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Honorable Lisa P. Jackson
Administrator
U.S. Environmental Protection Agency
c/o EPA Docket Center (6102T)
Docket ID No. EPA-HQ-OAR-2006-0790
<http://www.regulations.gov>
1200 Pennsylvania Ave., NW,
Washington D.C. 20460

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Re: Comments on EPA's Proposal at 75 Fed. Reg. 31896 (June 4, 2010) of National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial & Institutional Boilers at Area Sources

Dear Administrator:

The Pellet Fuels Institute (PFI) hereby submits their comments on EPA's proposal at 75 Fed. Reg. 31896 (June 4, 2010) entitled "National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers." These comments focus only on EPA's proposed treatment of relatively small boilers combusting biomass – *i.e.*, those boilers with design capacity less than 10 mmBtu/hr heat input.

PFI is a non-profit trade association that serves the pellet industry, which is comprised of pellet mills, pellet appliance manufacturers and industry suppliers. We are writing specifically on behalf of pellet mills. As of 2009, pellet manufacturing directly employs approximately 2,300 people in the U.S. and supports thousands of industry-related jobs in fields such as transportation and logging.

I. SUMMARY OF COMMENTS

PFI strongly supports EPA's proposal to set a work practice standard, instead of numerical standards, for emissions of CO and PM from *existing* area source biomass boilers with design capacity below 10 mmBtu/hr. EPA has no evidence that the CO and PM emissions data it has for biomass boilers are representative of units below 10 mmBtu/hr, especially units below 3 mmBtu/hr, the units of greatest concern to PFI. At the same time, EPA does have evidence that: (1) the fundamental designs of biomass boilers, including fuel usage, vary greatly, especially as between biomass boilers over 10 mmBtu/hr and those below 3 mmBtu/hr; (2) EPA's emissions measurement methodology is not applicable to biomass boilers below 10 mmBtu/hr, especially those below 3 mmBtu/hr; (3) add-on control technology and emissions testing and monitoring are

prohibitively expensive for such boilers; and (4) tune-ups are demonstrated in use to be effective in reducing CO and PM for such boilers. EPA's proposal as to existing units below 10 mmBtu/hr satisfies the rationality and achievability requirements of section 112(d).

This is not so for EPA's proposal to set numerical standards of 100 ppm and 0.03 lb/mmBtu for CO and PM respectively for *new* area source biomass boilers below 10 mmBtu, especially units below 3 mmBtu/hr. Basically, all the reasons for exempting the corresponding *existing* units are reasons also for exempting *new* ones. There is no basis for thinking that the CO and PM data EPA has are representative, and some basis for thinking the data are not. Moreover, there is a strong basis for thinking that the 100 ppm and 0.03 lb/mmBtu limits are technologically and economically infeasible for units below 10 mmBtu/hr, especially units below 3 mmBtu/hr. Certainly, it is clear that no single unit under 10 mmBtu could comply with both standards at the same time. Finally, it is also clear that the imposition of the proposed limits would have catastrophic consequences for the marketing of biomass boilers under 10 mmBtu/hr, especially pellet-fired units under 3 mmBtu/hr, severely compromising the continuing expansion of the pellet fuel market in the United States. PFI respectively urges EPA to carry the 10 mmBtu/hr exemption for existing biomass units over to new units. NSPS Subpart Dc provides strong precedent for doing that in the case of PM, where the GACT logic applies.

II. BACKGROUND

A. Statutory Authority

Section 112(d)(1) of the Clean Air Act (CAA), 42 U.S.C. § 7412(d)(1), authorizes and requires EPA to set "emission standards for each category or subcategory of major sources and area sources of hazardous air pollutants listed for regulation" according to a particular schedule. Here EPA long ago listed industrial, commercial and institutional (ICI) boilers at area sources.

Section 112(d)(1) further authorizes EPA in setting such standards "to distinguish among classes, types, and sizes of sources within a category or subcategory" generally. EPA may subcategorize on the basis of differences in the fundamental productive design of the HAP-emitting equipment as those differences relate to HAP emissions control. Where such differences thus matter significantly, EPA is obliged to subcategorize in order to remain faithful to the overarching injunction to issue standards that are "achievable." For instance, EPA is obliged to separate gas-fired boilers from coal-fired boilers because otherwise compliance with the resulting MACT standards by the coal-fired boilers would be technologically infeasible, an outcome Congress could not have intended, as discussed in detail below. As Judge Williams opined in his well-known concurring opinion in the D.C. Circuit's Brick MACT case, subcategorization is a vital tool for EPA to assure that its MACT standards are "in accord with common sense and the reasonable meaning of the statute." *Sierra Club v. EPA*, 479 F.3d 875, 885 (2007).

Section 112(d)(2) provides that the required emission standards for a category or subcategory in turn must require “the maximum degree of reduction in emissions of the hazardous air pollutants” which EPA determines is achievable through some form of emissions control (as opposed to fundamental design change), taking costs and non-air quality impacts into account. Such standards are commonly called “MACT standards.”

Section 112(d)(3) sets a minimum “floor” for such controls. For new units, the “floor” may not be less stringent than “the emission control that is achieved in practice by the best controlled similar source”. For existing units, it generally may not be less stringent than “the average emission limitation achieved by the best performing 12 percent of the existing sources”. EPA, however, may set the ultimate MACT standard at an even more stringent level, after taking control availability, costs, and non-air quality impacts into account.

For units at area sources, EPA may follow a different pathway pursuant to section 112(d)(5), except as otherwise might be required by section 112(c)(6). Section 112(d)(5) allows EPA to elect to promulgate, in lieu of a standard under section 112(d)(2), a standard providing for “generally available control technologies or management practices” (GACT) designed to reduce emissions of hazardous air pollutants (HAPs). Section 112(c)(6) requires EPA to ensure that 90 percent of emissions of certain specified HAPs are subject to a MACT standard, whether those emissions arise from units at major sources or area sources.

