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EPA's Wood Stove / Wood Heater Regulations: Frequently Asked Questions

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Summary

On March 7, 2018, the House passed H.R. 1917, a bill that would delay for three years the implementation of more stringent emission standards for new residential wood heaters. The emission standards were promulgated by the U.S. Environmental Protection Agency (EPA) in 2015, and are becoming effective through a two-step process. Step 1 standards took effect on May 15, 2015; unless delayed, more stringent Step 2 standards will become effective on May 15, 2020. EPA's 2015 rule revises standards for wood stoves and pellet stoves that were set in 1988, and establishes standards for other types of wood heaters, principally forced air furnaces and hydronic heaters, for the first time.

According to EPA, smoke from wood heaters and fireplaces contributes "hundreds of thousands of tons" of fine particles to the air each year, nationally accounting for nearly 25% of all area source air toxics cancer risks and 15% of noncancer respiratory effects. In many areas, in wintertime, wood heaters are the largest source of particulate air pollution. Until the implementation of this rule, however, many heater types were not subject to any federal emission standard.

The rule will only gradually reduce this pollution, because it only applies to new heaters (not those already in use) and it gives the industry a five-year grace period (until 2020) before its most stringent (Step 2) standards take effect. Nevertheless, EPA estimated that implementing the rule will eliminate 360 to 810 premature deaths annually in the 2015-2020 period as well as reduce hospital admissions and lost work days due to respiratory illness. EPA quantified these benefits at $3.4 billion to $7.6 billion per year during the 2015-2020 period, more than 70 times the agency's estimated annualized compliance cost to manufacturers, $46 million.

Trade associations representing the affected industries and affected companies have mixed views of the 2015 standards. While generally supporting revision of the 1988 standards and the inclusion of additional heater types, some have expressed concern that the standards will impose too great a cost. Homeowners may continue to use current, highly polluting equipment, rather than buy more expensive replacements. In its analysis of the final rule, EPA estimated the vast majority of cost (88%) would be borne by the hydronic heater and forced air furnace segments of the industry. Specifically, EPA estimated compliance costs for hydronic heaters and forced-air furnaces will be about 17% of total sales revenues for the two product types. EPA did not estimate the effect of these costs on prices or output, but the agency's analysis does conclude that high unit compliance costs could lead to "potential nontrivial increases in market price to wood-burning appliance consumers and potential decreases in output."

In addition to cost issues, many commenters on the *proposed* rule expressed concerns regarding the process to be used in certifying compliance and the short period of time in which units available at the time of the rule's promulgation could be tested and certified. EPA addressed many of these comments in the final rule, making changes intended to ease the burden of certifying compliance. Industry representatives continue to express concern that there will not be enough time to develop new models, certify compliance, and meet lead-time requirements of product retailers for the Step 2 (2020) compliance deadline. Citing these concerns, EPA proposed in 2018 to add a two-year "sell-through" period for new hydronic heaters and forced-air furnaces beyond the Step 2 deadline.

This report presents some of the most frequent questions raised concerning the rule, so as to provide basic background information about the final wood heater rule, its potential impacts, and stakeholder reactions to it.

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On March 16, 2015, the Environmental Protection Agency (EPA) published final emission standards for new residential wood heaters, including wood stoves, pellet stoves, hydronic heaters, and forced air furnaces.[1] Proposed in 2014,[2] the rule resulted from a regular review process that Section 111 of the Clean Air Act requires for all New Source Performance Standards (NSPS). Wood stoves and pellet stoves have been subject to NSPS since 1988. The act requires a review of NSPS and, if appropriate, revision of the standards, at least every eight years. The 2015 rule, which marks the first revision since EPA promulgated the wood stove NSPS in 1988, is becoming effective in two steps. Step 1 standards took effect on May 15, 2015. Unless delayed, more stringent Step 2 standards will become effective on May 15, 2020.

Release of the proposed and final versions of the rule generated a substantial amount of interest, particularly in areas where wood is used as a heating fuel, and some Members of Congress from those areas have written EPA to express concerns regarding the proposed rule's possible impacts.[3] On March 7, 2018, the House passed H.R. 1917, which would delay implementation of the standards for three years.[4]

More recently, EPA proposed to add a two-year "sell-through" period for new hydronic heaters and forced-air furnaces.[5] Specifically, EPA's proposal would allow all affected new hydronic heaters and forced-air furnaces that are manufactured or imported before the May 2020 deadline to be sold at retail through May 2022. EPA did not propose changes to the requirements for new residential wood heaters (e.g., wood stoves) but requested comment on whether a sell-through period beyond May 2020 is appropriate for these heaters and, if so, the necessary duration of the sell-through period. EPA also requested comment about whether the agency should revise the minimum pellet fuel requirements.

In addition, EPA published an advance notice of proposed rulemaking (ANPR) in late 2018 on new residential wood heaters, new residential hydronic heaters, and new residential air furnaces. The 2018 ANPR does not propose specific changes to the standards, but it requests comments on various regulatory issues "in order to inform future rulemaking to improve these standards and related test methods."[6] Citing stakeholder feedback about ways to improve implementation of the 2015 NSPS, EPA requested comment on 10 topics, including the cost and feasibility of meeting the Step 2 emission limits (which become effective in 2020), the timing of the Step 2 compliance date, and test methods used for certification.

