

By James E. Houck



# DIRTY- VS. CLEAN- BURNING?

*What percent of freestanding wood heaters in use in the U.S. today are still old, uncertified units?*

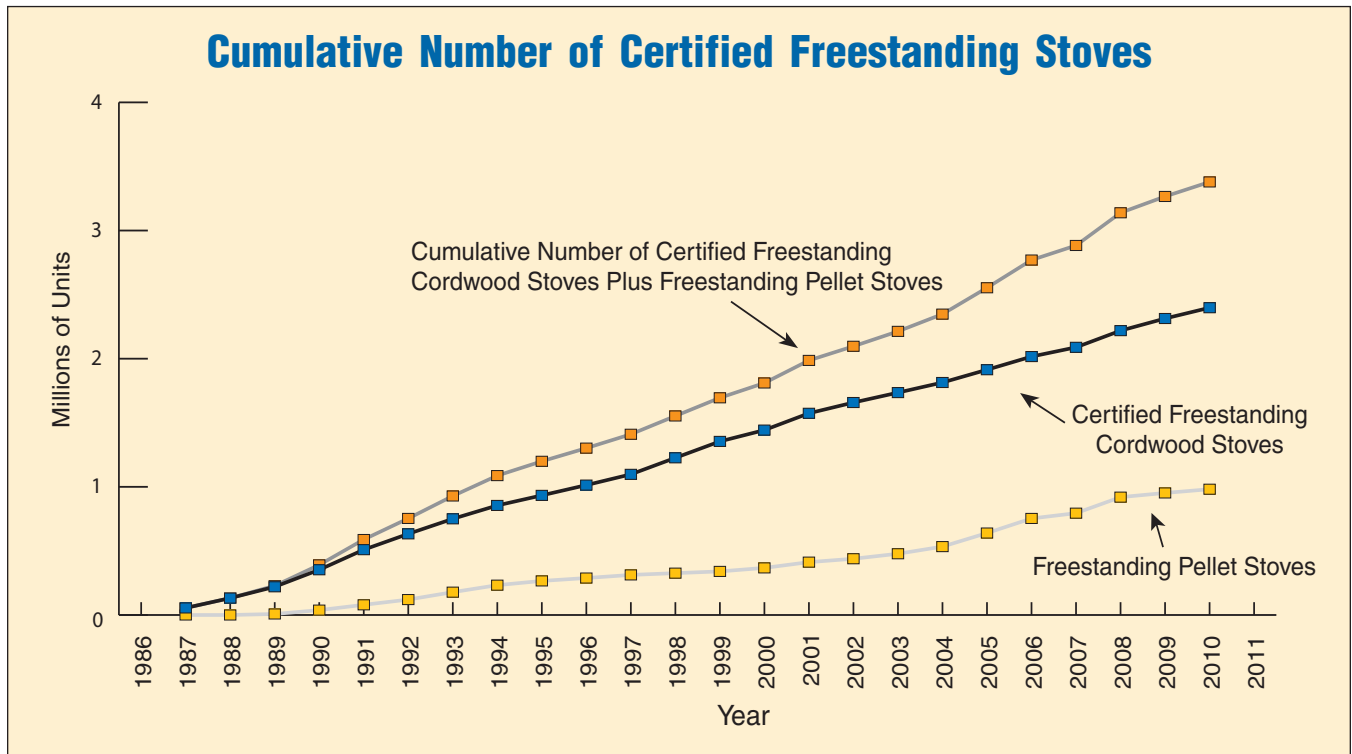
**T**he real question is: Is the glass 65 percent full and 35 percent empty, or vice versa? The Hearth, Patio & Barbecue Association (HPBA), recognizing the importance of understanding what portion of freestanding wood heaters currently in homes are freestanding EPA-certified cordwood or pellet heaters, commissioned research into finding out. The answer is, in the U.S., 65 percent of freestanding units are still old, uncertified ones and 35 percent are certified cordwood units or pellet units of any kind.

