

South Carolina Model Ordinance for Outdoor Hydronic Heaters

Introduction

The increased number and frequency of complaints received by the Department of Health and Environmental Control (DHEC) regarding outdoor hydronic heaters has led to the development of this Model Ordinance. Outdoor hydronic heaters are major emitters of residential wood smoke which has the potential to cause serious adverse health effects. Despite this, outdoor hydronic heaters have been widely used as heating units for decades. They are known by many different terms including but not limited to: outdoor wood-fired hydronic heaters (OWHHs), outdoor wood-fired boilers (OWBs), and outdoor wood furnaces. Outdoor hydronic heaters are fuel-burning devices which are designed to (1) burn wood or other biomass; (2) be installed according to the manufacturer's specifications; and (3) heat building space/water via the distribution of a fluid heated in the device (typically water or a water/antifreeze mixture).

Outdoor hydronic heaters often smolder for long periods of time and have short smoke stacks. Improper operation of these units leads to very poor combustion and nearly continuous heavy wood smoke emissions at or near ground level. Across the country, outdoor hydronic heaters are responsible for 336,000 tons of fine particulate matter (PM) with a diameter smaller than 2.5 microns (PM_{2.5}) per year. PM_{2.5} is known to cause eye, lung, nose, and throat irritation; and prolonged exposure may lead to increased cancer risk, pneumonia, and heart disease. Outdoor hydronic heaters are also known to emit polycyclic organic matter, polycyclic aromatic hydrocarbons, methane, black carbon, carbon monoxide and dioxide, and dioxin. Units may be in operation 12 months out of the year as they are commonly used to heat homes, water, and swimming pools. Outdoor hydronic heaters are also often used to burn trash, tires, treated lumber, and other hazardous materials which are against the manufacturer's recommendations and many state/local regulations.

On February 3, 2015, the U.S. Environmental Protection Agency (EPA) updated its clean air standards for residential wood heaters to make new heaters significantly cleaner and improve air quality in communities where people burn wood for heat. The updates strengthen the emissions standards for new woodstoves. They establish the first Federal air standards for previously unregulated new wood heaters, including outdoor hydronic heaters. A voluntary partnership program was already established that encouraged manufacturers to agree to produce models which met program qualification requirements in order to reduce emissions sooner than Federal regulations could be promulgated. The final New Source Performance Standard (NSPS) builds on the voluntary program to ensure that all new wood-fired hydronic heaters will be cleaner, establishing particle pollution emissions limits for these heaters in two steps. The Step 1 PM emissions limit, effective in 2015, is identical to the current qualifying level for EPA's voluntary Hydronic Heater Program. Most models that were "Phase 2" qualified (using EPA Method 28WHH) under the voluntary program automatically will be certified as meeting the Step 1 limit. Step 2 includes an emission limit of 0.10 pounds per million Btu heat output for each burn rate and an alternative limit of 0.15 pounds per million Btu heat output for each burn rate.

To ease the transition to cleaner stoves, EPA's final rule will allow retailers to sell woodstoves that meet requirements of EPA's 1988 rule and for hydronic heaters until December 31, 2015. After that date, any new woodstoves and hydronic heaters sold at retail in the U.S. must meet the Step 1 emissions limit. For more details on the final rule visit: <http://www2.epa.gov/residential-wood-heaters/new-source-performance-standards-new-residential-wood-heaters-new>.

The Northeast States for Coordinated Air Use Management (NESCAUM) Model Regulation for Outdoor Hydronic Heaters (2007) was utilized during DHEC's development of the model ordinance contained in this document. The model was formulated in order to assist municipalities who choose to enact their own local ordinances for hydronic heaters and is meant to be advisory only. Several alternative

approaches are spelled out in this model and municipalities are encouraged to change the model as necessary to meet local needs. Municipalities are not required to adopt any part of this ordinance, but if they choose to do so, DHEC encourages municipalities to seek legal advice prior to implementation as this document is not to be relied upon as legal advice.

Format of this Document: All **[bracketed bold]** sections require filling in a name, address, governmental body, date, or other information.

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Northeast States for Coordinated Air Use Management (NESCAUM) Model Regulation for Outdoor Hydronic Heaters was utilized in the development of this Ordinance

1. Applicability

- A. This Ordinance applies, in its entirety, to any person who owns, operates, installs, allows the installation or operation of, purchases, distributes, sells, or manufactures any outdoor hydronic heater in **[jurisdiction]**, except as provided below.
- B. Except for **[exception]**.