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[1] U.S. Environmental Protection Agency (EPA), "Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces," 80 *Federal Register* 13672, March 16, 2015. Hereinafter, "Final Rule."

[2] EPA took public comment on the proposal until May 5, 2014. For the proposal, see U.S. EPA, "Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces, and New Residential Masonry Heaters; Proposed Rule," 79 *Federal Register* 6329, February 3, 2014. Hereinafter, "Proposed Rule."

[3] A letter to EPA Administrator McCarthy from Senators Collins and King of Maine is available at https://www.king.senate.gov/newsroom/press-releases/senators-collins-king-express-concern-with-epas-proposed-wood-stove-rules. A letter to the EPA Administrator from Senator Thune of South Dakota is available at http://www.thune.senate.gov/public/index.cfm/press-releases?ID=008e36fa-35c2-42f0-a50c-6165fb33d982.

[4] The provisions affecting wood heaters were reported by the House Energy and Commerce Committee as H.R. 453 (H.Rept. 115-508). The Rules Committee combined that bill with H.R. 1917 when it established a rule for floor consideration of the latter, on March 6, 2018.

[5] EPA, "Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces," 83 *Federal Register* 61574, November 30, 2018.

[6] EPA, "Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces," 83 *Federal Register* 61585, November 30, 2018.

This report addresses questions posed to CRS by various requesters in order to provide basic information about EPA's action, its potential impacts, and industry and other reactions to the rule. The following 10 questions are among those frequently asked about the wood heater rule.

Q: To what sources of emissions does the final rule apply?

A: The final rule amended the NSPS for Residential Wood Heaters, which applied to wood stoves and pellet stoves, and, for the first time, set standards for new residential hydronic heaters, forced air furnaces, and single burn rate stoves.[7]

In addition to these five types of wood heaters, EPA had proposed NSPS for new residential masonry heaters that burn wood, but did not take final action on them in the 2015 final rule. The agency stated that it wanted "to allow additional time for the Masonry Heater Association (MHA) to finish their efforts to develop revised test methods and alternative compliance calculation procedures."[8] As of publication of this report, EPA has not taken action on masonry heaters.

The final rule does not apply to outdoor fireplaces, pizza ovens, barbecues, or chimineas (free-standing outdoor chimneys), and it does not apply to new or existing heaters that are fueled solely by oil, gas, or coal.

In addition, EPA did not include standards for indoor fireplaces in the regulation, because the agency determined that, "Fireplaces are not effective heaters."[9] The agency sought additional data and comments on this issue in the preamble to the proposed rule, but the final rule continued to exempt fireplaces from emission standards. Fireplaces are included in an agency voluntary program that encourages manufacturers to make cleaner-burning fireplaces and retrofits available for consumers,[10] and some industry representatives had asked EPA to include fireplaces in the final rule.[11]

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[7] Hydronic heaters, which are typically located outside the buildings they heat in small sheds with short smokestacks, are appliances that burn wood to heat a liquid (water or a water-antifreeze mixture) that is piped to provide heat and hot water to occupied buildings, such as homes. Hydronic heaters may also be located indoors. The forced air furnaces that would be subject to these regulations are similar to natural gas-fired or oil-fired forced air furnaces used in millions of American homes, except that they are designed to burn wood (Proposed Rule, p. 6360). According to EPA, "Industry information suggests that there are three times more sales of wood-fired, forced-air furnaces each year compared to wood-fired hydronic heaters. These units are relatively easy to retrofit into existing structures, and their sales price is substantially less than hydronic heaters but greater than gas or oil furnaces" (Proposed Rule, p. 6360). A single burn rate wood heater is "a wood heater that is not equipped with or installed with a burn control device to allow the operator to vary burn rate conditions. Burn rate control devices include stack dampers that control the outflow of flue gases from the heater to the chimney ... and air control slides, gates or any other type of mechanisms that control combustion air flow into the heater" (Final Rule, p. 13704).

[8] U.S. EPA, *Regulatory Impact Analysis (RIA) for Residential Wood Heaters NSPS Revision*, Final Report, February 2015, p. 1-1, at https://www.epa.gov/sites/production/files/2015-02/documents/20150204-residential-wood-heaters-ria.pdf. Hereinafter, "Final Rule RIA." Masonry heater operation, according to EPA, involves one or two short high burn rate cycles where hot gases are generated during combustion of a fuel load in the firebox. The hot gases then pass through channels, saturating the masonry mass with heat. The masonry mass then radiates heat into the area around the masonry heater for 12 to 24 hours.

[9] U.S. EPA, "Overview of Proposed Updates to Air Emissions Requirements for New Residential Wood Heaters," p. 2, at http://www2.epa.gov/sites/production/files/2013-12/documents/ proposed_wood_heater_nsps_overview_fact_sheet_1.pdf.

[10] For information, see "Burn Wise," U.S. EPA's Voluntary Program for Wood-Burning Fireplaces, July 11, 2013, at http://www.epa.gov/burnwise/pdfs/fireplaceqa.pdf.

