

SUPPLEMENTAL BASIS STATEMENT  
CHAPTER 150, CONTROL OF EMISSIONS FROM OUTDOOR WOOD BOILERS  
PROGRAM  
MARCH 16, 2009

List of Commenters

1. Alison Simcox, Anne Arnold  
US EPA Region 1, Boston
2. James Cohen of Verrill Dana Attorneys  
Attorney for International WoodFuels, Inc.
3. Patrick McGowan, Commissioner  
Maine Department of Conservation
4. Ernest Grolimund  
Citizen
5. Jerry Scanlin  
Citizen
6. Richard Emmons  
Mainly Custom
7. Terry Markham  
Best-Way Wood Heat, Inc.
8. John Kehrwald, General Manager  
Heatmor, Inc.
9. Michael Herz  
International WoodFuels, Inc
10. Chuck Gagner, President  
WoodMaster Furnaces

**Chapter 150 Control of Emissions from Outdoor Wood Boilers**

General Comments

1. Comment: Wood pellet boilers are an emerging technology. Therefore, it would seem prudent to develop rules specific to outdoor pellet boilers and not as an add-on to the outdoor wood boiler rule, as it would further delineate between the two technologies. (commenter 3)

*Response: The Department believes outdoor wood pellet boilers fall within the Chapter 150 regulation and a separate rule is not necessary. EPA certifies them through its voluntary hydronic heater certification program and most of the requirements in Chapter 150, such as, setback, stack height, visible emission standard and nuisance condition provisions apply to outdoor wood pellet boilers.*

2. Comment: The Maine Wood to Energy Task Force states that pellet boilers are 4 times more polluting than oil boilers. Wood boilers must be considered with all the other wood burning that is changing the whole air pollution situation. Unlike the particulate matter from cars, wood smoke is a complicated mix of combined particulate matter and toxics. The commenter is against wood burning in general, but especially the old equipment. The increase in pollution could cause heart attacks and asthma attacks. (commenter 4)

*Response: In general, an increase in burning wood increases particulate emissions. However, the replacement of older units with newer outdoor wood boilers and EPA certified wood stoves will reduce emissions. Today's cleaner burning technology provides a more thorough combustion which reduces particulate emissions and associated toxic compounds. The reason for adopting a rule regulating outdoor wood boilers is to reduce the potential health impact on the citizens of Maine.*

3. Comment: Portable particulate matter monitors cost about \$4000. It is certainly more accurate than human smoke opacity readings and the Department should pursue the use of this equipment. (commenter 4)

*Response: EPA Method 9 Visual Determination of the Opacity of Emissions from Stationary Sources is a longstanding method inspectors use for determining opacity from fuel burning sources, fugitive emission sources and process sources throughout Maine. This method enables the observer to evaluate the density of the smoke being released from a stack. A \$4000 monitor is cost prohibitive for the Department to use for this purpose and any readings from it are not comparable to a standard.*

4. Comment: The emission units which refer to lbs/mmBtu NSPS standards were never updated to conform to ambient air standards which take priority. (commenter 4)

*Response: The EPA's Voluntary Outdoor Wood-Fired Hydronic Heater Certification Program upon which the Chapter 150 certification is based certifies outdoor wood boilers in lbs/MMBtu units. In addition, the legislation directing the Board of Environmental Protection to adopt Chapter 150 established Phase 1 and Phase 2 particulate emission standards in lbs/MMBtu. No change to the rule.*

5. Comment: The commenter is impacted by an OWB in his subdivision. The house is currently for sale and the commenter wants it disclosed to potential buyers that the OWB is a nuisance. (commenter 5)

*Response: The Department does not have the authority to require this disclosure to potential home buyers.*

6. Comment: My recommendation is that the dealers revisit those problem boilers with licensed solid fuel representatives and be allowed to attempt to solve the problem without spending \$200,000 from an already hurting general fund. It would also be a great idea to amend Chapter 150 to make mandatory a site visit by the local dealer. We know our units and what they are capable of. (commenter 6)