2. Definitions

- A. “CFR” stands for Code of Federal Regulations.
- B. “Clean Wood” means wood that has no paint, stains, adhesive, oil, or other type of coating; and wood that has not been treated with, including but not limited to, copper chromium arsenate, creosote, pentachlorophenol, any preservative, herbicide, or pesticide.
- C. “Commercial-Size” means a heater with a rated thermal output greater than 350,000 Btu/hr.
- D. “Distribute or Sell” means to distribute, sell, advertise for sale, offer for sale, lease, ship, deliver for shipment, release for shipment, or receive and (having so received) deliver or offer to deliver.
- E. “EPA” stands for United States Environmental Protection Agency.
- F. “Installed Units” means any unit sold (or previously installed and/or operational at the intended location of use) prior to the promulgation of this Ordinance.
- G. “Manufacturer” means any person who constructs or imports into the United States an outdoor hydronic heater.
- H. “Nuisance” means **[definition]**.
- I. “Opacity” means the degree to which emissions other than water reduce the transmission of light and obscure the view of an object in the background.
- J. “Outdoor Hydronic Heater” means a fuel-burning device which may be equipped with a heat storage unit, and which is designed to (1) burn wood or other biomass; (2) be installed according to the manufacturer’s specifications; and (3) heat building space/water via the distribution (typically through pipes) of a fluid heated in the device (typically water or a water/antifreeze mixture). Also known as an outdoor wood-fired boiler (OWB), outdoor wood furnace, or outdoor wood-fired hydronic heater (OWHH).
- K. “Particulate Matter or PM” means total particulate matter including PM₁₀ and PM_{2.5} (condensable and non-condensable fraction).
- L. “Phase 2 Emission Level Qualified Model (Phase 2 Model)” means a model which is a part of the voluntary EPA Hydronic Heater Program that achieves an average emissions level of 0.32

lbs/million Btu heat output or less for all fuel types listed in the owner's manual and/or mentioned in marketing/sales materials, and that did not exceed 18.0 grams/hr of fine particles in any individual test run that was used in the calculation of the average. Phase 2 Models are identified with a white hang tag.

- M. "Residential-size" means a heater with a rated thermal output of 350,000 Btu/hr or less.
- N. "Sale" means the transfer of ownership or control.
- O. "Startup Period" means the time period, not longer than two hours, beginning with flame stability after first charge of wood fuel. This definition only includes initial startup where no previous coal bed exists. This does not include refueling.

3. Prohibitions

- A. Outdoor hydronic heaters must be installed **[distance]** feet or more from a property line and must have a permanent stack extending **[distance]** feet higher than the peak of any roof structure located within **[distance]** feet of the outdoor hydronic heater.
- B. Effective **[date]**, no person shall:
 - i. Import, supply, distribute, sell, install, or allow the installation of any outdoor hydronic heater subject to this Ordinance unless it has been qualified as a Phase 2 Emission Level Qualified Model;
 - ii. Install a Residential-size Phase 2 Model that does not meet the following:
 - a. Installed **[distance]** feet or more from a property line; and
 - b. Has a permanent stack extending **[distance]** feet higher than the peak of the roof of any structure located within **[distance]** feet of the outdoor hydronic heater; or
 - iii. Install a Commercial-size Model that does not meet the following:
 - a. Installed **[distance]** feet or more from a property line; and
 - b. Has a permanent stack extending **[distance]** feet higher than the peak of the roof of any structure located within **[distance]** feet of the outdoor hydronic heater.
- C. No person shall operate an outdoor hydronic heater from **[date-suggest beginning of Ozone Season]** to **[date-suggest end of Ozone Season]** unless the outdoor hydronic heater has been qualified as a Phase 2 Emission Level Qualified Model or better.
- D. Prohibited fuels. No person shall burn any of the following items in an outdoor hydronic heater:
 - i. Any wood that does not meet the definition of clean wood;
 - ii. Garbage;
 - iii. Tires;
 - iv. Lawn clippings or yard waste;
 - v. Materials containing plastic;
 - vi. Materials containing rubber;

- vii. Waste petroleum products;
 - viii. Paints and paint thinners;
 - ix. Chemicals;
 - x. Coal;
 - xi. Glossy or colored papers;
 - xii. Construction and demolition debris;
 - xiii. Plywood;
 - xiv. Particleboard;
 - xv. Salt water driftwood;
 - xvi. Manure;
 - xvii. Animal carcasses; or
 - xviii. Asphalt products.
- E. Outdoor hydronic heaters must comply with all applicable laws, including but not limited to, state and local regulations.
- F. No person shall operate an outdoor hydronic heater in such a manner as to create a public or private nuisance. Local Boards of Health may enforce this provision according to their general authority to enforce nuisance conditions.