[11] See, for example, statement of Mark Klein, President and Chief Executive Officer of Innovative Hearth Products, at U.S. EPA Public Hearing on the Proposed New Source Performance Standards for Wood Heaters, Boston, MA, February 26, 2014, transcript, p. 39, at http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2009-0734-

Q: When does the final rule go into effect?

A: The final rule's standards take effect in two steps, which are phased in over time. The "Step 1" standards took effect on May 15, 2015, for all covered heaters except forced air furnaces. Forced air furnaces had until May 2016 or May 2017 (depending on whether they are small or large) to comply with Step 1. Unless the implementation schedule is modified, the more stringent "Step 2" standards will become effective for all covered heaters on May 15, 2020.

For most new wood stoves or pellet stoves, there will be relatively little change in emission standards until the Step 2 deadline in 2020. Other types of wood heaters (notably, hydronic heaters and wood-fired forced air furnaces) were not subject to federal emission standards prior to the 2015 rule. As with wood stoves, far more stringent standards will affect new hydronic heaters and forced air furnaces beginning with models sold in 2020.

In late 2018, EPA proposed to add a two-year "sell-through" period beyond the May 2020 compliance date for new hydronic heaters and forced-air furnaces.[12] EPA cited stakeholder concerns about the compliance timeline as the basis for the proposal. In particular, EPA reported that manufacturers will need until May 2020 to develop, test, and certify the wood heating devices as Step 2 compliant. Retailers, according to EPA, may be reluctant to stock devices currently available—those certified for Step 1 but not Step 2—to reduce risk of being left with noncompliant inventory when the Step 2 deadline hits.[13]

Q: Does the final rule affect wood stoves and other wood heaters already purchased or in use prior to its effective date?

A: No. The standards only apply to new wood stoves and heaters sold after the final rule's effective date. See previous question for effective dates for each compliance phase of the rule.

The absence of standards for most wood heaters currently in use limits the effectiveness of EPA and state efforts to reduce wood smoke emissions. According to the U.S. Energy Information Administration, 11.5 million homes use wood heaters as their primary or secondary heating source.[14] An estimated 6 million of the heaters in operation predate EPA's 1988 standards.[15] EPA projected annual sales of wood heaters were to be about 270,000 in 2015,[16] less than 2.4% of the number of units in use. New units do not necessarily replace existing units, thus it may be decades before older, higher-polluting equipment is retired. Industry, EPA, and a number of states have initiated wood stove change-out programs, with subsidies for purchases that replace equipment that predates EPA standards, and at least one manufacturer proposed banning the sale

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[12] EPA, "Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces," 83 *Federal Register* 61574, November 30, 2018.

[13] EPA, "Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces," 83 *Federal Register* 61578-79, November 30, 2018.

[14] U.S. Energy Information Administration, *Today in Energy*, March 17, 2014, at https://www.eia.gov/todayinenergy/detail.php?id=15431.

[15] See statement of Jack Goldman, President and CEO of the Hearth, Patio, and Barbecue Association, at U.S. EPA Public Hearing on the Proposed New Source Performance Standards for Wood Heaters, Boston, MA, February 26, 2014, transcript, p. 17, at http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2009-0734-1037. The six (or occasionally seven) million figure also appears in statements from other stakeholders made at the public hearing at pp. 94, 96, 200, 221, 265, 272, and 325 of the transcript.

[16] Final Rule RIA, Table 4-4.

of replacement parts for non-EPA-compliant models.[17] Wood smoke impacts, particularly those from heaters in use prior to 2015, are likely to remain an issue of concern for some time.

Q: What does the final rule require?

A: The final rule's standards take effect in two steps.[18] Step 1 took effect on the effective date of the rule, May 15, 2015. Starting on that date, new wood heaters were required to meet standards that EPA described at proposal as "emission levels that almost all models can readily achieve now using today's designs and technology."[19] Many in industry disputed this characterization, but in its RIA for the final rule, EPA stated that the Step 1 limit for wood stoves and pellet stoves "is the 1995 Washington State standard for non-catalytic stoves."[20] The agency reported that 130 wood and pellet stoves (out of 145 models then on the market) already met the standard, using industry-supplied data.[21] Of hydronic heaters, the agency has stated: "The Step 1 limit is identical to the EPA 'Phase 2' voluntary program limit and is therefore already met by all 50 of the 50 currently Phase 2 qualified hydronic heater models built by U.S. manufacturers participating in the voluntary program."[22] The emissions standard for forced air furnaces was based on testing done in March 2010 for the Canadian standard for these units.[23]

Step 2, which requires a 56% reduction in particulate matter (PM) emissions from the Step 1 standards for wood stoves and pellet stoves, a roughly 70% reduction for hydronic heaters, and an 84% reduction in emissions from forced air furnaces, takes effect five years after the rule's effective date, May 15, 2020.[24] In proposing the standards, EPA stated that the "... second step represents stronger emission levels achievable for all appliance types at reasonable cost, but allows appropriate lead times for manufacturers to redesign their model lines to accommodate the improved technology across multiple model lines and test, field evaluate, and certify the new model lines."[25] The agency's RIA also provided data on numerous heaters that it stated currently achieved emissions at or below the required Step 2 level.[26]

Q: What will the rule cost?