The half-full or half-empty quandary comes into play because one has to ask – is this a good or bad thing? Certainly, achieving only 35 percent of the total number of freestanding wood heaters in homes in over two decades since the July 1, 1990 federal New Source Per-

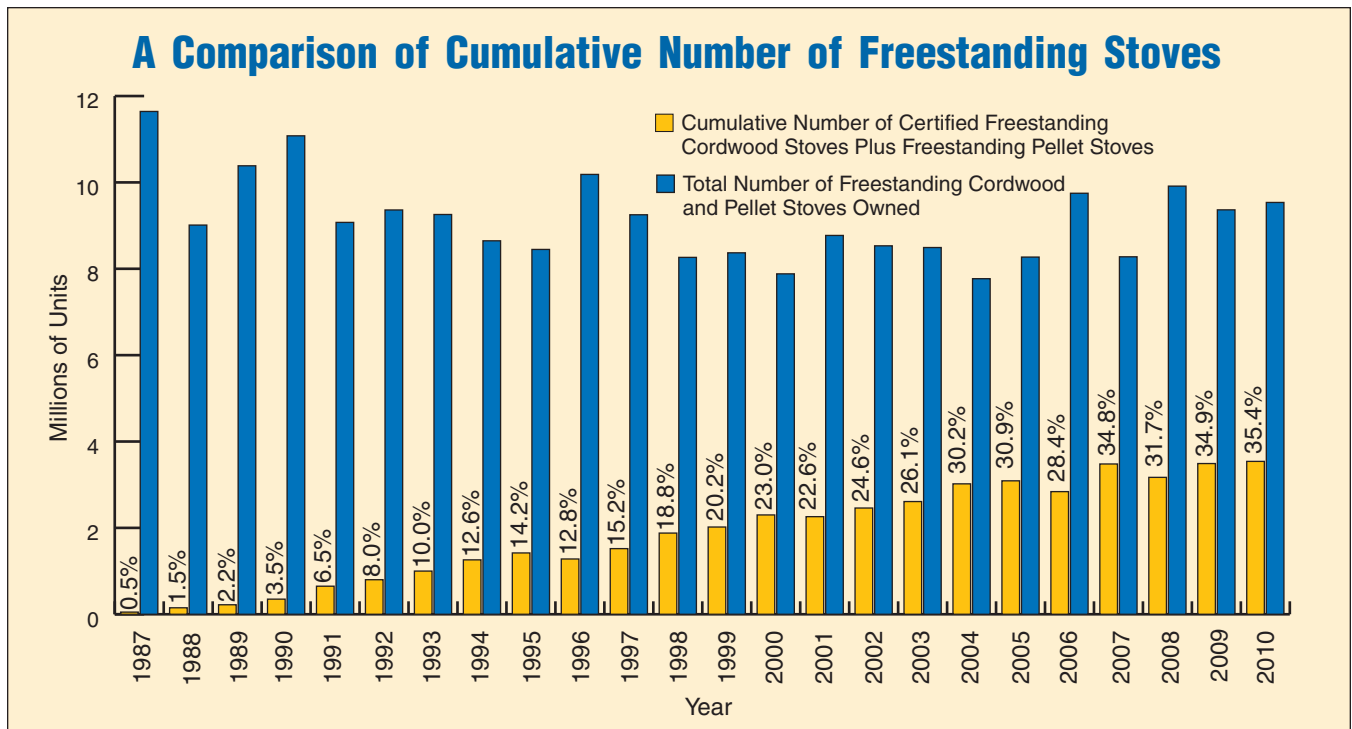
formance Standard (NSPS) required that only certified wood heaters be sold is an indictment of the limited effectiveness of the NSPS in affecting air quality improvement.

On the other hand, particularly in light of the new NSPS that is currently in the works, still having 65 percent of the freestanding units as potential targets for change-out is a good thing for the future of the hearth industry. Further, it's a testament of the robust, simple nature of cordwood stoves; they can last a generation or more in use.