*Response: The Legislature established an outdoor wood boiler fund, separate from the General Fund, for the purpose of replacing outdoor wood boilers that create a nuisance condition. In addition, the Department believes it is an unnecessary burden to require dealers to visit the site of every outdoor wood boiler installation particularly now that the Phase 1 and Phase 2 standards are in place.*

#### Definitions

7. Comment: International WoodFuels, Inc. (IWF) will own and maintain commercial wood pellet boilers at the premises of each of their customers. To ensure maximum efficiency, IWF will use indoor rated, efficient boilers manufactured to IWF's specifications. In some instances, the boilers may be placed inside commercial facilities where space is available. In other instances, due to internal space limitations, boilers may need to be placed external to the structure but containerized within a separate structure. Regardless of the location of the boilers, the specifications of the boiler will be rated for indoor use. Our concern with respect to the proposed rules relates to whether "outdoor pellet boilers" as defined in Section 2(I) would include boilers rated for indoor use that are containerized in structures attached to buildings. In particular, under this definition, an "outdoor pellet boiler" is defined as an "outdoor wood boiler" which includes fuel burning devices that "the manufacturer specifies for outdoor installation or installation in structures not normally occupied by humans." The problem with this definition is that boilers rated for "indoor use" may unintentionally fall under the definition of "outdoor wood boiler" to the extent the boiler is also approved for outdoor installation or installation in separate structures not occupied by humans. To ensure there is no ambiguity, we request the following modification:

(2) that the manufacturer specifies for outdoor installations or installation in structures not normally occupied by humans (e.g., garages), not otherwise specified by the manufacturer for indoor installation;

This modification ensures that indoor-rated pellet boilers installed outdoors in containerized structures will not inadvertently be classified as "outdoor wood boilers" under the current definition. (commenter 2)

*Response: The Department believes these units are currently subject to this regulation because they function as outdoor wood boilers. However, for clarification the Department has recommended to the Legislature that the definition of outdoor wood*

*boiler be amended to specifically include indoor rated units located in a container as outdoor wood boilers and outdoor pellet boilers subject to Chapter 150.*

8. Comment: The proposed revision to the Chapter 150 rule would negatively impact the Department of Conservation in our efforts to install wood heat energy appliances in our facilities. Our chief concern is in the general definition of “outside” boilers. Looking toward the technology developed in Europe, there are many systems used in schools, small hospitals, etc., that are modular systems made of “indoor” boilers installed in modular structures: the boiler room and fuel storage come as units and are dropped on site and piped to buildings. These systems all operate well within compliance limits outlined in the draft, but setback restrictions and stack heights seem unnecessary and burdensome. It is counter-intuitive that there would be restrictions on this technology in modular systems which would not apply to the identical equipment if installed in an existing building. In addition, Section 2(I) does not mention chip burning boilers. Are these regulated or unregulated? Is it dependent of whether the appliance is inside or outside? The boilers will be utilized by many public facilities in Maine, either as modular units or built within existing buildings. (commenter 3)

*Response: During the extensive outdoor wood boiler legislative and rulemaking hearings, there were no discussions concerning these modular boiler systems. It was only recently that the Department became aware that there was interest in installing these units in Maine. The Department believes the definition of outdoor wood boilers and outdoor pellet boilers applies to stand alone units and modular units made up of components which together function as an outdoor wood boiler or outdoor pellet boiler. However, to clarify this issue, the Department recommended, in its January 2009 report to the Legislature, that the outdoor wood boiler definition be amended to include these modular units.*

*In this report, the Department also recommended that outdoor wood boilers that burn biomass fuel products be subject to Chapter 150.*

9. Comment: The definition of PM10, PM 2.5 (Section 2(I)) needs to be clarified. At what output level is this specific to? Full fire, idle or mean output. And at what combustion efficiency? (commenter 3)

*Response: The definition of particulate matter is taken from the NESCAUM model rule for outdoor wood boilers. Chapter 100 Definitions of the Department’s Regulations contains a similar definition. The purpose of this definition is to indicate particle size only and not how it relates to combustion efficiency or output level.*

*Methods to determine emissions and efficiencies are specified in the EPA Test Method 28 OWHH used in the EPA Hydronic Heaters Program. Particulates measured are equal to and smaller than PM10 and include both non-condensable and condensable particulates. Emissions and efficiencies are determined over a variety of firing rates to simulate typical use patterns of the boilers. The efficiency measured is the “delivered efficiency”*