4. Visible Emission Standard

- A. The method which is approved by the Department for determining compliance with opacity limitations under this Section is EPA Reference Method 9 (40 Code of Federal Regulations (CFR) 60, Appendix A, as revised July 1, 1986). Alternate methods may be utilized only if approved in advance by the Department and by the Environmental Protection Agency (EPA).
- B. No person shall cause or allow the emission of a smoke plume from any outdoor hydronic heater to exceed an average of 20 percent opacity for six consecutive minutes in any one-hour period.
- C. Exception. Visible emissions may not exceed 40 percent opacity for 20 consecutive minutes during the startup period of a new fire. This only includes initial firing of the unit where no coal bed exists. This exception does not apply to refueling.

5. Installed Units

Compliance Authority may utilize the following options as necessary (for example, Options B and C may be appropriate in one locality while a different locality may be suited for Option A).

- A. Option A – Time Limit Removal Program. All installed and existing outdoor hydronic heaters within **[jurisdiction]** that do not meet, at least, the Phase 2 Emission Level Qualified Model requirements shall be removed from all properties by **[date]** or rendered permanently inoperable by **[date]**. It shall be a violation of this section for any person on or after **[date]** to possess or operate an outdoor hydronic heater within **[jurisdiction]** unless it is qualified to meet the Phase 2 emission limits or has been rendered permanently inoperable.
- B. Option B – Prior Sale or Transfer of Real Property. Prior to the completion or consummation of a sale or transfer of any real property on or after **[date]**, all existing and/or installed outdoor hydronic heaters that do not meet the Phase 2 Emission Level Qualified Model standard shall be replaced, removed, or rendered permanently inoperable.

C. Option C – Setback and Stack Height Requirement for Installed Units. All existing and installed residential outdoor hydronic heaters that do not meet the Phase 2 Emission Level Qualified Model standard within **[jurisdiction]** shall either meet the Phase 2 setback and stack height requirements as defined in Section 3B of this Ordinance, be removed from all properties by **[date]**, or be rendered permanently inoperable by **[date]**.

6. Fuel Requirements

A. No person that operates an outdoor hydronic heater shall use a fuel other than the following:

- i. Clean wood;
- ii. Wood pellets made from clean wood; and/or
- iii. Other fuels as approved by **[authority]**.

B. Home heating oil, natural gas, or propane that complies with all applicable sulfur content limits may be used as a starter or supplemental fuel for dual-fired outdoor hydronic heaters.

7. Notification by Manufacturers

A. By **[date]** of each year, manufacturers shall provide the following information in writing to any person to whom the manufacturer has distributed or sold, intends to distribute or sell, or actually distributes or sells a hydronic heater for use in **[jurisdiction]**:

- i. A list of all models of outdoor hydronic heaters that it manufactures;
- ii. A list of models that have received qualification to meet the particulate matter emission standards and qualification requirements; and
- iii. A list of all hydronic heater models, if any, which have not received qualification to meet the particulate matter emission standards and qualification requirements and may not be distributed or sold in **[jurisdiction]** after **[date]**.

B. Within **[time]** of promulgation of this Ordinance, manufacturers and distributors of outdoor hydronic heaters shall notify all persons who purchase or plan to purchase an outdoor hydronic heater of the requirements in Section 3, Section 4, Section 5, and Section 6 of this Ordinance.

C. Manufacturers must notify owners of installed units of the requirements of this Ordinance within **[time]** of the promulgation of this Ordinance.

8. Labeling Requirements for Manufacturers

A. Permanent Label. Within **[time]** months of promulgation of this Ordinance, any outdoor hydronic heater introduced into commerce in **[jurisdiction]** shall meet the following label requirements:

- i. Have a permanent label that shall:
 - a. Be permanently affixed in a readily visible or accessible location;