B. EPA’s Proposal of MACT/GACT Standards for Area Source Boilers

Through its June 4, 2010 *Federal Register* notice, EPA proposed a mix of MACT and GACT standards for new and existing biomass boilers at area sources. It defined a biomass boiler as one that burns biomass or biomass in combination with a certain, relatively small amount of a liquid or gaseous fuel. *See* 75 Fed. Reg. at 31901.

EPA proposed to use emissions of carbon monoxide (“CO”) as the surrogate for emissions of polycyclic organic matter (“POM”) and other organic HAPs, and emissions of particulate matter (“PM”) as the surrogate for emissions of non-mercury metallic HAPs. *See* 75 Fed. Reg. at 31900. Further, EPA proposed to base the CO standard for area source boilers on MACT logic, while the PM standard on GACT logic, because of the interplay of sections 112(c)(6) and 112(d)(5) in the context of HAP emissions from area source boilers.

EPA proposed to treat all new area source biomass boilers, regardless of size, as one subcategory for purposes of both CO and PM emissions. In contrast, EPA proposed for existing biomass boilers to distinguish for CO purposes between boilers with design capacity greater than or equal to 10 mmBtu/hr heat input and those with design capacity less than that level. In effect, EPA proposed to treat all existing biomass boilers as one subcategory for PM purposes.

To establish the CO MACT standard for new and existing biomass boilers, the Agency obtained emissions data from 14 boilers in the National Forest Service's Fuels for Schools program and 26 boilers from EPA's 2008 Information Collection Request (ICR) survey for major sources. After identifying the best controlled existing unit, EPA concluded that the CO MACT standard for all new units, regardless of size, should be 100 ppm at 7% oxygen. *See* 75 Fed. Reg. at 31906. After averaging the best performing 12 percent of those boilers (only 8 boilers in total), the Agency concluded that the CO MACT standard for existing biomass units greater than or equal to 10 mmBtu/hr in design capacity should be 160 ppm at 7% oxygen. For existing biomass boilers less than 10 mmBtu/hr in design capacity, EPA proposed for CO emissions a work practice standard consisting of biennial tune-ups.

For PM purposes for new and existing biomass units, the Agency determined the PM GACT standard using data obtained from 82 area source boilers as part of the 2008 ICR survey for major sources. However, the design capacity of all of those boilers was above 10 mmBtu/hr heat input. Thus, EPA did not have any PM emissions data for boilers below 10 mmBtu/hr. In light of that data and because new or modified area source biomass boilers above 10 mmBtu/hr would be subject to the applicable New Source Performance Standard (NSPS) (*i.e.*, 40 CFR Part 60, Subpart Dc) anyway, EPA proposed the NSPS PM limit of 0.03 lbs/mmBtu as the PM GACT emission limit for all new biomass units, regardless of size, oddly even those with design capacity less than 10 mmBtu/hr. For all existing biomass boilers, applying GACT logic, EPA proposed a working practice standard consisting of tune-ups.

In setting a tune-up standard for CO and PM for existing biomass units below 10 mmBtu/hr, EPA relied on section 112(h) of the CAA, which states that EPA may prescribe a work practice standard where it is not feasible to enforce an emission standard due to technological or economic limitations. EPA proposed two justifications. First, it found, with respect to technological feasibility, that most boilers below 10 mmBtu/hr have a stack diameter which is less than 12 inches, a diameter too small for effective use of the Agency's standard measurement methods. Second, EPA found, with respect to economic feasibility, that retrofitting those stacks to allow effective use of such measurement methods would be prohibitively expensive, and in particular that the total compliance costs would have a significant adverse economic impact on the companies operating those boilers. *See* 75 Fed. Reg. at 31906.

Finally, EPA proposed not to set an emission standard for possible emissions of mercury from any new or existing biomass boilers, in large part for lack of a significant amount of emissions data.

In sum, for the area source boilers of central concern to PFI, *i.e.*, biomass boilers with design capacity less than 10 mmBtu/hr, EPA proposed numerical standards for new ones of 100 ppm and 0.03 lb/mmBtu for CO and PM respectively and a tune-up standard for existing ones.

III. Key Legal Requirements EPA Must Satisfy

Two requirements of section 112(d) that EPA must satisfy deserve emphasis – *i.e.*, the requirements that each MACT standard must be rational and in general technologically achievable.

A. Rationality

In making the determinations required by section 112(d), *e.g.*, determinations as to the emission rates which represent the technological “floor” for new or existing units, EPA must satisfy basic requirements of rational decision-making. Congress explicitly consigned to the federal courts of appeals, and in particular the D.C. Circuit in the case of section 112(d) standards, the job of reviewing EPA’s final actions upon petition and overturning them for failure to satisfy those rationality requirements. *See* CAA § 307(d)(9), 42 U.S.C. § 7607(d)(9). Thus, rationality principles constitute a fundamental underpinning of section 112(d), notwithstanding the formulaic nature of section 112(d)(3). To survive judicial review, a MACT standard must be based demonstrably on rational decision-making.

In reviewing EPA’s actions under the CAA generally, the D.C. Circuit has firmly embraced that interpretation of the Act in many opinions. A much-quoted passage is the following one:

We will not set aside a final rule under the Clean Air Act unless the underlying agency action was “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law” or “in excess of statutory jurisdiction, authority, or limitations, or short of statutory right.” 42 U.S.C. § 7607(d)(9)(A) & (C). **The “arbitrary and capricious” standard deems the agency action presumptively valid provided the action meets a minimum rationality standard.** *See, e.g., Small Refiner Lead Phase-Down Task Force v. EPA*, 227 U.S. App. D.C. 201, 705 F.2d 506, 520-21 (D.C. Cir. 1983). In applying this standard we determine whether the agency has considered the relevant factors and articulated a rational connection between the facts and its choices. *See Motor Vehicle Mfrs. Ass’n of the United States v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43, 77 L. Ed. 2d 443, 103 S. Ct. 2856 (1983). While we carefully review the factual record, we will give due deference to the agency especially when the agency action involves evaluating complex scientific or statistical data within the agency’s expertise. *See Ethyl Corp. v. EPA*, 176 U.S. App. D.C. 373, 541 F.2d 1, 34-36 (D.C. Cir. 1976) (*en banc*).