We found that asking air quality regulators or hearth industry representatives about how many stoves in homes were certified was like asking about politics or religion – everyone had strong opinions but there were few solid facts.

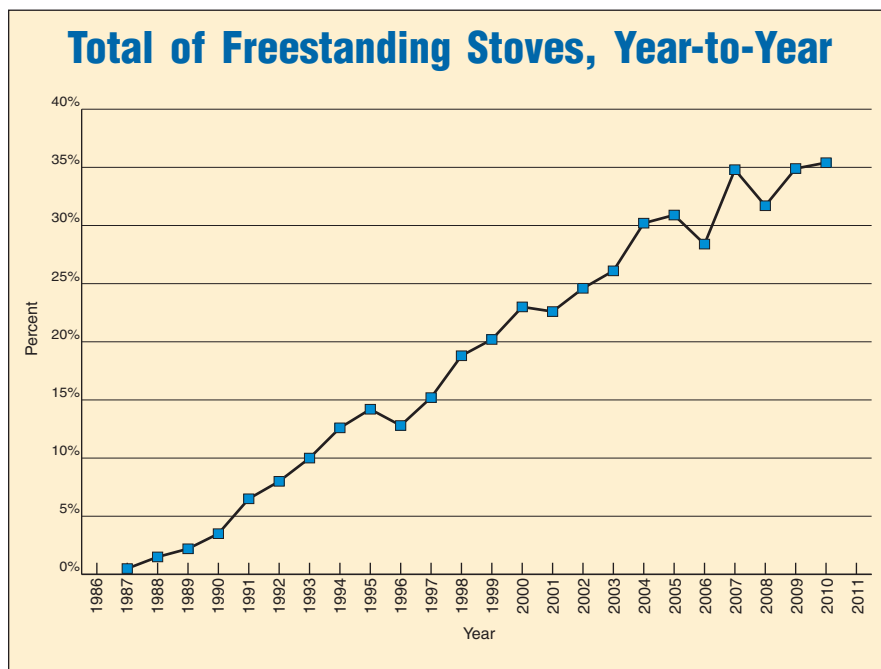


The estimated cumulative number of freestanding certified cordwood stoves, the estimated cumulative number of freestanding pellet stoves and the sum of both that are in homes are illustrated. The data are shown by year since 1987 when pellet stoves and certified or certifiable cordwood stove models first appreciably became available. As of the end of 2010, the cumulative number of freestanding certified cordwood stoves was estimated as 2,397,602, the cumulative number of pellet stoves as 981,488 and the sum of both as 3,379,090.

