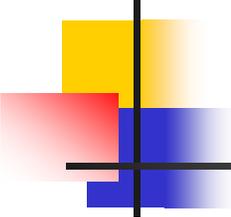


Outdoor Wood-fired Hydronic Heaters (OWHH)
Program Update for HPBA Expo Workshop
2/28/08



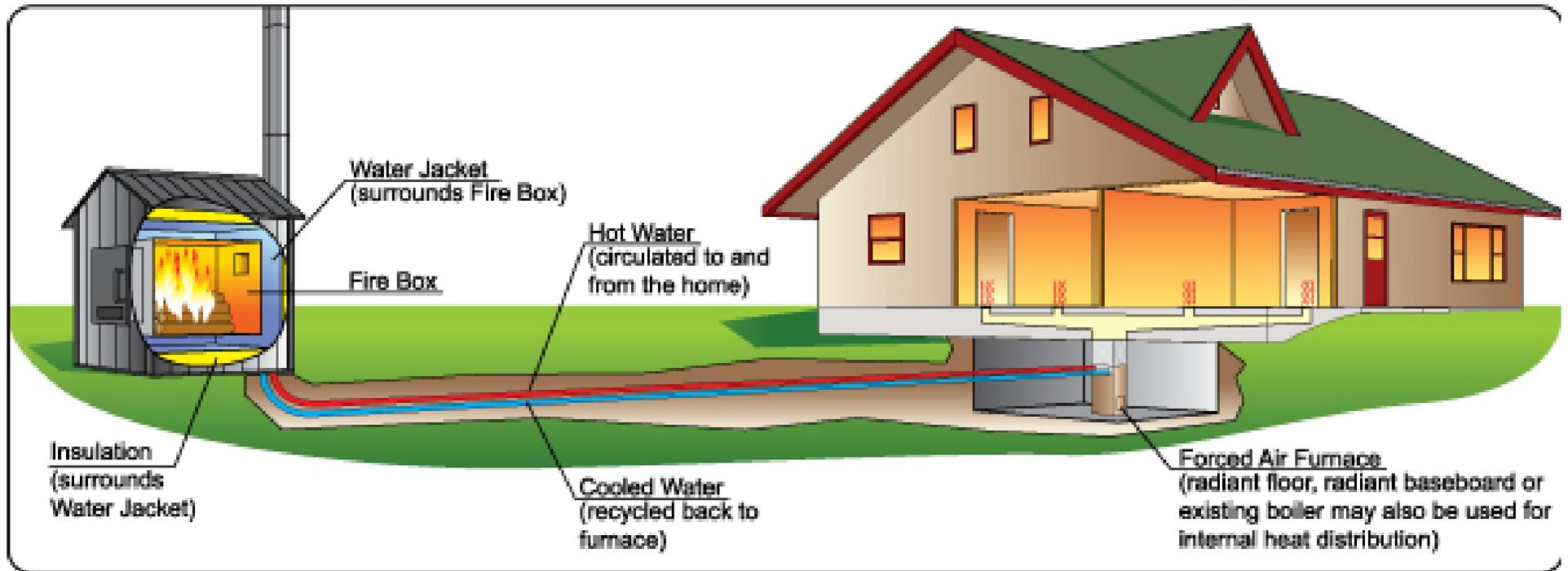


Purpose of Today's Presentation

Discuss Status & Lessons Learned So Far:

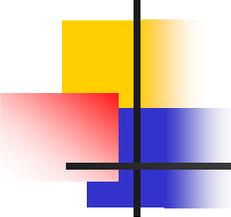
- Voluntary Program and Model Rule
 - Agreements with Stakeholders
 - [NESCAUM, States, Manufacturers]
 - Roll-out on 1/29/07
 - Implementation aspects
 - Implications for future

How It Works



Front View of Typical Unit





Petition to Administrator (8/11/05)

- 6 northeastern States plus Michigan & NESCAUM
- Revise woodstove NSPS or develop new NSPS
- Federal regulation needed: “avoid patchwork”
- Other state, local agencies, and citizens expressed interest

Why Are People All Fired-Up?