NRDC v. EPA, 194 F.3d 130, 136 (D.C. Cir. 1999) (emphasis added in bold). In a case arising under section 112(d), then Judge Roberts, now Chief Justice of the U.S. Supreme Court, quoted with approval the sentence highlighted in bold print in the above quotation, clearly intending to apply the rationality principle to the MACT standards at issue in that particular case. See *Sierra Club v. EPA*, 353 F.3d 976, 978 (D.C. Cir. 2004).

Indeed, in leading cases involving section 112(d), or its mirror-image counterpart, section 129(a)(2), 42 U.S.C. § 7429(a)(2), the D.C. Circuit has upheld, elaborated on and applied the rationality principle repeatedly. A prime example is *Cement Kiln Recycling Coalition v. EPA*, 255 F.3d 855 (2001), where the court stated:

In *Sierra Club*, we held that CAA section [129(a)(2)] ... requires EPA to make a **reasonable** estimate of the performance of the top 12 percent of units. While acknowledging that EPA has authority to devise the means of deriving this estimate, we made clear that the method EPA selects must allow a **reasonable** inference as to the performance of the top 12 percent of units. We emphasized that EPA must show not only that it believes its methodology provides **an accurate picture** of the relevant sources' actual performance, but also why its methodology yields the required estimate.... In *National Lime II*, we addressed a Sierra Club petition challenging emission standards set under section [112(d)] for non-hazardous waste-burning Portland cement kilns. In evaluating EPA's standards, we reiterated *Sierra Club's* central holding that to comply with the statute, EPA's method of setting emission floors must **reasonably** estimate the performance of the relevant best performing plants.

Id. at 861-62 (emphasis added in bold; citations and quotation marks omitted). In the court's view, a "floor" determination is rational only if it accurately reflects actual performance.

Here, it would be the antithesis of rationality for EPA to base a section 112(d) determination on data that is unrepresentative of actual reality. Such data simply cannot depict actual performance accurately. That would be arbitrary and capricious, and the D.C. Circuit would strike down any MACT standard based on such a determination.

B. Achievability

1. Introduction

A fundamental issue facing EPA in the present rulemaking is whether Congress intended it to set the so-called “floors” for existing and new units within a particular subcategory solely on the basis of emissions test data, without regard to whether there is a technically feasible means of emissions control in actual usage within the subcategory which is sufficient generally to achieve the floor. EPA squarely addressed this issue in its 2004 Boiler MACT rulemaking, saying:

Furthermore, setting emission standards on the basis of actual emission data alone where facilities have no way of controlling their HAP emissions would contravene the plain statutory language as well as Congressional intent that affected sources not be forced to shut down.

69 Fed. Reg. 55218, 55233 col. 1 (Sep. 13, 2004). EPA explained: “This is because the statute requires EPA to set standards that are duplicable by others.” *Id.* Thus, in 2004, EPA interpreted the CAA as requiring it to determine when it sets the floors whether there are technically feasible means of compliance in actual usage within the subcategory. However, in their challenge to the 2004 Boiler MACT standard before the D.C. Circuit, NRDC and the other citizens groups disputed EPA’s interpretation, contending that EPA must focus only on actual emission rates in setting the floor.¹ EPA vigorously defended its view in its responsive brief, saying: “... Congress intended EPA to base its standards on the amount of emission reduction sources can achieve by the application of some form of control, and not on the levels some source may emit simply because of characteristics of the source or its operation that cannot be replicated by others.”² Moreover, in EPA’s view, it has a duty to examine the technical feasibility of a floor: “... Congress did not intend that EPA consider just the level of emissions, *but rather that the Agency consider how those emission levels are achieved and base the standard on the lowest level that can be achieved through the implementation of some sort of emission control.*” *Id.* (emphasis added). The court, however, never decided this issue because it vacated the standard on a different ground. *See NRDC v. EPA*, 489 F.3d 1250, 1261 (June 8, 2007). Thus, EPA must face the issue again, in the present rulemaking.

2. EPA’s Legal Position in Its Area Source Proposal

Unfortunately, EPA on the whole appears in its June 4, 2010 area source Boiler MACT proposal to be adopting – without an explanatory legal analysis – the position of the citizen groups in the *NRDC* case. For example, with respect to a MACT standard for CO emissions from existing boilers, EPA stated:

¹ Environmental Petitioners’ Initial Opening Brief, at 31 (June 12, 2006) (*NRDC v. EPA*, Case No. 04-1385).

² Final Brief for Respondent United States Environmental Protection Agency, at 49 (Dec. 4, 2006).

The MACT floor limits for each of the HAP and HAP surrogates (mercury and CO) [for existing area source boilers] are calculated based on the performance of the lowest emitting (best performing) sources in each of the subcategories. We ranked all of the sources for which we had data based on their emissions and identified the lowest emitting 12 percent of the sources for each HAP.

....
We used the emissions data for those best performing affected sources to determine the emission limits to be proposed, with an accounting for variability.

75 Fed. Reg. at 31905 col. 2 (emphasis added). Thus, EPA appears to have changed its mind about the methodology Congress intended EPA to use in determining the floors for existing and new units, albeit without providing any explanatory legal analysis.