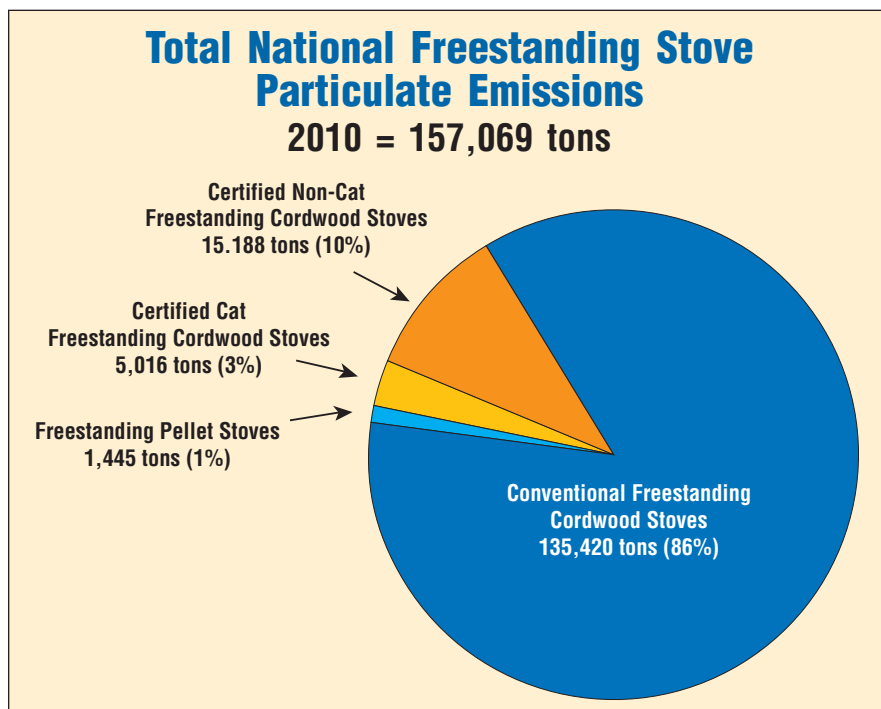


A comparison of the cumulative number of freestanding high-technology stoves and the number of total freestanding stoves is shown. The total number of freestanding wood stoves in use fluctuated modestly from 1987 to 2010 in part due to the ebb and wane of wood stove popularity in response to such factors as fossil fuel prices, the increase in natural gas availability, and interest in renewable resources.

Also, part of the variability is from the uncertainty in survey results and from the statistical bias among the different survey organizations' methods and surveyed population. It should be remembered that many high-technology wood stoves are replacement units for existing pre-certified cordwood units and even some certified units. The mean number of freestanding cordwood stoves for the time period between 1987 and 2010 was 9,147,500 with a year-to-year standard deviation of 976,000.



The percentage of total freestanding wood stoves that were either certified cordwood stoves or pellet stoves is shown by year. As of the end of 2010, 35.4 percent of the total freestanding wood stoves owned in the United States were either freestanding certified cordwood stoves or pellet stoves.



The national annual particulate emissions for freestanding wood stoves by category are shown. In 2010, uncertified cordwood stoves were responsible for 86 percent of the particulate emissions. It is difficult to judge the effectiveness of the NSPS and new technology stoves in reducing particulate emissions because of changes in overall wood stove usage independent of the NSPS due to the ebb and wane of wood stove popularity.

However, if it is assumed that the same number of freestanding stoves would be in use today without the NSPS, i.e., all the freestanding stoves were uncertified conventional cordwood stoves, the annual hypothetical 2010 emissions would have been 209,742 rather than the actual 157,069 tons or 34 percent higher.

Surveys of home occupants who are cordwood stove users also have not been very helpful in providing accurate estimates of the percentage of cordwood stoves that are certified, primarily due to home occupants commonly not knowing the certification status or age of their wood heater.

In addition, because many home occupant surveys that include questions relating to stove certification status have been local or regional in scope, and have generally been focused in areas where wood stove usage has been a topical issue, the results of these high-visibility area surveys, even if accurate, are not representative of the nation as a whole. Often there have been programs encouraging or requiring change-outs to new stoves in these areas.

Nearly three-quarters of wood stoves being used are in rural areas, many of which are in rural sections of the South and Mid-Atlantic states, where there are few if any wood stove regulations or voluntary programs for the purchase of new lower-emitting wood stoves. Consequently, again even if accurate, the results of the “focused” surveys tend to over predict the national average fraction of stoves that are high-technology stoves. Many forget that Oregon, Washington, California and Colorado are where most of the focus has been, and these four states have biased our perception.

To obtain an unbiased national estimate of the fraction of freestanding wood stoves that are currently certified cordwood or pellet stoves, hearth industry manufacturing (shipment) records tabulated since 1989 and supplied by the HPBA were compared to total wood stove ownership data. Estimates of the fraction of units that were captured by the HPBA manufacturing records were obtained by interviewing HPBA staff and key industry representatives and, to avoid “double counting,” the HPBA shipment data were adjusted (reduced) by an estimate of the freestanding certified stoves and pellets stoves that have been replaced by newer freestanding certified cordwood stoves or pellet stoves since 1987.

