

---

**TITLE 326 AIR POLLUTION CONTROL BOARD****FISCAL IMPACT STATEMENT**

LSA Document #05-332

**Agency:** Indiana Department of Environmental Management (IDEM)**Rule Number:** #05-332**Rule Topic:** Outdoor Hydronic Heaters/Outdoor Wood Boilers**Re:** Office of Management and Budget Fiscal Impact Statement Required by [IC 4-22-2-28](#) (Total Estimated Economic Impact of a Rule Over \$500,000)**Rule Summary**

This rulemaking applies to outdoor hydronic heaters, also referred to as outdoor wood boilers or outdoor wood burning furnaces. Indoor wood burning appliances and other sources of wood smoke are sufficiently different in potential emissions, stack heights, design, operating conditions, or frequency of operation to distinguish them from outdoor hydronic heaters. Indoor wood heating appliances are already subject to federal emission limitations for new units. In an effort to control heating costs, Indiana citizens are increasingly turning to outdoor hydronic heaters to heat and provide hot water for their homes and other structures. Outdoor hydronic heaters are freestanding appliances that burn wood or some other fuel to heat water. The heated water is pumped, typically through underground pipes, to the structure or multiple structures to be heated, and the cooled water is returned to the outdoor hydronic heater for reheating. A unit typically looks like a small shed with a short smoke stack and is usually located in close proximity to the building to be heated.

Local jurisdictions in Indiana have received complaints about outdoor hydronic heaters, leading to local bans on the placement of new units in the cities of Indianapolis, Evansville, Petersburg, Loogootee, and Batesville. LaPorte has requirements in place to allow units to continue to be used with certain restrictions. Currently, outdoor hydronic heaters are not regulated in Indiana at the state level, nor are they regulated at the national level. The United States Environmental Protection Agency (U.S. EPA) has announced plans to add outdoor hydronic heaters to the New Source Performance Standard (NSPS) for New Residential Wood Heaters, which would require units manufactured after a certain date to meet a particulate matter emission limit.

IDEM initiated this rulemaking in 2005 due to citizen complaints and requests for IDEM to develop rules on outdoor hydronic heaters. The emissions, health effects, and nuisance factor that can be created by the use of outdoor hydronic heaters are a concern to IDEM. Following the First Notice of Comment Period, state legislation was passed that directed the Environmental Quality Services Council (EQSC) to study and make findings and recommendations concerning the regulation of outdoor hydronic heaters. The EQSC issued their final report on November 1, 2006, finding that emissions from outdoor hydronic heaters are an environmental concern, especially in areas designated as nonattainment for the fine particulate (PM<sub>2.5</sub>) National Ambient Air Quality Standard (NAAQS). The EQSC's report recommended that IDEM not resume this rulemaking until the U.S. EPA released state model regulations. On January 29, 2007, as part of a national effort to reduce the harmful effects of residential wood smoke, the U.S. EPA announced a voluntary partnership program together with the release of state model regulations. The voluntary partnership program consists of an agreement between outdoor hydronic heater manufacturers to make cleaner burning units available to the public beginning in the spring of 2007. Units certified as meeting the emissions standards for the voluntary partnership program feature an orange hang tag comparing that particular model's emission performance with U.S. EPA's voluntary Phase 1 standards or a white tag for units meeting U.S. EPA's Phase 2 standards. As of October 15, 2008, the Phase 1 program has been terminated, and the Phase 2 program has started. The Outdoor Hydronic Heater Model Regulation was developed and released by Northeast States for Coordinated Air Use Management (NESCAUM), with technical and financial assistance from U.S. EPA.

IDEM reviewed the model rule and tailored it to address concerns about particulate matter emissions from outdoor hydronic heaters in Indiana through the implementation of emission standards for new units and establishment of operational standards for existing units. The draft rule language proposes an emission limit based on the Phase 2 limit since this rulemaking will not be effective before March 31, 2010, the compliance date in the NESCAUM rule for Phase 2. The Phase 2 standard is a particulate matter emission standard of 0.32 pounds per million BTU output. Since IDEM's proposed program relies on the U.S. EPA certification program, the applicability of the rule is limited to units designed for a thermal output of less than 350,000 British thermal units per hour (Btu/hr).