3. PFI's Comments on EPA's Proposed Legal Position

PFI respectfully urges EPA to return to its 2004 position. The evidence of Congressional intent strongly and unequivocally shows that Congress intended the regulatory machinery of sections 112(d)(1)-(3) to operate so as to: (1) identify those forms of emission control in actual use which produce maximum reductions in HAP emissions when applied to particular units; (2) press all existing and new units of the same type from the standpoint of basic production design to apply those controls or otherwise achieve at least the same reduced level of emissions, either through innovation, reduced operation or some other way; and (3) preserve, protect and enhance the economic vitality of the national economy. Thus, in line with other key provisions of the Clean Air Act, such as section 111, sections 112(d)(1)-(3) are technology-forcing. They are designed to propagate the best HAP emissions control in actual usage, not to produce dictates achievable only through widespread shutdowns and the installation only of newly designed production equipment.

To implement that Congressional purpose, EPA must base the floors not only on available emissions test data, but also on a determination that some technically feasible means of achieving the floor is generally available to the units within the subcategory, as demonstrated by actual use within the subcategory. Otherwise, if EPA were to base the floors for a particular subcategory only on available test data, without examining technical feasibility and actual usage, it could produce a MACT standard which a majority – indeed even a plurality – of units in the subcategory would have no hope of achieving. That would be a perversion of the Congressional vision – which is to identify and spread the use of best controls, while preserving economic vitality, not to force widespread shutdowns, re-capitalization within industry segments, and the sacrifice of useful production designs.

Section 112 is replete with unassailable textual evidence that Congress authorized EPA to set a floor *only* at a level which units within a subcategory generally had some means of achieving as a technical matter, as demonstrated by actual usage within the subcategory. In implementing section 112, EPA must give full effect to that textual evidence. See *Whitman v. American Trucking Association, Inc.*, 531 U.S. 457, 485 (2001) (“The EPA may not construe the statute in a way that completely nullifies textually applicable provisions meant to limit its discretion.”).

Key pieces of such evidence are as follows:

- Section 112(d)(2), the overarching directive to EPA for establishing a MACT standard for any given subcategory, requires EPA to set the standard at a level that corresponds to the maximum degree of reduction of HAP emissions that is achievable for the subcategory through the “*application* of measures, processes, methods, systems, or techniques”. (Emphasis added.) Sections 112(d)(2)(A)-(E) then define those various forms of emissions control as including a wide range of “measures”. Specifically listed are process changes, materials substitution, enclosures, add-on control technology, work practices, and operational standards. Not listed, or even suggested, were changes to the basic design of the units in question, the HAP-emitting production equipment. In crafting the MACT standard setting process, Congress took production equipment, such as boilers and process heaters, as a given and envisioned that the standards EPA generated would stimulate the “application” of control “measures” to the production equipment, without change to the basic design of the equipment. In other words, section 112(d)(2) evidences a fundamental mindset on the part of Congress, namely: Congress sought to control HAP emissions by forcing investments only in control measures. It did not seek to control HAP emissions by dictating or restricting basic designs of production equipment. Congress left individual companies free to make fundamental decisions about their core capital investments, especially the basic design of production equipment. Section 112(d)(2) thus reflects and reveals a fundamental conceptual orientation on the part of Congress which is universal to all of the technology-based standard-setting processes dictated by the CAA.
- Section 112(d)(3)(A) is also an expression of, and hence reveals, that mindset. It calls on EPA to set the floor for existing units within a subcategory at the average level actually “achieved” by the best “performing” 12 percent. The use of the terms “achieved” and “performing” imply that Congress had in mind a cause-and-effect relationship between the actual in-use application of one or more of the control measures listed in section 112(d)(2)(A)-(E) to a piece of HAP-emitting equipment and a resulting actual level of reduced emissions from the equipment. The terms indicate that Congress distinguished between such measures and the fundamental design of the equipment and wanted to identify those measures by which EPA could reliably establish norms of behavior for pieces of equipment of like design. In

other words, Congress sought to spread the use of those controls proven to be best by actual practice, but not force changes in the fundamental design of production equipment within an industry segment, *e.g.*, through shutdowns and re-capitalization. If EPA, however, were to base the floor for existing units within a subcategory only on average emissions test data, without examining the cause-and-effect relationships, it could end up setting a floor which would operate to force changes in fundamental design of production equipment. That would be contrary to the textual thrust of section 112(d)(3)(A), especially in the light of the fundamental structure of section 112(d)(2), as EPA recognized in the first Boiler MACT rulemaking. In short, Congress authorized EPA to set behavioral norms *only* for the application of proven best controls to existing HAP-emitting equipment within an industry segment. It did not authorize EPA to set norms for the basic design of such equipment.

- The first sentence of section 112(d)(3), which specifies the methodology EPA must follow to set a floor for new units, carries the same meaning. It provides: “The maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory shall not be less stringent than the emission control that is achieved in practice by the best controlled similar source” Once again, the phrases “reduction in emissions”, “achieved in practice”, and “best controlled” all bring to mind, especially in juxtaposition with section 112(d)(2), the application of control measures to HAP-emitting production equipment. The first sentence of section 112(d)(3) thus confirms that Congress regarded the basic design of such equipment as a given and sought to identify the forms of control that (i) experience showed to be the most effective and (ii) companies could apply in a replicable way without altering the basic design of the production equipment.
- Section 112(d)(6) also reflects this mindset. It requires EPA to “review, and revise as necessary (taking into account developments in practices, processes, and control technologies), emission standards promulgated under this section no less often than every 8 years.” The reference to “practices, processes, and control technologies” indicates what Congress regarded as factors of significance in setting behavioral norms for controlling HAP emissions. In the light of section 112(d)(2)(A)-(E), those factors are limited to means of control applicable to an already established basic design of the relevant piece of productive equipment. Section 112(d)(6) thus confirms that Congress did not intend to authorize section 112(d) standards that could constrain the choice of such basic design.