These estimates were obtained by a survey of 22 well-established hearth dealers geographically distributed throughout the United States. Total wood stove ownership data were obtained from multiple credible sources. These were: (1) “American Housing Survey”

biennial reports, (2) HPBA biennial consumer surveys, (3) Mediamark Research, “Household and Personal Appliances” annual reports, and (4) Simmons Market Research Bureau annual surveys.

In addition to freestanding stove ownership estimates, estimates of the current (2010) national particulate emissions for each freestanding stove category were made from the number of stoves used (used in contrast to owned), standard emission factors, and average annual national fuel usage per unit.

This review focused on freestanding wood stoves. Fireplace inserts were not included. The term “wood stove” included both freestanding cordwood-

and freestanding pellet-fueled heaters. Both certified and uncertified freestanding pellet stoves, as they both have low air emissions, were grouped together and simply referred to as “pellet” stoves. Freestanding certified cordwood stoves and freestanding pellet stoves together were referred to as “high-technology” stoves.

### About the Author

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As of Aug. 1, 2010, Oregon law requires an uncertified wood stove or fireplace insert to be removed when a home is sold. This clearly will continue to stimulate the sale of new certified wood stoves and inserts, at least in Oregon. Other states or local jurisdictions may follow suit now that a precedent has been set.

## EPA's New NSPS for Residential Wood Heaters

### Is History Repeating Itself? Most Likely, Yes

**W**hen, at the beginning of the new (second) New Source Performance Standard (NSPS) process, those of us who were around during the first NSPS process cautioned that it most likely would take quite a few years based on the precedent set by that first NSPS, the caution was marked by scoffs and promises that it would be a more streamlined process this time around.

For those who don't recall, it required about six years to create the first NSPS, from its initiation marked by filing of the New York and NRDC lawsuit against the U.S. EPA, to the time that only Phase 1 certified stoves could be sold; it required about eight years until the time that the regulation in its current form allowing only Phase 2 certified stoves to be sold was in place.

At mid-course – if it is “mid” yet – it looks as if history may repeat itself. Assuming that the WESTAR/NESCAUM April 29, 2008 letter to EPA served as the spark initiating the new NSPS, analogous to the New York/NRDC lawsuit that prompted the first NSPS, it looks as if the time frame may be similar or even longer.

Some believe that counting the WESTAR/NESCAUM letter as the initiator is being generous; there was movement some time before the letter in that the Clean Air Act requires NSPS's to be reviewed every eight years, and the 1988 rule was certainly more than eight years in the past.

For example, the Outdoor Hydronic Heater Caucus of the HPBA submitted a letter to EPA in August 2007 requesting that it develop a NSPS for Outdoor Hydronic Heaters. Moreover, regulatory timelines projected by the EPA

commonly are not met, and if litigation becomes part of the story all bets are off leaving future benchmarks even further out in the future.

One thing also to remember is that the first NSPS was only for cordwood and pellet heaters, i.e., freestanding stoves and inserts. The new NSPS as it now appears will cover (1) cordwood freestanding stoves and inserts with some type of modification or consideration for single-burn rate stoves that were exempt as part of the first NSPS; (2) pellet freestanding stoves and inserts with the “loop-hole” allowing exemption under the first NSPS to be closed; (3) pellet furnaces and boilers; (4) cordwood furnaces, boilers and hydronic heaters (both indoor and outdoor); (5) per-

haps masonry heaters, and (6) other biomass-fueled heaters such as corn, grain and grass pellets.

Further exemptions/definitions for coal stoves, fireplaces and cookstoves will be refined. Bottom line – smart money would say that, due to the complexity of the new NSPS, if all else were equal, it will take more time for the second go around than the first due to the increased complexity.

It is, however, illustrative and provides a reality check to compare the timeline of the first NSPS with where we are now in the current NSPS process and EPA projections, albeit with a full realization that the projections are probably “soft.”