*which reports the amount of heat delivered to the building served by the boiler in use not including loss through the hot water delivery lines.*

10. Comment: The commenter recommends the definition of a commercial outdoor wood boiler be further defined. The Department needs to make it clear whether the logger who needs his shop to maintain his equipment is a commercial installation or a carpentry shop that chooses to burn his clean scrap can do this legally without spending thousands of dollars to hire a licensed engineer to design the system. (commenter 6)

*Response: The Department recognizes that the definition of commercial outdoor wood boiler needs further clarification; however, it cannot make that change as part of this rulemaking. The Department submitted a report to the Legislature in January 2009 and recommended language clarifying that the commercial outdoor wood boiler definition excludes those outdoor wood boilers used solely for space heating and/or domestic hot water.*

#### Emissions standards/Setback/Stack height

11. Comment: Throughout the proposed revision of Chapter 150, ME DEP makes a distinction between "outdoor wood boilers" and "outdoor pellet boilers". In our view, this distinction between unit types is artificial because it gives the impression that pellet boilers are inherently less polluting than other types of outdoor wood heaters. As a general statement, this has not been demonstrated to be true for all models. Currently, three pellet heaters and three non-pellet heaters are included on our "List of Cleaner Hydronic Heaters" that qualify for our Phase 2 voluntary program. Although this shows that some outdoor pellet units can meet the Phase 2 PM emissions level of 0.32 lbs/mmBtu output, it does not follow that all pellet units will meet this (or even the Phase 1 - 0.6 lbs/mmBtu input) emission level. In our view, any distinctions made between different types of heaters should be based on demonstrated emissions levels rather than on heater type. Therefore, we recommend that ME DEP apply the same emissions limits, setback and stack height requirements to "outdoor pellet boilers" as are applied to other types of outdoor wood boilers. (commenter 1)

*Response: The Department agrees and has applied the same setback and stack height requirements to those outdoor pellet boilers that have the same Phase 1 and Phase 2 particulate emissions as outdoor wood boilers.*

12. Comment: Specifically, we do not agree that outdoor pellet boilers should have less stringent setback requirements than other outdoor wood boilers just by definition. We recommend that Maine require that all OWBs installed after the effective date of the rule, except non-commercial units meeting the Maine Phase 2 emission limit, be required to have a minimum setback of 200 feet from the nearest property line. If your intent is that a lesser minimum setbacks would encourage consumers to choose lower emitting models, then perhaps that could be better accomplished via adding a tighter Phase 3 emission

level that represents the best of the best, e.g., 0.06 lbs/mmBtu heat output. (commenter 1)

*Response: The original Chapter 150 includes setbacks for Phase 1 and Phase 2 outdoor wood boilers as directed and approved by the Legislature and changing those setbacks will not be part of this rulemaking. However, the Department agrees that outdoor pellet boilers should have the same setback requirements as outdoor wood boilers and has made that change to the rule.*

*In its January 2009 report to the Legislature, the Department recommends the Legislature direct the Department to adopt a technology-forcing emission standard (lower emission standard) as an incentive for manufacturers to produce cleaner burning OWB units. This voluntary standard, if met, would allow for less stringent setbacks than existing Phase 2 requirements and will reward those manufacturers, dealers, and homeowners who produce, sell and buy cleaner and more efficient technology.*

13. Comment: Extending the stack height on some OWB is detrimental to the way the OWB runs and should not be required. The commenter has found that with these cleaner burning units, there is little need for extended chimney. Here are some of the reasons: increased draft only pulls more of the heat through the heat exchanger than needed, resulting in lost BTUs going up the stack unnecessarily, you're burning more wood than you need to; danger of an improperly installed or maintained stack falling over and injuring persons or damaging property; higher cost for your insurance; the cost of installing an extra stack is expensive for the already strapped homeowner who is attempting to cut his dependence on fossil fuels, something that our Governor stated just a few weeks ago that he approves of. My suggestion is to add stack only when necessary. (commenter 6)