Other provisions of the CAA provide further evidence of Congress’ intent. First, several provisions other than section 112 call for the establishment of technology-based emission standards for stationary sources, namely: section 111 (New Source

Performance Standards (NSPS)), section 129 (incinerators), section 165 (Best Available Control Technology (BACT) for certain new construction projects), section 172(c)(1) (Reasonably Available Control Technology (RACT) for existing sources as control by State Implementation Plans), and section 173 (Lowest Achievable Emission Rate (LAER) for certain new construction projects). In each case, the basic idea is to set a behavioral norm based on the application of available and “demonstrated” control technology, without fundamentally compromising the freedom of companies to choose the basic design of their production equipment. There is no sign in the CAA that Congress intended section 112(d) to operate differently or to authorize EPA to encroach fundamentally on that basic freedom in setting MACT standards. Second, section 101(b)(1) declares that an overarching purpose of the entire CAA is “to protect and enhance the quality of the Nation’s air resources so as to promote the public health and welfare and *the productive capacity of its population.*” (Emphasis added.) If EPA were to set floors under section 112 solely on the basis of emission rates, without regard to the cause-and-effect relationship between available proven controls and such rates, inevitably that approach would defeat that purpose by severely compromising the Nation’s productive capacity.

The legislative history of section 112 confirms that Congress was aiming to identify and spread best, in-use-proven controls of HAP emissions within the appropriate categories and subcategories of HAP-emitting equipment, without fundamentally constraining the ability of companies to choose the basic design of that equipment. During the Senate debates on the conference bill that became the CAA Amendments of 1990, U.S. Senator David Durenberger (R-MN), the primary author of section 112, stated: “For each category of sources, EPA will promulgate a standard which requires the *installation* of maximum achievable control technology (MACT) by the sources in the category.”³ Later in the same debates, U.S. Senator John Chafee (R-RI), one of the managers of the legislation, echoed U.S. Senator David Durenberger’s description.⁴ Still later, U.S. Senator Max Baucus (D-MT), another manager of the legislation, stated:

Mr. President, the MACT requirement is the cornerstone of this approach. It means that the source may need to install a scrubber, selective catalytic reduction, adjust the combustion temperature of its equipment, substitute materials or apply other methods to reduce air emissions.⁵

Plainly, in their mind, section 112(d)(1)-(3) would cause companies to take action only to apply controls to an established equipment design, as opposed to cause changes in such design. If EPA were to set the floors solely on the basis of emissions test data, without

³ Committee on Environment and Public Works, U.S. Senate, *Legislative History of the Clean Air Act Amendments of 1990*, S. Prt. 103-38, at 863 (Nov. 1993).

⁴ *Id.* at 951.

⁵ *Id.* at 1029.

examining the technical reasons for the actual emission level, it could end up setting a standard that a company could achieve only by mixtures of shutdowns and shifts in basic design of production equipment, as opposed to the application of control measures. Thus, EPA would fail to keep faith with the intent of Congress.

Finally, no court decision has addressed squarely whether EPA may set a floor solely on the basis of emissions test data, without regard to the existence of a proven means of achieving the floor. The D.C. Circuit in the Brick MACT case, *Sierra Club v. EPA*, 479 F.3d 875 (2007), did not address that issue squarely. As characterized by EPA in the June 2010 proposal, the closest the court came to addressing that issue was to rule that “[f]loors for existing sources must reflect the average emission limitation achieved by the best-performing 12 percent of existing sources, not levels EPA considers to be achievable by *all* sources.” 75 Fed. Reg. at 32009-10 (emphasis added). That is a different issue. A individual source within a particular subcategory may not be able to achieve a floor because of cost, even if a proven means of control is available to it from a technological standpoint.

4. Summary and Conclusion

As shown above, Congress did *not* authorize EPA to set a floor on the basis of emissions test data, without also determining that there are technologically feasible means of achieving that floor which actual usage within the subcategory has shown are available to all of the units in the subcategory given their particular basic design. If EPA were to determine that there are no such means of control across the subcategory, it would have to subcategorize further in order to group units of like design or, if that were not practicable, base the ultimate standard on a universally applicable work practice, such as tune-ups. PFI respectfully urges EPA to return to its 2004 interpretation to the same effect.

IV. COMMENTS ON EPA’S SPECIFIC PROPOSALS

A. Introduction

With respect to EPA’s proposals on area source boilers, PFI is concerned primarily with EPA’s proposed treatment of biomass boilers with design capacity below 10 mmBtu/hr, especially those units below 3 mmBtu/hr.

PFI strongly supports EPA’s proposal to set a work practice standard, as opposed to a numerical standard, for emissions of CO and PM from *existing* units with design capacity below 10 mmBtu/hr. First, EPA is correct in concluding that: (1) its emissions measurement methodologies for CO and PM generally are not applicable and effective for biomass boilers below that level, especially boilers below 3 mmBtu/hr; and (2) the cost of emissions testing and monitoring for CO and PM for such small units is prohibitive. *See* 75 Fed. Reg. at 31906 cols. 2-3.

Second, in the view of PFI, EPA has no rational basis in any event for concluding that the emissions data EPA has for CO and PM, largely collected from biomass units above 10 mmBtu/hr, are representative of biomass units below that level. The fundamental designs of biomass boilers below that level vary greatly within that group and from biomass boilers above it.

Finally, it is widely recognized that tune-ups are the most practical choice for control of PM emissions from biomass boilers below 10 mmBtu/hr generally. *See, e.g.*, 75 Fed. Reg. at 31908 cols. 1-2. EPA acknowledged in its *Federal Register* notice (*id.*) and its technical support document for its area source boiler proposal (TSD) that tune-ups are generally more effective than multiclones.⁶ Dry electrostatic precipitators (ESPs) and fabric filters (FF) are seen as prohibitively expensive for small boilers.⁷ This is especially so for small biomass boilers where the cost of an ESP or FF system almost certainly would exceed the cost of the boiler and the installation. Moreover, as of early this year, there was no demonstrated application of an ESP on a small wood boiler in the United States.⁸ And FF systems for biomass boilers under 10 mmBtu/hr are seen as presenting major risks of fire and clogging, for which the sort of facility, such as a small school or church, that would install such a boiler would be very ill-equipped to manage.⁹

PFI also supports EPA's proposal to defer any action on possible mercury emissions from biomass boilers at any time. In particular, EPA lacks any rational basis for making a MACT/GACT decision on mercury emissions from new or existing area source biomass boilers with design capacity less than 10 mmBtu/hr. EPA has no meaningful data to support such a decision.