A. In 2015, EPA estimated that the annualized cost of the rule in the 2015-2020 timeframe will be $45.7 million,[27] and that it will affect an average of 296,000 heaters sold annually during this

[17] Statement of Brett Watson, President of Jotul North America, at U.S. EPA Public Hearing on the Proposed New Source Performance Standards for Wood Heaters, Boston, MA, February 26, 2014, transcript, p. 263, at http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2009-0734-1037.

[18] In addition to the two-step five-year phase-in approach taken in the final rule, in its proposal the agency asked for comment on an alternative approach that would have had three steps. Under this approach, the final standards would have taken effect in 2023 rather than 2020, with an intermediate set of standards in 2018. EPA did not choose this approach for the final standards.

[19] Proposed Rule, p. 6353.

[20] Final Rule RIA, p. 4-5.

[21] Final Rule RIA, p. 4-5.

[22] Final Rule RIA, p. 4-5.

[23] Final Rule RIA, p. 4-6.

[24] The rule allows somewhat higher emissions, generally, for wood stoves, pellet stoves, and hydronic heaters if they are certified using cord wood. See Final Rule, pp. 13678, 13681.

[25] Proposed Rule, p. 6353.

[26] Proposed Rule RIA, pp. 9-15 to 9-17. EPA also presented this data in the Final Rule RIA, pp. 4-5 to 4-6.

[27] The $45.7 million estimate was based on a 7% discount rate. The agency also produced a cost estimate using a 3%

period.[28] As shown below in **Table 1**, EPA's estimate of the cost impact of the rule varies by industry segment. EPA expected the vast majority of the cost (88%) to be borne by the hydronic heater and forced air furnace segments of the industry, neither of which was previously subject to emission limits. In percentage terms, EPA estimated that increased costs will range from a low of 1.1% of sales for pellet stoves to a high of 17.1% of sales for hydronic heaters.

The total estimated costs are relatively small compared to other Obama-era EPA rules that received considerable attention in Congress. For example, the Mercury and Air Toxics Standards (MATS), which apply to electric generating units, were estimated to cost $9.6 billion annually[29]—more than 200 times the estimated cost of the wood heater rule. However, given that the revenues of the electric utilities, to which the MATS rule applies, are about 750 times those of the wood heater industry, the estimated costs of this rule would impose a greater percentage burden on this small segment of U.S. industry than MATS would impose on electric utilities.[30] Most of the manufacturers of wood heaters are small businesses—EPA concluded that approximately 90% of U.S. companies that manufacture residential wood heaters meet the Small Business Administration's small entity definition.[31] Small businesses do not have large revenues over which to spread research and development costs. As a result, stakeholders raised concerns that stringent standards would drive them out of business.[32]

In the final rule RIA, EPA stated that, lacking estimates of the price elasticity of both supply and demand, it did not estimate wood heater price or output changes that might result from the rule. On the other hand:

> While we are unable to estimate price and output changes, we note that the high increases in unit costs for some affected appliances could lead to potential nontrivial increases in market price to wood-burning appliance consumers and potential decreases in output for such appliances if supply elasticities are determined to be low. This could be true for hydronic heaters and forced air furnaces, but is unlikely for wood stoves and pellet stoves.[33]

Table 1. Annualized Compliance Cost and Average Annual Product Sales, 2015-2020, by Product Type

Product Type	Annualized Compliance Cost ($ million)	Average Annual Product Sales, 2015-2020 ($ million)	Compliance Cost/ Product Sales
Pellet stoves	$1.5	$132.2	1.1%

discount rate (which resulted in lower annualized cost), but most of the agency's explanatory materials use the $45.7 million estimate. See Final Rule RIA, p. 1-4. For detailed cost estimates, summarized in this paragraph, see Section 5 of the final rule RIA, https://www.epa.gov/sites/production/files/2015-02/documents/20150204-residential-wood-heaters-ria.pdf.

[28] Final Rule RIA, Table 4-4.

[29] See U.S. Environmental Protection Agency, *Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards*, EPA-452-R-11-011, December 2011, pp. ES-2, https://www.epa.gov/sites/production/files/2015-11/documents/matsriafinal.pdf.

[30] Revenue from sales of electricity to ultimate customers was $388,089 million in 2017 according to the U.S. Energy Information Administration, *Electric Power Monthly*, February 27, 2018, Table 5-2. Annual revenue from sales of wood heaters, as shown in **Table 1** of this report was estimated by EPA at approximately $500 million.

[31] Final Rule RIA, p. 6-13.

[32] U.S. Environmental Protection Agency, Response to Comment on Proposed Rule, 'Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces, and New Residential Masonry Heaters', EPA-HQ-OAR-2009-0734-1775, February 2015, https://www.regulations.gov. See pp. 455-456.

[33] Final Rule RIA, p. 5-23.

Product Type	Annualized Compliance Cost ($ million)	Average Annual Product Sales, 2015-2020 ($ million)	Compliance Cost/ Product Sales
Wood stoves	$3.0	$123.1	2.4%
Single burn rate stoves	$0.9	$11.6	7.8%
Forced-air furnaces	$15.4	$91.8	16.8%
Hydronic heating systems	$24.9	$145.7	17.1%

Source: CRS analysis of EPA's Final Rule RIA, Table 5-5.