The draft rule establishes provisions that prohibit a person, manufacturer, supplier, or distributor from selling, offering for sale, distributing, installing, purchasing, leasing, or receiving an outdoor hydronic heater for use in Indiana, unless it is a Phase 2 unit. Existing units may not be operated outside the normal winter heating season unless they have been certified to meet the emission limit. The proposed rulemaking also establishes stack height requirements for outdoor hydronic heaters that do not meet the emission limit. The proposed rule requires a permanent stack extending five feet higher than the peak of any roof structure located within 150 feet of the unit

and not located on the same property as the unit. All units must meet a 20% opacity limit (the visual density of smoke emitted) and burn approved fuel. Sellers of outdoor hydronic units must provide notice to buyers of operating restrictions and notify the department of the transaction.

The health effects associated with exposure to particulate matter include aggravation of respiratory and cardiovascular disease, lung disease, decreased lung function, asthma attacks, and certain cardiovascular problems. Individuals particularly sensitive to particulate matter exposure include older adults, people with heart and lung disease, and children.

**Fiscal Impact**

The citizens of Indiana will benefit from the proposed rulemaking because it would help to reduce particulate matter emissions from outdoor hydronic heaters. Reductions in ambient levels of particulate matter would promote improved human health and welfare, improved visibility, and decreased damage to plants and trees. The proposed rulemaking will also benefit neighbors that are living near outdoor hydronic heaters and are impacted by their emissions and smoke.

**Economic Impact**

The draft rule will have the following costs:

- The cost to manufacturers for designing and testing an outdoor hydronic heater model that meets the U.S. EPA Phase 2 emission limit.
- The cost difference to purchase a Phase 2 unit compared to non-Phase 2 unit.
- Cost to current owners to comply with stack height requirement and summer time operating restriction.
- Economic impact on dealers of outdoor hydronic heaters.

**Manufacturing Cost**

IDEM is unable to provide the cost associated with designing a Phase 2 unit and certification testing. Non-phase 2 units manufactured in Indiana or elsewhere can still continue to be manufactured as long as they are marketed/sold outside of Indiana. IDEM is aware of one company that manufactures units in Indiana. This company does not currently sell a Phase 2 certified unit. Manufacturers may be able to recoup some of the cost of developing a Phase 2 unit through increased retail price of the Phase 2 unit.

**New Installations – Phase 2 Unit Cost**

The draft rule requires that new installations, after a specified date, be units that are Phase 2 certified. A comparison of lower cost non-Phase 2 certified and Phase 2 certified units does show a higher cost for Phase 2 units. Outdoor hydronic heaters can range in cost from \$4,000 to \$18,000. There are currently 10 models (not including the E-Classic 2400) qualified as Phase 2 on U.S. EPA's list, with three of these being pellet-fueled models. The range for a select number of Phase 2 units is \$8,750 to \$9,630 dollars without installation costs (see Phase 2 Unit Cost table below). According to one manufacturer, the difference between a Phase 2 unit and a non-Phase 2 unit is \$3,500.

While the initial cost of a Phase 2 unit is higher than a noncompliant unit, there would be some cost savings over time because the newer models are more efficient and less wood is burned. Using less wood could be considered a benefit even to those owners who have access to free wood because less time and labor would be needed to chop, mulch, or gather wood. At this time, rules in other states requiring Phase 2 units are relatively new. For example, Vermont's rule was effective on October 1, 2009. As more people are buying Phase 2 units and once U.S. EPA's revised NSPS is effective, the price for Phase 2 units may drop. Also, prospective purchasers have available a variety of other heating units that can perform the same or similar functions, including U.S. EPA certified indoor wood stoves and gas or oil fired furnaces. Most of the alternative wood heating appliances are less expensive to purchase and install than outdoor hydronic heaters, although, indoor wood stoves usually serve a smaller area.