PFI, however, strongly objects to EPA's proposal to set numerical standards of 100 ppm and 0.03 lb/mmBtu for CO and PM respectively for *new* area source biomass boilers with design capacity of less than 10 mmBtu/hr. As explained below, EPA lacks any rational basis for setting those standards, yet the standards would needlessly destroy the market for a very large percentage of models of small biomass boilers, all of which have important economic usefulness, especially in the drive to substitute renewable fuels for fossil fuels, contrary to the fundamental requirements of rationality and achievability which underpin section 112(d). PFI urges EPA to abandon any effort to set a numerical standard for such boilers, especially those with design capacity less than 3 mmBtu/hr, and at most to set a work practice standard for such boilers below 10 mmBtu/hr.

⁶ A. Singleton, ERG, *MACT Floor Analysis for the Industrial, Commercial, Institutional Boilers, National Emission Standards for Hazardous Air Pollutants – Area Sources*, at unnumbered page 12 (April 2010) (EPA-HQ-OAR-2006-0790-0049) (herein, the "TSD").

⁷ *See, e.g.*, RSG Inc., *Emission Controls for Small Wood-Fired Boilers*, at sections 5.2 and 5.3, pp. 18-19 (Feb. 2010) (Docket ID No. EPA-HQ-OAR-2006-0790-0048).

⁸ *Id.*, at section 5.2, p. 18.

⁹ *See, e.g., id.* at section 5.3, p. 18.

B. EPA Lacks A Rational Basis to Establish a Numerical Standard for Emissions of CO or PM from New Area Source Biomass Boilers With Design Capacity of Less Than 10 mmBtu/hr.

The most striking feature of EPA's proposal to set a CO standard of 100 ppm and a PM standard of 0.03 lb/mmBtu for *new* area source biomass boilers with design capacity of less than 10 mmBtu/hr is that it is guesswork. The facts in the record behind the proposal are far too inadequate to provide a rational basis for those standards. The standards are technically and legally indefensible under the MACT and GACT logic of section 112(d). In addition, the standards would have a catastrophic impact on the market for such boilers, a consequence that EPA has not attempted to justify. A work practice standard consisting of tune-ups is the only practical path for regulating HAP emissions from such small boilers.

First, the TSD reveals that, while CO emissions "fluctuate according to the design of the combustion chamber", "there is not enough emission data available to further subcategorize according to combustor design." According to the author of the TSD, "we are unable to identify the distribution of combustor designs at area source boilers" generally, and consequently "the boiler combustor design was not a factor in developing the subcategories for the MACT floor [for area source boilers]." ¹⁰ Because the combustion design of area source biomass boilers, including especially biomass boilers with design capacity less than 10 mmBtu/hr, varies widely, this immense gap in EPA's knowledge means that EPA has no way to manage the risk that units of a particular combustion design would drive EPA's MACT "floor" determination to such stringent levels as to foreclose the use of other designs, however economically valuable those other designs might be. The classic example is emissions data from gas-fired boilers driving the MACT/GACT emission standards for coal-fired boilers, an obviously unacceptable dynamic. One way to manage that risk is further subcategorization, a technique EPA used in its parallel proposal for major source biomass boilers and heaters, where it established four biomass subcategories: stokers, fluidized bed, suspension burners/Dutch ovens, and fuel cells. 75 Fed. Reg. 32006, 32066, Table 1. But, as acknowledged by EPA, that sort of targeting is impossible for area source biomass boilers given the present record. Without the ability to subcategorize among biomass boilers, EPA has no rational basis for setting numerical standards at all, especially for biomass boilers below 10 mmBtu, as to which EPA has practically no data at all.

Another way to manage the risk is to account broadly for variability. But again there is too little information, because EPA has not taken stock of the varieties of combustion design, particularly in the case of biomass boilers below 10 mmBtu/hr. While EPA can guess at an appropriate CO standard for such boilers, it cannot determine that there are technologically feasible ways in actual usage by which such boilers generally can achieve the standard, as section 112(d) requires.

¹⁰ TSD, at unnumbered page 4.

EPA's development of the MACT "floor" for CO for new area source biomass boilers is a prime example. While EPA does have emissions data showing that several area source biomass boilers below 10 mmBtu/hr had, under the tested operating conditions, CO emission levels which were less than 100 ppm,¹¹ EPA has no factual basis for thinking that other such small biomass boilers generally have some way of achieving those levels given their fundamental design. In a word, EPA has not – and indeed cannot – demonstrate that the CO emissions data it has are representative for the broad range of designs of such small biomass boilers, as required by the rationality and achievability principles underpinning section 112(d). As illustrated below, the design of such boilers, including fuel type, varies greatly. Just the fuels are myriad: stick wood, wood chips, sawdust, pellets, corn, stover, grasses, forest residues, yard waste, paper mill sludge, etc. Also, designs for small biomass boilers vary greatly with respect to the fuel feeding system, heating demands, temperature control, combustion technology, heat transfer systems, parameter monitoring, and automation.

The same basic point applies to EPA's proposal of 0.03 lb/mmBtu as the GACT standard for PM emissions from all *new* area source biomass boilers, including those with design capacity less than 10 mmBtu/hr. EPA expressly acknowledges in its TSD that: "All of the boilers [for which EPA had emissions data] were greater than 10 million Btu per hour in size."¹² In light of EPA's further express acknowledgement (described above) that it has no inventory of the combustion designs of area source biomass boilers generally, much less biomass boilers under 10 mmBtu/hr, EPA lacks a rational basis for extending the NSPS precedent of 0.03 to such small biomass boilers. Indeed, the relevant NSPS (Subpart Dc) itself exempts all boilers below 10 mmBtu/hr, even after undergoing a formal update "review" in the 2005-06 timeframe. *See, e.g.*, 71 Fed. Reg. 9866 (Feb. 27, 2006). Thus, since EPA bases its selection of the 0.03 limit largely on the existence of Subpart Dc, rationality calls for EPA to likewise exempt new biomass boilers below 10 mmBtu/hr from the GACT standard.