*Response: This comment was presented in previous Chapter 150 hearings. If an outdoor wood boiler dealer feels that an increased stack height is detrimental to the performance of an OWB that he sells, the dealer should consider a location on the property that would not trigger the stack height requirement. An increased stack height enhances the dispersion of wood smoke emissions in areas where neighbors are close by.*

*In addition, Maine Fire Marshall regulations require stacks to comply with the safety codes of the National Fire Protection Association.*

14. Comment: Section 3(E): Using the EPA Outdoor Wood-Fired Hydronic Heater Program as a certification standard may be problematic, especially as it applies to state-of-the-art technologies. (commenter 3)

*Response: Manufacturers of outdoor wood boilers and outdoor pellet boilers voluntarily submit data to EPA to obtain certification through EPA's Outdoor Wood-Fired Hydronic Heater Program. Under Chapter 150 the Department may approve an alternative certification program; however, it relies primarily on the EPA program because of the time and resources required to certify the units.*

15. Comment: Section 3(D): This adds another layer of expense burden to consumers. Many of these systems, particularly smaller systems, have marginal paybacks without adding \$1000-2000 for an engineering study. (commenter 3)

*Response: Because of the size of the boilers and the potential for impact to the public, the Department believes it is essential that the installation of commercial units and those outdoor wood boilers with a rated thermal output greater than 350,000 Btu/hr are evaluated for proper siting, setbacks and use. The Legislature directed the Board of Environmental Protection to adopt rules as a result of the number of wood smoke complaints the Department and legislators received concerning outdoor wood boilers that were located too close to neighbors, undersized units for commercial applications and oversized units at residences, in addition to excessive smoke from older technology outdoor wood boilers. However, the Department believes those commercial outdoor wood boilers that are only used for space heating and/or domestic hot water should be excluded from this definition and made that recommendation in its January 2009 report to the Legislature.*

16. Comment: Section 3(H): Why the ban on rain caps for all systems? (commenter 3)

*Response: The use of a rain cap may severely impede the upward flow and dispersal of smoke emitted from the stack causing the plume to flow horizontally or downward. A rain cap may be used in those cases where it is required by the manufacturer's specifications.*

### Fuels

17. Comment: Section 4(B): It is common in northern Europe to burn oats, straw, miscanthus, switchgrasses and other annual fuels. Why doesn't the Department list these without special approvals? (commenter 3)

*Response: The Department is unable to anticipate all possible fuels that could be used now or in the future, so it took the approach of listing the two most commonly used fuels in Maine (corn and wood pellets made from clean wood) and provided the opportunity to approve others as the need arises. It is uncertain if emissions from a boiler which burns a fuel made from a different type of biomass will have the same characteristics. Limited studies indicate that emissions may increase with alternative biomass fuels.*

**Chapter 150 Control of Emissions from Outdoor Wood Boilers**  
**Additional comments received in second comment period ending February 20, 2009**

Emission standards/setbacks/stack height

18. Comment: Although DEP proposes to apply the same setbacks and stack height requirements to outdoor pellet boilers (OPBs) as are applied to other outdoor wood boilers, no emission limits are set for “outdoor pellet boilers” under section 3A. Therefore, we recommend that the DEP apply the same PM emission limits to “outdoor pellet boilers” as are applied to “outdoor wood boilers” so that pellet boilers will be required to meet an emission limit of 0.60 lbs/MMBtu heat input after April 1, 2009 (in view of the fact that the April 1, 2008 deadline for other outdoor wood boilers has past) and an emission limit of 0.32 lbs/MMBtu heat output after April 1, 2010. (commenter 1)

*Response: The Department agrees and has amended Section 3(A) to include outdoor pellet boilers.*

19. Comment: The NESCAUM outdoor wood boiler model rule includes a minimum setback of 500 feet for OWBs (which we interpret to include outdoor pellet boilers) with PM emissions exceeding or meeting 0.44 lbs/MMBtu heat input. The model rule does not include a minimum setback for residential OWBs meeting the 0.32 lbs/MMBtu limit; however, it includes a setback of 300 feet for commercial units meeting this emission limit.