Q: Has there been controversy regarding the agency's testing and certification requirements?

A: Yes. Many concerns and comments in response to EPA's *proposed* rule had to do with the testing that would be required for certification of wood heating equipment under the proposal. In order to demonstrate compliance with the proposed standards, EPA would rely on testing and certification provided by independent labs—just as it did with the 1988 standards for wood and pellet stoves. The labs rely on an EPA protocol that specifies the type and amount of wood, moisture content, startup procedures, duration of the test, etc., to test whether or not a specific model meets the NSPS standards.

As noted above (in "Q: What does the final rule require?"), EPA has stated that a large number of wood heaters (more than 85% of wood stove models available when the rule was developed, for example)[34] already met the Step 1 standards at the time of their promulgation. Controversy over the proposed rule centered on EPA's desire to alter the test method to better account for real world conditions. In particular, the agency proposed the use of cordwood (split wood) in place of "cribs" (lumber assembled in a standardized configuration) in the certification process. Recertifying under a new testing protocol would have imposed costs on already certified equipment and could have resulted in many of the heaters not being certified.

EPA resolved this concern for Step 1 compliance by grandfathering heaters certified at emission levels below the new NSPS under the 1988 test methods. Under the final rule, heaters/stoves with EPA certifications under the 1988 emission standards that showed compliance with the Step 1 emission levels were automatically deemed as certified to meet the Step 1 emission limits until the Step 2 compliance date (in 2020). Hydronic heaters, which had not previously been subject to emission standards, were allowed to show compliance with the Step 1 standards if they qualified under a preexisting EPA voluntary program or were certified by a New York State program. More than 90 heater models met the Step 1 standards (and some met the Step 2 standards) under these provisions.

These provisions addressed most of the industry's concerns about the Step 1 compliance process, but Step 2 compliance remains an issue. At House and Senate hearings held in late 2017, witnesses presented different opinions about the extent to which new wood heaters can demonstrate compliance with Step 2 standards. For example, an environmental organization stated that there is "a long list of devices that already meet" the Step 2 standards.[35] An industry

[34] Final Rule RIA, p. 2-3.

[35] Statement of John D. Walke, Natural Resources Defense Council, U.S. Congress, hearing before the Subcommittee on Clean Air and Nuclear Safety, Senate Committee on Environment and Public Works, *Legislative Hearing on S. 1857, S. 203, S. 839, and S. 1934*, 115th Cong., 1st sess., November 14, 2017, Serial No. 115-127 (Washington: GPO,

association disagreed with that characterization, stating that few devices can meet the testing criteria for Step 2, which includes a carbon monoxide measurement.[36] According to this association, "it is not feasible" for one type of heater—warm air furnaces—to meet the Step 2 emission standards.[37] As of March 2018, the EPA identified 66 of 559 certified model lines as "meet[ing] the 2020 particulate matter emission standards"; the list showed a carbon monoxide measurement for 38 of these model lines.[38]

In addition, witnesses from heater manufacturing companies and the nation's largest certification lab expressed concern that there would not be enough time to certify products for Step 2 compliance before the 2020 deadline, in part, they alleged, because retailers—not wanting to be left with noncompliant inventory when the Step 2 deadline hits—will refuse to accept anything but Step 2-compliant products beginning in 2018. As a result, many in the industry have rallied behind legislation (H.R. 453[39] and S. 1857) that would move the Step 2 deadline to 2023.[40]

EPA did not testify at either 2017 hearing. In a written statement submitted for the record of the House committee hearing, EPA Administrator Pruitt stated that the Administration had no official position on H.R. 453, but "I am very supportive of the committee's efforts to provide additional flexibilities, extensions, and clarifications for industries complying with various Clean Air Act regulations."[41] The agency had stated, in proposing and promulgating the rule, that the five-year phased approach was developed to provide the affected industry sufficient time to develop, test, and certify new products. The period of time EPA has allowed for the development of Step 2-compliant products (five years) is longer than the time allowed for compliance with most Clean Air Act emission standards. As discussed earlier in this report, EPA's 2018 proposal would add a two-year "sell-through" period beyond the May 2020 compliance date for new hydronic heaters and forced-air furnaces.[42] (See "Q: When does the final rule go into effect?")

2017), pp. 64-84. On p. 81, the witness cited "U.S. EPA. Compliance, List of EPA Certified Wood Stoves, October 2017 *available at* https://www.epa.gov/compliance/list-epa-certified-wood-stoves."

[36] U.S. Congress, hearing before the Subcommittee on Clean Air and Nuclear Safety, Senate Committee on Environment and Public Works, *Legislative Hearing on S. 1857, S. 203, S. 839, and S. 1934*, 115th Cong., 1st sess., November 14, 2017, Serial No. 115-127 (Washington: GPO, 2017). See attached letter from Jack Goldman, Hearth, Patio, and Barbecue Association, p. 122.

[37] Hearth, Patio & Barbecue Association, "EPA's NSPS," https://www.hpba.org/Advocacy/EPAs-NSPS.