In any event, EPA cannot possibly have data showing that it is reasonably cost-effective, a key criterion in a GACT analysis, to control a biomass boiler under 10 mmBtu/hr to the level of 0.03 lb/mmBtu. As EPA's record shows already (see above), the cost of the necessary add-on control equipment would be comparable to, or exceed, that of the boiler and the installation itself. It would be a violation of common sense to apply a FF system to a biomass boiler under 10 mmBtu/hr.

¹¹ *See generally*, TSD. *See also* Biomass Thermal Energy Council (BTEC), *Comments on Proposed Area Source Rules*, Docket ID No. EPA-HQ-OAR-2006-0790, at 2 (July 9, 2010) (herein, the "BTEC Comments"). Incidentally, the Thomson Falls, MT wood boiler listed as Rank #3 in the biomass CO MACT analysis in the TSD is in fact a biogas boiler, the fuel for which is produced by a separate Chiptec wood gasifier. Aspen Consulting & Testing, Inc., *Particulate Matter, Nitrogen Oxides, and Carbon Monoxide Source Test Report, Bitter Root RC&D Area, Inc., Thompson Falls School District #2, Fuels for Schools Project*, at 1 (Report BRT06021) (April 29, 2006). This source does not belong in the biomass boiler category and should be deleted from EPA's analysis.

¹² TSD, at unnumbered page 12.

For example, EPA's research report on outdoor wood-burning furnaces, which are small boilers, reported CO levels ranging from 7,800 ppmv to 24,400 ppmv (0.78% to 2.44%) in carefully controlled Method 5 tests.¹³ The average CO emissions of 14,400 ppmv are two to three orders of magnitude higher than the CO emissions from the eight wood-chip boilers EPA used in their MACT analysis, illustrating that the data set EPA used does not represent small boilers and the resulting CO MACT limit of 100 ppmv, which is two orders of magnitude lower than existing small boiler emission rates, is not achievable in this small size boiler. The eight boilers EPA used for the CO MACT analysis are all larger than 1 mmBtu/hr heat input in size and include industrial boilers up to 115 mmBtu/hr.¹⁴

A recent review article on PM emissions from wood-burning small boilers presents results from 56 EPA Method 5G tests done on eight different boilers. It documented PM emissions in the range of 0.5 to 3.0 lb/mmBtu and averaging 1.44 lb/mmBtu.¹⁵ Those existing emissions are two to three orders of magnitude higher than the PM emissions from the six wood-chip boilers (which have ESP controls) that EPA used in their GACT analysis, illustrating that the data set EPA used does not represent small boilers. This comparison also reveals that the proposed PM GACT limit of 0.03 lb/mmBtu, which is two orders of magnitude lower than existing small boiler emission rates, is not achievable in this small size boiler. There are no ESP or fabric-filter systems for small boilers, nor any other commercially-available PM control method, that achieves the PM collection efficiency demanded by the proposed GACT limit. The six boilers EPA used for the PM GACT analysis are all larger than 10 mmBtu/hour (75 Fed. Reg. at 31909), all equipped with ESP systems, and two of them are in fact utility-sized boilers at or above 500 mmBtu/hour.

EPA proposed that *existing* biomass boilers below 10 mmBtu/hour in size should not be subject to a numerical emission standard and the associated compliance testing and monitoring because "testing and monitoring alone would have a significant adverse economic impact on these facilities," as high as 19 percent of business gross revenues, according to EPA. Since the annual costs of emissions testing and the amortized capital cost and maintenance of a CEM are fixed costs for a boiler regardless of size, it is obvious that such costs as a percentage of any measure such as firm revenues or boiler capital cost, would be much higher on average for small boilers than for the wider class of boilers below 10 mmBtu/hour in size. Even so, EPA makes the contradictory claim that *new* units "have the added flexibility of including compliance costs into their design and planning" while admitting such "planning" may simply involve fuel switching to natural gas in order to avoid the rule's requirements. See 75 Fed. Reg. at 31909. While a company would have the ability to plan in advance, that would make little or no

¹³ Valenti, J. and Clayton, R., *Emissions from Outdoor Wood-Burning Residential Hot Water Furnaces*, Table 4-3a, at 26 (EPA-600/R-98-017).

¹⁴ See BTEC Comments, at 2.

¹⁵ Guldberg, P., "Outdoor Wood Boilers – New Emission Test Data and Future Trends," presented at the EPA 16th Annual International Inventory Conference, Raleigh, NC, May 2007, page 4.

difference because the cost of testing and monitoring would be extremely high relative to revenues or new boiler cost. Moreover, EPA lacks authority to set a numerical standard that is generally unachievable for a given design.

In sum, the present record does not provide EPA with a rational basis for setting any numerical limit for CO or PM for area source biomass boilers with design capacity under 10 mmBtu/hr. Instead, since tune-ups are the only form of effective control discernible in the record for such boilers, EPA must set at most a work practice standard requiring tune-ups for them.

C. The Artificial Combination of the Proposed CO and PM Standards for New Area Source Biomass Boilers, Including Those under 10 mmBtu/hr, Fails to Satisfy The CAA's Requirements for Rationality and Achievability Because the Record Fails to Show How Any New Boiler of That Sort Could Comply with Both Standards at the Same Time.

EPA derived the CO standard for new area source biomass boilers from emissions data taken from one set of such boilers, and the corresponding PM standard from emissions data from an *entirely* different set.¹⁶ Remarkably, EPA proposed to apply both standards to any new area source biomass boiler, even though there is nothing in the record to indicate that such a boiler could comply with both at the same time. As described at length above, section 112(d) not only requires EPA to have a rational factual basis for its decisions, it also requires the Agency to include affirmatively in the record a minimal demonstration that the units within the subcategory generally have some technologically feasible, demonstrated means of complying with each emissions standard.