- b. Be at least 3½ inches long by 3 inches wide;
 - c. Be made of a material expected to last the lifetime of the unit;
 - d. Present required information in a manner so that it is likely to remain legible for the lifetime of the unit; and
 - e. Be affixed in such a manner that it cannot be removed from the appliance without damage to the label; and
 - ii. Have a permanent label that shall display the following information:
 - a. Month and year of manufacture;
 - b. Model number or name;
 - c. Serial number;
 - d. Thermal output rating in MMBtu/hr;
 - e. Date of qualification; and
 - f. Results of emissions standard testing in grams per hour and lb/MMBtu input and output for Phase 2 Emission Level qualification testing.
 - iii. The permanent label may be combined with any other label, as long as the required information is displayed, and the integrity of the permanent label is not compromised.
- B. Required Labeling. Each unit shall prominently display the following language on the outdoor hydronic heater:
 - i. Language stating: “It is unlawful to burn garbage, treated or painted wood, coal, tires, plastic and plastic products, rubber products, yard waste, lawn clippings, glossy or colored papers, construction and demolition debris, plywood, particleboard, salt water driftwood, manure, animal carcasses, asphalt products, waste petroleum products, paints, chemicals, or any substance that normally emits dense smoke or obnoxious odors.”
 - ii. For units equipped with catalytic combustors, the following statement shall appear on the permanent label: “This unit contains a catalytic combustor that needs periodic inspection and replacement for proper operation. Consult owner’s manual for further information. It is against the law to operate this unit in a manner inconsistent with operating instructions in the owner’s manual, or if the catalytic element is deactivated or removed.”
- C. Temporary Labeling. All units shall have attached to them a temporary label which shall not be combined with any other label information and which shall be attached to the unit in such a manner as to be easily removed by the customer. All temporary labels shall contain the following:
 - i. A statement indicating the compliance status of the model;

- ii. A graphic representation of the composite particulate matter emission rate as determined in the qualification test or as determined by **[authority]**;
 - iii. A graphic representation of the efficiency of the model;
 - iv. A numerical expression of the heat output range in British thermal units per hour (Btu/hr) rounded to the nearest 100 Btu/hr;
 - v. Statements regarding the importance of proper operation and maintenance; and
 - vi. Identification of the manufacturer and the model.
- D. Owner's Manual. Each outdoor hydronic heater offered for sale or lease must be accompanied by an owner's manual that shall contain all the information listed below:
- i. Proper thermal output capacity for matching with the building's thermal demands;
 - ii. Proper installation information;
 - iii. Operation and maintenance information;
 - iv. Wood loading procedures, recommendations on wood selection, and warnings on improper fuels;
 - v. Fire starting procedures;
 - vi. Proper use of air flow devices, if applicable;
 - vii. Ash removal procedures;
 - viii. For catalytic models, information pertaining to maintaining catalyst performance, maintenance procedures, procedures for determining catalyst failure or deterioration, replacement procedures, and information on warranty rights; and
 - ix. Language stating: "Persons operating this hydronic heater are responsible for operation of the hydronic heater so as not to cause a nuisance condition. Manufacturer guarantees, however, that proper operation of the outdoor hydronic heater in accordance with manufacturer's operating and maintenance procedures will not create a nuisance condition."

9. Notice to Buyers

- A. No outdoor hydronic heater subject to the requirements of this Ordinance shall be offered, sold, offered for retail sale, or leased within **[jurisdiction]** unless, prior to any sales or lease agreement, the seller or dealer provides the prospective buyer or lessee with a copy of **[authority]**'s Ordinance and a written notice stating:
 - i. It is unlawful to burn garbage, treated or painted wood, coal, plastic and plastic products, rubber products, yard waste, lawn clippings, glossy or colored papers, construction and demolition debris, plywood, particleboard, salt water driftwood, manure, animal

carcasses, asphalt products, waste petroleum products, paints, chemicals, or any substance that normally emits dense smoke or obnoxious odors;

- ii. Installation of an outdoor hydronic heater may be subject to other applicable state and local stack height and setback requirements;
 - iii. Use of an outdoor hydronic heater that meets the distance and stack height requirements provided in Section 3 of this Ordinance may not be adequate in some areas due to terrain that could render the operation of an outdoor hydronic heater to be a nuisance or public health hazard; and
 - iv. Specific results of the average and maximum emission rates of particulate matter for the outdoor hydronic heater in grams per hour and the average delivered heating efficiency as found in the test reports that were used for qualification.
- B. The written notice specified above (Section (9)(A)(i)-(iv)) shall be signed by the buyer or lessee at the time of purchase or lease to indicate receipt of notification of the requirements of this section. Within **[time]** days of making the delivery of the outdoor hydronic heater into the possession of the buyer or lessee, the seller or dealer shall mail or otherwise provide a copy of the signed notice specified above to **[authority]**. Said notice shall contain the name; address; telephone number of both the seller or dealer and the buyer or lessee; the location where the outdoor hydronic heater will be installed; and the make and model of the outdoor hydronic heater.

10. Nuisance Conditions

No person shall cause or allow emissions of air contaminants to the outdoor atmosphere of such quantity, characteristic, or duration that are injurious to human life, plant life, animal life, or property; or that unreasonably interfere with the comfortable enjoyment of life or property. Notwithstanding the existence of specific air quality standards or emission limits, this prohibition applies, but is not limited to, any particulate, fume, gas, mist, odor, smoke, vapor, toxic, or deleterious emission, either alone or in combination with others.