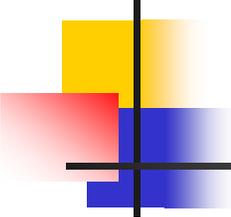






PM2.5 Emissions: Efficiency Comparisons

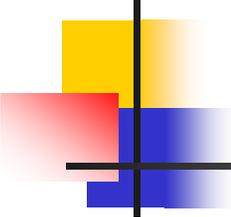
	Grams/hour	Pounds/ton wood burned [pounds/MM BTU]	Efficiency (%)
Outdoor Wood-fired Boilers (OWB)	30-390	6-60 [0.5-5]	~30-55
Old Wood Stoves	25-50 or more	~90-150 [7.5-12.5]	~54
NSPS Wood Stoves 40CFR60 Subpart AAA	7.5 Non-Catalytic 4.1 Catalytic	~30 [2.5] ~16 [1.4]	~67
Pellet Stoves	~1	4.2 [0.3]	~70-80
Fireplaces		34.6 [2.8]	~10
Oil-fired Furnaces		NA [0.012]	~90
Natural Gas Furnaces		NA [0.0075]	~90



Our 2-Part Stakeholder Strategy

- Part 1 – EPA OWHH Voluntary Program

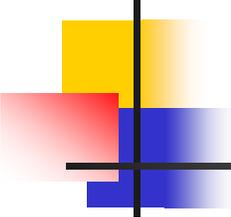
- Part 2 – Model Rule for States to use
 - Parts 1 and 2 are in parallel and “complementary”
 - We kicked-off the Stakeholder Process on 6/15/06
 - We had numerous meetings, calls, and sharing of information
 - “Roll-out” Press Releases: 1/29/07
 - EPA’s Primary Goal: Protect public health by getting manufacturers to voluntarily agree to re-design and manufacture cleaner models sooner than a Federal rule



Part 1: Voluntary OWHH Program

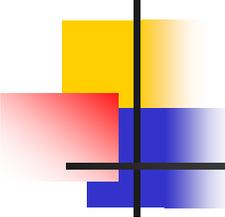
Developed via Stakeholder Process based on mutual needs of EPA, Manufacturers & States

- Phase 1: cleaner models starting 4/2007 (i.e., sales for the next heating season)
- Phase 2: even cleaner, now!



Voluntary Program Components

- Partnership Agreement between EPA and manufacturer to bring cleaner units to market
- Text “label” on new OWHH
- Orange hang tag
- Table top display/poster
- Owner’s Manual text on proper operation and maintenance
- EPA website with list of cleaner OWHH
- Tracking results



Text “label” for New OWHH

“Test results from ___ independent accredited laboratory indicate that this model meets the U.S. Environmental Protection Agency 2007 (Phase 1) voluntary program emission level for outdoor wood-fired heaters (OWHH) when tested in accordance with EPA Method 28 OWHH. To minimize smoke, always operate OWHH in accordance with manufacturer’s instructions found in the owner’s manual. Additional information about EPA’s voluntary program is available at www.epa.gov/owhh.”

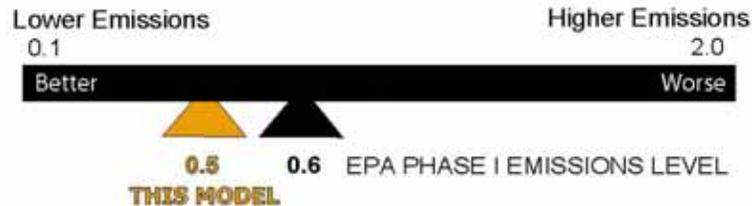
U.S. Environmental Protection Agency 2007 Outdoor Wood-Fired Hydronic Heater Program

This Outdoor Wood-Fired Hydronic Heater has been tested
and meets a certain air quality emissions level.*

By meeting this level this model is cleaner and pollutes less than those models
that have not met this emissions level. Exposure to wood smoke has been
associated with respiratory illness and other health problems. Models that have
lower smoke emissions may reduce your family's risk.

For more information go to www.epa.gov/woodheaters

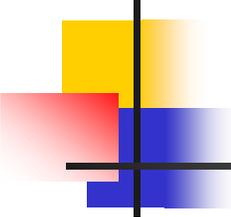
OUTDOOR WOOD-FIRED HYDRONIC HEATERS SMOKE EMISSIONS RANGE



Outdoor wood-fired hydronic heaters with lower emissions produce
less smoke when installed and operated properly.

MANUFACTURER:	XXXXXXXXXXXX
MODEL NO:	XXXXXXX
8-HOUR HEAT OUTPUT RATING:	58,000 BTU/HR
EMISSIONS:	XXX GRAMS/HR
	0.5 LBS/MILLION BTU HEAT INPUT
	XX GRAMS/HR / 10,000 BTU HEAT OUTPUT

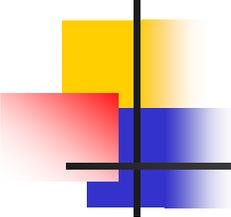
* - This model has been tested by an accredited independent laboratory according to EPA
method 28 OWHH and meets the emissions level for U.S. EPA's Phase 1 Voluntary Program.