[38] According to EPA, "model line" refers to all wood heaters offered for sale by a single manufacturer that are similar in burning technology but have a different cosmetic or aesthetic look. List accessed on March 8, 2018. U.S. EPA, *List of EPA Certified Wood Stoves*, https://www.epa.gov/compliance/list-epa-certified-wood-stoves.

[39] As noted earlier, the House passed H.R. 453 on March 7, 2018, as part of H.R. 1917.

[40] Statement of Frank Moore, Hardy Manufacturing Company, Inc., U.S. House, Committee on Energy and Commerce, Subcommittee on Environment hearing, *Big Relief for Small Business: Legislation Reducing Regulatory Burdens on Small Manufacturers and Other Job Creators*, September 13, 2017, and attached letter from Rachel Feinstein, Hearth, Patio, and Barbecue Association. Also, statement of Paul Williams, United States Stove Company, in U.S. Senate, Committee on Environment and Public Works, Subcommittee on Clean Air and Nuclear Safety hearing, *Legislative Hearing on S. 1857, S. 203, S. 839, and S. 1934*, November 14, 2017, and Attachment 2, letter from OMNI Test Laboratories.

[41] Statement for the Record by Administrator Scott Pruitt, U.S. Environmental Protection Agency, in U.S. House, Committee on Energy and Commerce, Subcommittee on Environment, *Big Relief for Small Business: Legislation Reducing Regulatory Burdens on Small Manufacturers and Other Job Creators*, September 13, 2017, p. 148.

[42] EPA, "Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces," 83 *Federal Register* 61574, November 30, 2018.

Q: Does the rule have any specific provisions for small businesses?

A: In general, the emission standards apply equally to manufacturers of all sizes with the same compliance deadlines for all. More than 90% of the manufacturers of wood heaters qualify as small businesses.[43]

Nevertheless, EPA incorporated numerous suggestions in the rule in response to the concerns raised by small businesses. As part of the regulatory process, in 2010, EPA created a Small Business Advocacy Review panel under the Regulatory Flexibility Act, as amended by the Small Business Regulatory Enforcement Fairness Act.[44] The panel included representatives of the Office of Advocacy of the Small Business Administration (SBA), the Office of Information and Regulatory Affairs at the Office of Management and Budget, and 26 small businesses or organizations from the wood heating industry.

The panel produced a number of recommendations, which are summarized in the preamble to the proposed wood heater rule. EPA stated in the preamble that it collected additional information and refined its economic and technical analyses based on the panel's input. The agency stated that its stepped compliance approach is a response to the panel's recommendation for delayed compliance dates for low-volume producers.[45] The panel recommended that EPA allow the use of International Standards Organization (ISO)-accredited labs and certifying bodies to expand the options for product testing and certification, which the final rule does. The panel recommended that EPA allow manufacturers to test a representative unit for a model line to determine compliance with the standards, rather than each individual unit, which EPA agreed to. The panel also recommended that EPA not move forward with proposed emission limits for 12 types of heaters, 8 of which EPA agreed to.[46]

These responses seem to have addressed many small business concerns. The preamble to the final rule notes that SBA's Chief Counsel for Advocacy did not file any comments to the proposed rule.[47]

Q: What are the estimated benefits of the rule?

A: EPA has found that wood smoke—a mixture of fine particles, carbon monoxide, volatile organic compounds, and toxic air pollutants—causes respiratory illness and even premature death in some people exposed to it. In 2015, the agency estimated that the reductions in fine particulate ($PM_{2.5}$) emissions that will result from implementation of the final standards will avoid 360 to 810 premature deaths per year in the years 2015-2020, as well as reduce nonfatal heart attacks, emergency room visits for asthma, and lost work days. Using its standard methods for monetizing health benefits, EPA estimated that reduced health impacts resulting from the proposal would provide a benefit of $3.4 billion to $7.6 billion per year over the period 2015-2020, or $74 to $165 in benefits for every dollar spent to comply.[48]

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[43] Final Rule RIA, p. 6-13.

[44] 5 U.S.C. §609.

[45] Proposed Rule, p. 6370, and Final Rule, p. 13673.

[46] Proposed Rule, pp. 6370-6371.

[47] Final Rule, p. 13698.

[48] These are the estimated benefits as expressed in 2013 dollars, using a 3% discount rate. EPA also estimated benefits using a 7% discount rate, producing a range of $3.1 billion to $6.9 billion in 2013 dollars. The benefits of the rule are discussed in Section 7 of the Final Rule RIA.

EPA estimated that 98% of the monetized benefits of the rule would come from the reduction in premature mortality due to reduced $PM_{2.5}$ exposure.[49] To estimate the number of avoided premature deaths, the agency relied on two peer-reviewed epidemiological studies (the American Cancer Society study and the Harvard Six Cities study), which have formed the backbone of the agency's conclusions on the health effects of $PM_{2.5}$ for the past two decades.[50] In line with other executive branch agencies,[51] and as reviewed by its outside Science Advisory Board, EPA valued statistical lives saved at $8.5 million per life in 2013 dollars.[52]

The agency attributed 99% of the monetized benefits to the standards for hydronic heaters, forced air furnaces, and single burn rate stoves (none of which were previously subject to regulation).[53]

The projected monetized benefits did not include the value of other expected emission reductions, including in volatile organic compounds, carbon monoxide, black carbon, and hazardous air pollutant emissions.[54] EPA also identified improved wood heater efficiency as a benefit of the rule—that is, new wood heaters would use less wood to produce an equivalent amount of heat. EPA did not quantify this benefit, noting that it lacked robust data to do so.[55]

Q: Do any of the rule's provisions apply to the operators of residential wood heaters?