**Phase 2 Unit Cost**

Comparison	Wood Doctor HE-8000	Heatmor SSRII	Central Boiler E-Classic 1400	HeatSource <sup>1</sup> Earth Energy Series 190	Pro-Fab Empyre Pro 200	Pro-Fab Empyre Pro 400
Price (not including installation)	\$8,750	\$10,495	\$9,630 <sup>1</sup>	\$8,995	\$8,495	\$10,249
Water Capacity	185 gallons	377 gallons	195 gallons	321 gallons	75 gallons	115 gallons
8-hour Btu output rating (EPA testing)	112,655 Btu/hr	66,842 Btu/hr	107,459 Btu/hr	87,577 Btu/hr	66,290 Btu/hr	177,333 Btu/hr
Heating Area (sq. ft.)	Up to 8,000 sq. ft.	5,000 sq. ft.	Not available	Up to 6,500 sq. ft.	2,000 to 4,000 sq. ft.	6,000 to 8,000 sq. ft.

---

<sup>1</sup>Based on data provided by Hawken Energy during the Second Notice of Comment Period. All other prices were obtained from the manufacturer.

### **Stack Height Requirement and Summer Operating Time Cost**

It may cost as little as a few hundred dollars to modify the stack height of an existing unit. The cost would be higher for owners who have to extend with more than one extension piece, add guide wires, or pay for installation. Cost could be significant if the unit owner could not comply with the stack height requirement and either had to move the unit or replace the unit with a Phase 2 unit.

Cost estimates received during the Second Notice of Comment Period (Hawken Energy comments) indicate that proposed stack height requirements would cost the average home owner \$815. This includes the cost of adapter, triple wall extension piece, roof bracket, chimney tee, tax, and installation.

IDEM does not know how many existing outdoor hydronic heaters are currently operating in Indiana that would need to extend their stack height to comply with the proposed rule. This type of information would be extremely difficult to ascertain through a survey. Many comments received during the Second Notice of Comment Period indicated that units are installed in areas where neighbors are not located within 150 feet of the unit, so they would not have to comply with the stack height requirement.

Some owners of outdoor hydronic heaters continue to use their unit during the summer for hot water. The restriction limiting the use of these units to the heating season would impact the owners that save money by continuing to use their unit for hot water instead of another fuel source. Some commenters have estimated this at \$30 per month per owner. IDEM does not know how many owners use their units for hot water during the summer or how many use their units for other summer time uses, such as heating swimming pools.

### **Other Economic Impacts**

The draft rule would also have an economic impact on retailers/dealers who may have a reduction in the number of Phase 2 units available for sale or decreased demand for outdoor hydronic heaters due to higher cost of Phase 2 units, or both. There are several dealerships that sell outdoor hydronic heaters in Indiana; many are located in southern Indiana. It is not expected that dealerships will incur any additional costs as a result of this rule. Upon adoption of this rule, these dealerships will be able to continue to sell outdoor hydronic heaters, if the specific models being sold meet the Phase 2 emission standard. While there are currently eleven outdoor hydronic models (stick wood and pellet units) manufactured by eight companies that meet the Phase 2 standard and have been listed on U.S. EPA's website, because of the cost of Phase 2 units, there may be a reduction in demand in Indiana.

### **Post-Implementation Costs (Total Estimated Economic Impact)**

The economic impact to be considered for an [IC 4-22-2-28](#) fiscal analysis is the annual economic impact on all regulated persons beginning with the first 12 month period after the rule is fully implemented. The economic impact for this rulemaking would result from the increased cost of Phase 2 units compared to noncompliant units. While a prospective buyer has other options for heating appliances, once a choice is made to buy an outdoor hydronic heater the draft rule would impact the cost of this decision. IDEM cannot anticipate how many units would be sold in Indiana after the implementation of this rule. At an increased cost of, for example, \$3,500 per unit, only 143 units annually would need to be sold to exceed the requirement for a greater than \$500,000 fiscal under [IC 4-22-2-28](#). IDEM cannot demonstrate that the economic impact of this rule will be less than \$500,000.

### **Examination of Alternatives**

IDEM will review comments received during the Second Notice of Comment Period in advance of preliminary adoption and will consider ways to reduce the economic impact or burden, or both, of this rulemaking. One option IDEM will consider is eliminating the summer time operating restriction for non-Phase 2 units to only apply if neighbors are within a specified distance.