Of course, the record is devoid of such a demonstration, but that is understandable because it would be impossible to make. At high levels, PM and CO emissions from biomass boilers are positively correlated, and both can be reduced by ensuring good combustion in the firebox. However, achieving an ultra-low CO level of 100 ppm (one one-hundredth of the CO emissions typical for biomass boilers, *i.e.*, 10,000 ppm) requires injection of large amounts of excess air.¹⁷ It is the combination of high temperature and long residence time for flue gas in the biomass boiler's firebox that ensures burnout of most PM. Increasing excess air in order to lower CO levels reduces residence time and thus increases PM emissions,¹⁸ making the two pollutants inversely correlated. Thus, it is imperative that any regulation addressing CO and PM emissions consider the two in

¹⁶ See generally TDS. See BTEC Comments, at 2.

¹⁷ The alternative of a CO catalyst is not practical long-term because of the poisoning of the catalyst bed by the metallic salts in biomass (especially, wood-burning) boiler flue gas, and catalyst deactivation. For example, catalyst beds on new EPA-certified wood stoves are generally inactive within one to two years time.

¹⁸ High levels of excess air also reduce boiler efficiency and require more fuel consumption, and hence emissions, per unit of heat output.

tandem. Otherwise the resulting limits will be unrealistic and impossible to achieve, contrary to the rationality and achievability requirements of section 112(d).

D. In Establishing the GACT Standard for PM from New Area Source Boilers with Design Capacity Less Than 10 mmBtu/hr, EPA May and Should Take into Account the Importance of Maintaining a Viable Market for New Pellet-Fired Boilers Below That Level in Order to Promote the Continuing Expansion of the Pellet Fuel Market as a Valuable Source of Renewable Energy.

Pellet fuel is a renewable, clean-burning and cost-stable heating alternative currently used throughout North America. Pellet fuel is refined and densified biomass, enabling remarkable consistency and burn efficiency at a fraction of the particulate emissions of raw biomass. Pellet manufacturers take woody biomass by-products and refine them into pencil-sized pellets that are uniform in size, shape, moisture, density and energy content.

Pellet fuel is an important source of energy from the standpoint of the Nation's economy and its policies on energy, forest management and the environment. First, the moisture content of pellets is substantially lower (4% to 8% compared to 20% to 60% for raw biomass). Less moisture means higher BTU value and easier handling, especially in freezing situations, than with green raw biomass materials. Second, the density of pellet fuel is substantially higher than raw biomass (40 lbs. per cubic foot versus 10-25 lbs. per cubic foot in raw material form). More fuel can be transported in a given truck space, and more energy can be stored at the respective site. Finally, pellets are more easily and predictably handled. Their uniform shape and size allows for a smaller and simpler feed system that reduces costs as well.

In setting a GACT standard, EPA may take costs and other factors into account. Here, a GACT standard of 0.03 lb/mmBtu for new area source biomass boilers below 10 mmBtu/hr would destroy much, if not all of the market for new pellet-fired boilers, because of the high and generally prohibitive cost of ESP or FF control, especially for units below 3 mmBtu/hr. That impact would severely compromise the current market for pellet fuel and the potential for expanding the usage of pellet fuel. EPA should work to avoid that consequence. Pellet fuel is valuable from an economic standpoint, but it also furthers the policies of governments in the areas of energy, forest management and the environment.

V. SUMMARY AND CONCLUSION

EPA's proposal to set a work practice standard, instead of numerical standards for CO and PM, for *existing* area source biomass boilers with design capacity below 10 mmBtu/hr is sound. EPA has no evidence that the CO and PM emissions data it has for biomass boilers are representative of units below 10 mmBtu/hr, especially units below 3 mmBtu/hr, the units of greatest concern to PFI. At the same time, EPA does have

evidence that: (1) the fundamental designs of biomass boilers, including fuel usage, vary greatly, especially as between biomass boilers over 10 mmBtu/hr and those below 3 mmBtu/hr; (2) EPA's emissions measurement methodology is not applicable to biomass boilers below 10 mmBtu/hr; (3) add-on control technology and emissions testing and monitoring are prohibitively expensive for such boilers; and (4) tune-ups are effective in reducing CO and PM, and in some usage, for such boilers. EPA's proposal as to existing units below 10 mmBtu/hr satisfies the rationality and achievability requirements of section 112(d).

This is not so for EPA's proposal to set numerical standards of 100 ppm and 0.03 lb/mmBtu for CO and PM respectively for *new* area source biomass boilers below 10 mmBtu, especially units below 3 mmBtu/hr. Basically, all the reasons for exempting the corresponding *existing* units are reasons also for exempting *new* ones. There is no basis for thinking that the CO and PM data EPA has are representative, and some basis for thinking the data are not. Moreover, there is a strong basis for thinking that the 100 ppm and 0.03 lb/mmBtu limits are technologically and economically infeasible. Certainly, it is clear that no single unit under 10 mmBtu could comply with both standards at the same time. Finally, it is also clear that the imposition of the proposed limits would have catastrophic consequences for the marketing of biomass boilers under 10 mmBtu/hr, especially units under 3 mmBtu/hr, including pellet-fired boilers

PFI respectively urges EPA to carry the 10 mmBtu/hr exemption for existing biomass units over to new units. NSPS Subpart Dc provides strong precedent for doing that. In the case of PM, where GACT applies, EPA may take costs and other factors into account, such as furthering non-air quality policy goals.

Thank you for your consideration of these comments. Please contact me or Seth Voyles, PFI's Manager of Government Affairs, at 703-522-6778 if you have any questions.

Sincerely,



Don Kaiser
Executive Director
Pellet Fuels Institute