A: Although the final rule mainly sets emission standards to be met by manufacturers, it also has some provisions applicable to the equipment's operator. Specifically, the final rule sets requirements for the type of fuel that may be used, and it prohibits the burning of garbage, yard waste, tires, plastic, waste petroleum products or paint, material containing asbestos, construction and demolition waste, paper products, railroad ties, pressure-treated wood, animal remains, unseasoned wood, and salt water driftwood in those heaters.[56] For all wood heaters, it is a violation of federal regulations to operate the equipment in a manner inconsistent with operating instructions in the owner's manual.[57] For pellet-fueled appliances, the rule makes it clear that operation according to the owner's manual includes operation only with pellet fuels that have been specified in the manual and "graded under a licensing agreement with a third-party organization approved by the EPA. The Pellet Fuels Institute, ENplus, and CANplus are initially deemed to be approved third-party organizations for this purpose."[58]

[49] Final Rule RIA, p. 7-6.

[50] Final Rule RIA, p. 7-5.

[51] For a discussion of the value of a statistical life used by various federal agencies, see CRS Report R41140, *How Agencies Monetize "Statistical Lives" Expected to Be Saved By Regulations*, by Curtis W. Copeland.

[52] Final Rule RIA, pp. 7-6 and 7-7.

[53] CRS calculation, based on data in Final Rule RIA, Figure 7-2, p. 7-13.

[54] Final Rule RIA, p. 7-1.

[55] Final Rule RIA. See pp. 5-26 and 5-27 for a discussion of energy impacts of the rule.

[56] Final Rule, p. 13717.

[57] Final Rule, p. 13712.

[58] Final Rule, p. 13705.

Q: What have stakeholders' reactions been to the 2015 standards?

A: According to EPA, many of the 1,300 comment letters submitted in response to the 2014 proposal generally supported it and the importance of reducing particle pollution.[59] Commenters represented the wood heat industry, state and local governments, environmental and health advocacy groups, and private citizens.

There was a general consensus in the wood heat industry that the updated standards were welcome, in part to provide uniformity and predictability.[60] For example, in a May 8, 2017, letter to the leadership of the House of Representatives and the House Energy and Commerce Committee, the Hearth, Patio, and Barbecue Association (HPBA, which represents the makers of wood heaters) stated the following:

> The 2015 NSPS program reflects today's modern wood heating devices that provide important benefits to millions of Americans, especially those living in rural communities. The program fosters the market for wood, which is an important domestic source of heating fuel. It will save consumers money, many of whom are low income households, by lowering fuel costs through increased appliance efficiency. Replacing non-EPA-certified stoves with today's modern stoves will reduce health risks from exposure to wood smoke [footnote omitted], but this can only be done if products are clean burning, fuel efficient, and affordable. Finally, this program will ensure continued innovation in U.S. manufacturing that will help keep domestic companies competitive in the solid fuel industry.[61]

Many states echoed the concerns about uniform standards and endorsed the 2014 proposal to strengthen and expand the NSPS. The National Association of Clean Air Agencies (NACAA), which at the time represented air pollution control agencies in 42 states and the District of Columbia, identified residential wood heaters as a challenging source of emissions for states and localities to regulate. NACAA concluded that it

> cannot overstate the importance of federal standards for these sources. Residential wood combustion is extremely difficult to regulate at the state level because the devices are installed and operated in private homes and consumers are able to purchase wood heaters and stoves outside their own state (which could enable a consumer to purchase a device that does not meet the standards of his state of residence). In the absence of strong new federal standards, states and localities will have no choice but to pursue or build upon their own regulatory programs in order to attain and maintain [federal air quality standards] and/or meet other clean air goals.[62]

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[59] Final Rule, p. 13685. See also U.S. Environmental Protection Agency, Response to Comment on Proposed Rule, 'Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces, and New Residential Masonry Heaters,' EPA-HQ-OAR-2009-0734-1775, February 2015, https://www.regulations.gov.

[60] U.S. Congress, House Committee on Energy and Commerce, Subcommittee on Environment, *Big Relief for Small Business: Legislation Reducing Regulatory Burdens on Small Manufacturers and Other Job Creators*, 115th Cong., 1st sess., September 13, 2017, Serial No. 115-54 (Washington: GPO, 2017), p. 12.

[61] The letter was jointly signed by the Hearth, Patio, and Barbecue Association and Northeast States for Coordinated Air Use Management and written to "express our joint concern with H.R. 694 that would rescind the 2015 New Source Performance Standards (NSPS) for residential wood heating devices promulgated by the U.S. Environmental Protection Agency (EPA)." See U.S. Senate, Committee on Environment and Public Works, Subcommittee on Clean Air and Nuclear Safety, *Legislative Hearing on S. 1857, S. 203, S. 839, and S. 1934*, November 14, 2017, pp. 125-126.