Benefits of Voluntary Program

- Got manufacturers to redesign and market cleaner OWHH much sooner than Federal rules
 - First unit qualified 4/2007!
 - ~70% less emissions
 - Negated argument that “it cannot be done”
- Meets immediate needs of States and manufacturers

Note: Effective Federal rules would have had to wait for improved technology to be demonstrated. If EPA had developed a Federal rule, the earliest compliance date would likely have been >2012.

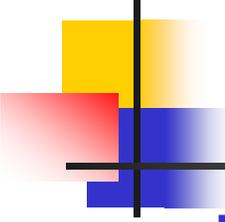


Part 2: NESCAUM Model Rule

States, Tribes, and local authorities may elect to use portions as they develop their own rules

- Phase 1: Compliance as early as 4/2008 for 1st State, others later
 - Technology-based
 - 0.44 # of PM per mmBTU heat input
 - ~80% reduction

- Phase 2: Compliance as early as 4/2010 for 1st State, others later
 - Health-based
 - 0.32 # of PM per mmBTU heat output
 - >90% reduction

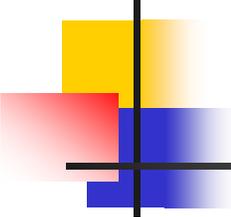


NESCAUM Model Rule Components

- New OWHH – Phase1
 - Emission limit [Phase 1: 0.44 #/mmBTU heat input]; 20% opacity limit [except 40% for 20 minutes at start-up of new fire]; not operate 4/15 to 9/30 unless meet Phase 2
 - Set-back from property lines [>300 feet]
 - Stack height [>5 feet above structures within 150 feet]
 - Proper operation and maintenance, label, notice to buyers

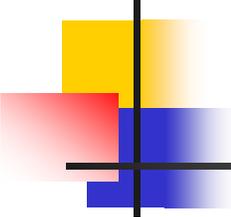
- Existing OWHH options
 - Shutdown by x date
 - Replace or shutdown prior to sale or transfer of real property
 - Setback of 500 feet & Stack height >5 ft above structures within 150 feet by Y

- Phase 2 Emission Limit of 0.32#/mmBTU heat output
 - Based on AQ modeling to meet the NAAQS
 - 15g/hr max test run for residential; 20g/hr max test run for commercial
 - For residential units that meet the Phase 2 emission limit, the set-back and stack height requirements and seasonal prohibition are dropped.



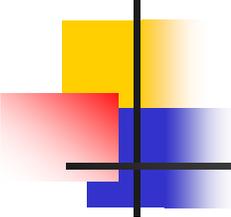
Key Expected Results

- Voluntary Program Phase 1 Units 4/2007
0.60 #/mmBTU heat input
~70% reduction
- Model Rule Phase 1 as soon as 4/2008
0.44 #/mmBTU heat input
~80% reduction
- VP Phase 2 Now & MR as soon as 4/2010
0.32 #/mmBTU heat output; 18 g/hr max
>90% reduction



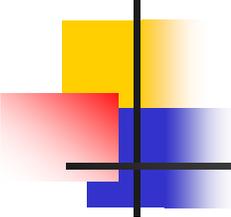
Testing/ Verification

- Use of EPA method for “certification”
- Validation of method on-going
- 3rd party testing with QA/QC audits
- Future 3rd party testing via Environmental Technology Verification Center



Successes

- EPA, NESCAUM, and Industry news releases
- EPA website: www.epa.gov/woodheaters
- 18 Phase 1 Partnership Agreements:
 - Qualifying Process
 - Test Guidelines
 - Guidelines for Use of Label, Hangtag, and Outreach Materials
- VT & ME have adopted rules primarily based on Model Rule and ~20 States have proposed or are considering using the MR
- 5 new models have qualified for Phase 1 hangtag; several more expected in March and more by Fall
- 1 new model already meets Phase 2; at least one more expected in March and more by Fall



Implementation and Future Plans

- Intense review of verification tests [Mike Toney]
- Validation of test method [Mike Toney]
- States adopting rules and potentially incorporating into PM SIPs
- Track sales and market penetration
- Expanding to wood pellets & other biomass
- Anxiously awaiting approval of ASTM test methods for heat storage units and other biomass
- Drafting Phase 2 Partnership Agreement & distinctive hangtags
- Considering similar approach for low-mass fireplaces