Therefore, EPA recommends that Maine revise Sections 3B and 3D of the rule so that all OWBs and OPBs installed after the effective date of the rule, except non-commercial units meeting emission limits of 0.32 lbs/MMBtu heat output or better, are required to have a minimum setback of at least 200 feet from the nearest property line. For OWBs and OPBs with particulate emission limits greater than 0.60 lbs/MMBtu heat input, we recommend a minimum setback of 500 feet.

In addition, we recommend including a minimum setback of 300 feet from property lines for both existing and new commercial units. (commenter 1)

*Response: The Department acknowledges that the NESCAUM model rule includes a 500 foot setback for certain units and that it does not include a minimum setback for OWBs meeting the 0.32 lbs/MMBtu limit. However, during the extensive legislative process in developing this regulation, the Legislature clearly stated in statute the setbacks required for locating outdoor wood boilers. The Department will not be making changes to those setbacks, nor has it recommended to the Legislature that they do so.*

20. Comment: EPA recommends revising language that allows installation of OWBs or OPBs at specified distances from the nearest “dwelling” instead of a property line so that

the distance selected is required to be the greater of the two options. As written, the proposed language could allow OWBs or OPBs to be located very near or at property boundaries if a “dwelling” is located further from the OWB or OPB than specified for that boiler. In addition, there might be other buildings or public facilities that do not meet the definition of a “dwelling” on adjacent properties (i.e., businesses, schools, ball fields, playgrounds) that, under the proposed language, can be disregarded when boilers are sited. (commenter 1)

*Response: It is the Legislature’s intent that OWBs can be installed close to a property line as long as the installation is a certain distance from the nearest dwelling. During the hearings they heard comments that prospective buyers could not meet the original distance requirements and recommended they change the distances to include an option allowing for installation near a property line. The Legislature directed the Department to amend Chapter 150 to reflect that change.*

*The Department believes that dwelling can be interpreted to include facilities such as schools, hospitals, daycare facilities, and businesses, but to avoid any confusion the Department will recommend the Legislature clarify that provision.*

21. Comment: During the calendar year 2008, we received numerous calls from customers who described their location as being “in the middle of nowhere”. They were interested in purchasing an OWB but wanted an older style unit. Given proper setbacks we feel that placement of these units would be appropriate. Therefore, we would like to have the ability to sell these stoves if they were placed no less than 500 feet from the nearest residence. (commenter 7)

*Response: The Legislature held extensive hearings and workshops concerning outdoor wood boilers and established emission standards and setbacks for these units. The Legislature clearly stated the emissions standards and setbacks in statute and directed the Department to develop rules that included those criteria. No change to the rule.*

22. Comment: Heatmor does not agree with the provision for reduction in setback and stack height requirements for units achieving 0.06 lbs/MMBtu heat output. Without details, it is difficult to evaluate. We base this primarily on studies (particularly one prepared by RTP) that indicate even Phase 1 levels (0.60 lbs/MMBtu input) provide for conditions in compliance with the requirements of the NAAQS. Requirements for further reductions in emission output levels beyond the already established EPA Phase 2 levels have not been shown to provide any significant return.

The DEP states that there is currently only one pellet burning unit that has met a 0.06 output. This is a very new unit and has yet to meet the long term reliability test that has been shown with current units.

The DEP has concerns that without further legislation, manufacturers will cease to make improvements to products. This is not the case. The only thing holding back development for several years was the fact that there was no method available for

accurate comparison testing. With a method now in place, the free enterprise system will provide incentive for ongoing improvements to these units. (commenter 8)

*Response: The Department believes there should be a less stringent setback provision for those outdoor pellet boilers exceeding the Phase 2 limit of 0.32 lbs/MMBtu heat output. The Department believes that outdoor pellet boilers that are achieving levels below the Phase 2 limit should be recognized/rewarded with a reduced setback requirement. The Department recommends a limit of 0.06 lbs/MMBtu heat output to apply to the 20/40 setback provision as suggested by the commenter. The cleanest currently certified outdoor pellet boiler has a particulate emission rate of 0.06 lbs/MMBtu heat output.*