[62] Letter from George (Tad) S. Aburn, Jr., Co-Chair, NACAA Criteria Air Pollutants Committee, and Lynne A. Liddington, Co-Chair, NACAA Criteria Air Pollutants Committee, to EPA Docket (EPA-HQ-OAR-2009-0734), May 1, 2014, EPA-HQ-OAR-2009-0734-1417 at https://www.regulations.gov.

The prevalence of wood smoke and its health consequences, particularly in small communities, led some jurisdictions to ban the installation of new wood heaters or to establish burn bans on days when air quality is poor. Prior to the rule's development, several states adopted emission standards more stringent than EPA's 1988 NSPS. According to the Connecticut Department of Energy and Environmental Protection, local health districts in the state have issued cease and desist orders to individuals violating local bans on the use of hydronic heaters. In monitoring conducted over a two-year period, Connecticut found the monthly contribution of wood smoke to total concentrations of $PM_{2.5}$ to be as high as 41.3%, with daily contributions as high as 74.3%.[63] The existence of bans and the threat of future bans discourage sales of wood heating equipment; regardless, many in the industry want to see the pollution problem addressed.

The wood heater industry—as represented by HPBA and others—generally supported EPA's decision in 2015 to revise the NSPS and expand it to cover additional heater types. As noted earlier, however, HPBA and a number of heater manufacturers have expressed concern regarding the timing of the Step 2 standards. For example, one manufacturer testified at a 2017 congressional hearing that the wood burning industry may not have enough time to meet the standard in 2020.[64] (See "Q: Has there been controversy regarding the agency's testing and certification requirements?" above.)

Environmental and health advocacy groups, state and local pollution control agencies, and private citizens were among the commenters that generally supported the 2015 NSPS due to concerns about the health effects of wood smoke.[65] Comments from other private citizens and some industry organizations, however, raised concerns that the proposed rule would increase the price of new wood heaters and therefore negatively affect the rural poor.[66]

More recently, some stakeholders reiterated concerns about the difficulties that some jurisdictions face in limiting emissions from residential wood heaters. The Sierra Club testified at a 2017 congressional hearing that areas such as Fairbanks, AL, and Salt Lake City, UT, "that are struggling with unhealthy levels of particulate pollution driven primarily or partially by wood smoke cannot afford" delays to cleaner technology.[67] EPA has reclassified these two nonattainment areas from moderate to serious nonattainment for fine particle pollution.[68] According to EPA Region 10, "Fairbanks North Star Borough faces an especially difficult

[63] Statement of Richard Pirolli, Bureau of Air Management, Connecticut Department of Energy and Environmental Protection, at U.S. EPA Public Hearing on the Proposed New Source Performance Standards for Wood Heaters, Boston, Massachusetts, February 26, 2014, transcript, p. 190, at http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2009-0734-1037.

[64] U.S. Congress, House Committee on Energy and Commerce, Subcommittee on Environment, *Big Relief for Small Business: Legislation Reducing Regulatory Burdens on Small Manufacturers and Other Job Creators*, 115th Cong., 1st sess., September 13, 2017, Serial No. 115-54 (Washington: GPO, 2017), p. 12.

[65] U.S. Environmental Protection Agency, Response to Comment on Proposed Rule, 'Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces, and New Residential Masonry Heaters,' EPA-HQ-OAR-2009-0734-1775, February 2015, https://www.regulations.gov, p. 8.

[66] Ibid., p. 452.

[67] U.S. Congress, House Committee on Energy and Commerce, Subcommittee on Environment, *Big Relief for Small Business: Legislation Reducing Regulatory Burdens on Small Manufacturers and Other Job Creators*, 115th Cong., 1st sess., September 13, 2017, Serial No. 115-54 (Washington: GPO, 2017), p. 57.

[68] U.S. Environmental Protection Agency, "Determinations of Attainment by the Attainment Date, Determinations of Failure to Attain by the Attainment Date and Reclassification for Certain Nonattainment Areas for the 2006 24-Hour Fine Particulate Matter National Ambient Air Quality Standards," 82 *Federal Register* 21711, May 10, 2017.

challenge of meeting existing pollution standards for a number of reasons including a high reliance on woodstoves and wood heaters to stay warm."[69]

The challenge, which the industry, EPA, and individual states all face, has been to find the sweet spot, where emissions are significantly reduced, without needlessly harming the industry or unwittingly providing incentives for equipment owners to continue using old, inefficient, highly polluting equipment. This has not been an easy task.

Given the large number of wood heating devices already in use—many of which are not subject to any emission standard—the NSPS, on their own, will have relatively small impacts on total wood heater emissions for many years, unless other programs address the retirement or change-out of old, uncontrolled wood heaters. As a result, controversy over wood heater emissions is likely to remain an issue.

Author Information

James E. McCarthy
Specialist in Environmental Policy

Kate C. Shouse
Analyst in Environmental Policy

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[69] U.S. Environmental Protection Agency, "EPA, Alaska to Work Together on Improving Fairbanks Air Quality," press release, May 1, 2017, https://www.epa.gov/newsreleases/epa-alaska-work-together-improving-fairbanks-air-quality.