavy metals, including arsenic, copper, and chromium. This may be due to extraneous materials in the pellets, such as preservative-treated and painted waste wood. The report's authors concluded: "Based on these test results, establishing enforceable U.S. standards for elemental compositions of commercial wood pellets and chips would help exclude inappropriate materials and promote cleaner combustion."

An important advantage of the ENplus certification over the PFI standard is that ENplus covers the complete supply chain, and includes sustainability criteria as well as standardized carbon balance calculations. ENplus certified producers have to commit to a list of sustainability criteria and document the origin of their raw materials, to be inspected during the annual compliance audit. The wood sourcing sustainability principles include, among others: not interfering with the carbon balance in vegetation and soil, not negatively interfering with biodiversity within the forest, maintaining water resources, avoiding negative impact on air quality, respecting property rights, contributing to local prosperity and adhering to ethic principles.

U.S. PRODUCERS IMPLEMENT ENPLUS TODAY

The European support for renewable energy generation with biomass to meet their 2020 renewable energy targets lead to significant demand and export of wood pellets to the EU. Most of the increase in exports over the past two years has been from the U.S. South.¹⁵ The majority of the pellets exported to the European Union (EU) are for power generation. Pellets for residential

¹⁴ Elemental Analysis of Wood Fuels, NESCAUM for NYSERDA, June 2013, <http://www.nyserda.ny.gov/-/media/Files/Publications/Research/Biomass-Solar-Wind/elemental-analysis-wood-fuel.pdf>

¹⁵ <http://biomassmagazine.com/articles/9794/north-american-pellet-exports-to-europe-continue-increase>

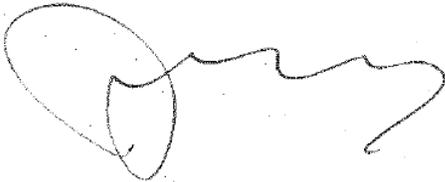
heating are sourced more locally. The export to the EU has lead however to a growing number of U.S. pellet producers to seek European quality standard certification. At the time of writing these comments, 10 producers in the U.S. have been certified according to the ENplus standard.¹⁶

Arguably this demonstrates the feasibility of implementing a pellet fuel quality certification in the U.S. that goes beyond the minimum requirements of the PFI standard.

DOER respectfully recommends the EPA to develop such a federal pellet fuel quality certification.

Thank you for your leadership in this area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Bram Claeys'. The signature is fluid and cursive, with a large initial 'B' and a long, sweeping tail.

Bram Claeys

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¹⁶<http://www.enplus-pellets.eu/production/certified-producers/>