*The advantage of a less stringent setback, while not technology forcing (one manufacturer has a unit achieving the 0.06 lbs/MMBtu output), may provide some incentive for manufacturers to produce, and homeowners to utilize, cleaner outdoor pellet boilers.*

23. Comment: This commenter is concerned about any rules which would not present a level playing field for its company's products against similar fossil fuel appliances. Our installations should be held to the same standards that equipment inside the building are required to adhere to, but no more. Because boiler rooms are frequently located at the back of the property (away from view) setback distances could be an issue. Likewise we would expect our exhaust flues to be similarly configured to the existing chimneys and if required to extend higher, this would pose additional and unnecessary expense. Any regulation that arbitrarily mandates additional requirements and expense could significantly impact our ability to provide service. (commenter 9)

*Response: Fossil fuel boilers emit different concentrations of pollutants than wood pellet boilers. Chapter 150 regulates the particulate emissions from outdoor wood boilers. The Department believes the definition of outdoor wood boilers and outdoor pellet boilers applies to modular units made up of components which together function as an outdoor wood boiler or outdoor pellet boiler, regardless of whether the wood pellet boiler has an indoor rating. However to clarify this issue, the Department recommended, in its January 2009 report to the Legislature, that the outdoor wood boiler definition be amended to include these modular units.*

24. Comment: The commenter offers the following reasons why indoor rated wood pellet boilers should not be subject to Chapter 150 requirements:

- Modern commercial wood pellet boilers produce minimal particulates, are approximately 92% efficient and on average emit approximately one-half the NOx and SOx emissions of comparable oil fired boilers.
- If it is necessary due to space considerations that the wood pellet boiler is installed outside in a container, according to most building codes, the boiler is vented through a pipe alongside the structure terminating above the roofline. In

- There is a material difference between an outdoor boiler that burns pellets and an indoor rated wood pellet boiler that is physically located outside. Aside from the common outside location, there is no similarity between the two types of boilers, and Chapter 150 should more clearly distinguish between them.
- The proposed setback requirements in the rule may effectively bar these boiler installations. This would occur in instances where the property setbacks associated with the structure are smaller than the setbacks in the rule, a circumstance that is particularly likely to occur in urban areas where setbacks are smaller. Fossil fuel boilers, by contrast, would not be so restricted. This would be an unfortunate result, particularly in light of the efforts elsewhere in state government to promote indigenous fuel sources that are sustainable and low-carbon.

To remedy this problem, the commenter requests that a narrow distinction be drawn between indoor-rated, containerized boilers and outdoor-rated boilers in the definition of outdoor pellet boilers. Specifically, we request the following amendment to Section 2(I):

Outdoor pellet boiler means an outdoor wood boiler designed and warranted by the manufacturer specifically to burn pellet fuel with metered fuel and air feed and controlled combustion engineering, which is operated according to the manufacturer's specifications and burns only pellet fuel. Outdoor pellet boiler does not include an indoor-rated wood pellet boiler that is located in a container adjacent to a structure normally occupied by humans and is vented above the adjacent structure's roofline. (commenter 2)

*Response: The Department believes the modular units are currently subject to this regulation because these function as outdoor wood boilers. However, for clarification the Department has recommended to the Legislature in its January 2009 report to the Legislature describing unintended consequences, that the definition of outdoor wood boiler be amended. The amended definition includes indoor rated devices housed in modular or containerized structures as outdoor wood boilers and outdoor pellet boilers subject to Chapter 150.*

25. Comment: Wood Master is a member of HPBA and the OHH caucus that has worked very closely with EPA, NESCAUM and several states to write the Phase 1 and Phase 2 volunteer program that is now in place. The Phase 2 emission level of 0.32 is a very aim high goal for all manufacturers. An OHH that makes the 0.32 is so clean burning you basically can not tell it is running.

In our industry, a large amount of testing is performed during the design of a new product. From time to time an outlier test will appear for unknown reasons. The commenter believes the 0.06 emission number could be an outlier and should not be used

in any rulemaking. In all our testing and design work, we are confident that the 0.32 number is a good and very clean number. Using the 0.32 limit will allow a larger selection of OWBs and will enhance the pellet industry. (commenter 10)

*Response: See response to comment # 22.*