IDEM has not chosen to wait until the federal rule is in place for requiring new Phase 2 installations, because the federal rule could take too much time to be effective and the sooner more installations use more efficient units, the sooner Indiana will realize reductions in particulate matter emissions. This could reduce future complaints from people that did not know Phase 2 units were available and do not want retroactive application of regulations.

The no-action alternative would allow high emissions of particulate matter and other pollutants in future outdoor hydronic heater units. The result would likely be more widespread risk of respiratory and cardiovascular health problems and an increase in the accompanying health care costs. Other impacts would include increased exposure to nonparticulate matter wood smoke pollutants, increased complaints from outdoor hydronic heater neighbors, and continued investigation and mediation responsibilities for IDEM.

While some local municipalities have already enacted ordinances, it is important to have a state-wide rule because not all local governments have the resources to enact their own ordinance or would prefer the state handle this issue. A state-wide rule is also important in terms of applying an emission standard for new units. Applying a consistent standard when manufacturing new units is much easier at the state or national level.

### **Conclusion**

While the statewide annual cost of this rule cannot be quantified for current owners, dealers, and manufacturers, it is known that not all current owners of outdoor hydronic heaters will be financially impacted by

this rule. A majority of current owners already burn clean dry wood and will not need to increase the stack height on the unit because they do not have neighbors within 150 feet of the unit. Current owners will be subject to additional cost if they purchase a new unit. Dealers and manufacturers could have decreased sales until more Phase 2 units are sold or until the brand they sell markets a Phase 2 unit. In-state manufacturers will either need to sell outside the state or design and certify a Phase 2 unit.

### **Small Business Fiscal Impact**

The estimated economic impact on small businesses for Indiana is included in the total economic impact of the draft rule. The manufacturing and marketing of outdoor hydronic heaters is typically on a regional or national basis for the major manufacturers. Some manufacturers already have a Phase 2 unit available. Many of the dealers affected by the draft rule are small businesses. Under the draft rule, Indiana dealers can sell Phase 2 units. Dealers that also offer service and repair could continue to do so since the rule is not banning the use of these units. The one Indiana manufacturer known to the department is the type of manufacturer that may find it difficult to compete when emission standards go into effect. A small operation may not have the capital to pursue redesign of its units.

### **Fiscal Impact on State and Local Government**

In Indiana, state or local government agencies that use outdoor hydronic heaters regulated by this rule will be impacted when they purchase a new unit. In addition, the cost of ensuring compliance will be handled at existing staffing levels at IDEM. There is no unfunded mandate on state or local governments as a result of this rulemaking.

### **Additional Rule Information**

Given the increased use of outdoor hydronic heaters in areas throughout the country, some states have developed or are in the process of developing rules to regulate outdoor hydronic heaters. The emissions, health effects, and nuisance factor that can be created by the use of outdoor hydronic heaters are a concern to IDEM; therefore, IDEM has developed draft rule language that allows the continued use of these units while addressing the issue of emissions and complaints from the use of these types of wood burning appliances.

### **Sources of Information**

1. United States Environmental Protection Agency. "Emissions from Outdoor Wood-burning Residential Hot Water Furnaces". EPA-600/R-98-017. February 1998. Available at:

<http://www.epa.gov/ttn/atw/burn/woodburn1.pdf> (last visited March 22, 2010)

2. Northeast States for Coordinated Air Use Management. "Assessment of Outdoor Wood-fired Boilers". March 2006 (revised June 2006). Available at:

<http://www.nescaum.org/documents/assessment-of-outdoor-wood-fired-boilers> (last visited March 22, 2010)

3. Attorney General of New York State. "Smoke Gets in Your Lungs: Outdoor Wood Boilers in New York State". 2005. Available at:

<http://burningissues.org/pdfs/ny-outdoor-wood-boilers-05.pdf> (last visited March 22, 2010)

4. Indiana Department of Environmental Management, Office of Air Quality, Rule and State Implementation Plan Development Section. "Hawken Energy" (Comment submitted during Second Notice of Comment Period LSA Document #05-332). February 19, 2010.

5. United States Environmental Protection Agency. "Partners-Program Participation-List of Cleaner Hydronic Heaters".

<http://www.epa.gov/burnwise/owhlist.html> (March 8, 2010)

*Posted: 10/13/2010 by Legislative Services Agency*

An [html](#) version of this document.