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Program of U.S. EPA

Reducing Residential Wood Smoke: EPA Programs and Tools Available to State, Tribal and Local Agencies

Larry Brockman

Office of Air Quality Planning and Standards

RTP, NC

June 25, 2013

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EPA Programs and Tools Available

- Wood Heater New Source Performance Standard
- Support Wood Burning Appliance Changeout/Retrofits
- Fireplace and Hydronic Heater Voluntary Programs
- Burn Wise Education Campaign
- *Strategies for Reducing Residential Wood Smoke* Guide

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Revising the Residential Wood Heaters New Source Performance Standards

We expect to:

- Tighten emissions limits for currently regulated wood stoves

- Regulate new:
  - Single-burn-rate stoves
  - Pellet stoves
  - Wood-fired hydronic heaters and indoor wood furnaces
  - Masonry heaters

- Propose the rule in Fall, 2013 and finalize in Fall, 2014

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Support Wood Burning Appliance Changeout/Retrofit Programs

- Technical advice
- Emission calculations
- Example forms
- Hearth industry contacts
- Environmental Settlement Agreement Projects
  - More than 20 cases
  - $10 million to support projects

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EPA Hydronic Heater Program

- Achieve emission reductions sooner than a federal rule
- Issue EPA label to those that qualify (90% cleaner)
- Models tested by independent accredited laboratory
- More than 35 EPA-qualified models developed
- 10,000 EPA-qualified units have been sold

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EPA Wood-Burning Fireplace Program

- Develop cleaner burning fireplaces
- Issue EPA label to those that qualify (70% cleaner)
- Models tested by independent accredited laboratory
- More than 20 EPA-qualified models developed
- Program includes fireplace retrofit devices for existing fireplaces

Burn Wise Education Campaign

- Target Audience: Operators of old and new wood stoves, fireplaces and hydronic heaters

- Message: “Burn the right wood, the right way in the right wood-burning appliance.”

- Strategy: Develop and distribute materials to states, local governments, tribes and to public

Tools You Can Use: Website

www.epa.gov/burnwise

Burn Wise Poster

Burn the right wood. Save money and time. Burn only dry, seasoned wood and maintain a hot fire.

The right way. Keep your home safer. Have a certified technician install and annually service your appliance.

In the right appliance. Make your home healthier. Upgrade to an efficient, EPA-approved wood-burning appliance.

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Tip Sheet

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BURN THE RIGHT WOOD, THE RIGHT WAY, IN THE RIGHT APPLIANCE

Did you know that by changing the way you burn wood you can save money, reduce air pollution and protect your health?

Here are a few simple tips to make your fire burn hotter, keep your wallet fatter and keep your local air cleaner and healthier.

Season all firewood. All firewood should be split, securely covered or stored, and aged for at least six months. Seasoned wood burns hotter, cuts fuel consumption and reduces the amount of smoke your appliance produces.

Choose the right firewood. Hardwoods are the best. Never burn trash or treated wood which can emit toxic air pollutants.

Start it right. Use only clean newspaper or dry kindling to start a fire. Never use gasoline, kerosene, charcoal starter, or a propane torch.

Don't let the fire smolder. Many people think they should let a fire smolder overnight. But reducing the air supply does little for heating and can increase air pollution.

Clean ashes from your wood-burning appliance. Excess ashes can clog the air intake vents reducing efficiency. Be sure to dispose of ashes in a metal container away from the house or any flammable material to reduce the risk of fire.

Keep your chimney clean. A clean chimney provides good draft for your wood-burning appliance and reduces the risk of a chimney fire. Have a certified chimney sweep inspect your chimney once a year.

Be a good neighbor. Follow best practices for burning wood and always remember to comply with state and local codes.

Follow instructions. Operate your wood-burning appliance according to the manufacturer's instructions and follow all maintenance procedures specified by the manufacturer.

Upgrade to cleaner equipment. EPA-certified and qualified wood stoves, fireplaces, and wood boilers burn cleaner and burn wood more efficiently emitting less particle pollution than older equipment.

Size matters. Choose the right sized appliance for your needs. If your wood-burning appliance is too big for your room or house, the fuel will smolder and create more air pollution.

For more information about burning cleaner, go to www.epa.gov/burnwise

Firewood Permit Tear Sheet

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Don't Let Your Investment Go up in Smoke

Burn Dry, Seasoned Firewood

Breathe easier and save money, energy, and time with these four simple steps:

1. **Split** wood for faster drying.
2. **Stack** wood split side down and away from buildings.
3. **Cover** top of the stack to protect it from rain or snow.
4. **Store and dry** softwood for at least 6 months and hardwood for at least 12 months.

Learn before you burn.
Go to epa.gov/burnwise

facebook.com/EPABurnWise
twitter.com/epaburnwise

EPA

EPA-456/F-12-002

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"Wet Wood Is A Waste"
Split, Stack, Cover and Store
Brochure and Video PSA

Clean and Efficient Heating Checklist

Burning dry firewood can save money and protect you and your family's health. A properly installed and operated wood-burning stove should produce little smoke.

- ☐ Start a small fire with dry kindling then add a few pieces of wood.
- ☐ Give the fire plenty of air - fully open the air controls until the fire is roaring.
- ☐ Burn the fire to heat the chimney or flue before adding more wood.
- ☐ Keep space between the firewood as you add more to the fire.
- ☐ Check for local burn bans and avoid fireplace and wood stove use while in effect.
- ☐ Avoid burning garbage, treated lumber, or saltwater driftwood. Burning these items can damage your stove and cause serious health issues.
- ☐ Have your stove and chimney professionally inspected and serviced yearly if possible.
- ☐ If available, refer to your owner's manual for start-up guidelines.
- ☐ A smoldering fire, "dirty" glass doors, or smoke from the chimney are all signs that the fire needs more air or your wood is too moist.

Properly dried wood is lighter, has cracks in the grain on the end, and sounds hollow when knocked against another piece of wood.

WET

DRY

WET WOOD IS A WASTE

BURN DRY FIREWOOD TO SAVE MONEY AND HEALTH

Four Easy Steps to Dry Firewood

STEP 1 SPLIT

STEP 2 STACK

STEP 3 COVER

STEP 4 STORE

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EPA

FOUR EASY STEPS TO DRY WOOD

STEP 1 SPLIT

- Start with the right sized wood
- Split wood dries much faster
- Split the wood in a range of sizes to fit your stove, but no larger than 6 inches in diameter
- Split small pieces for kindling

STEP 2 STACK

- Stack wood to allow air to circulate
- Build the stack away from buildings
- Keep wood off the ground. Stack it on rails
- Stack wood in a single row with the split side down

STEP 3 COVER

- Cover the top of the stack to protect it from rain or snow
- Make sure there is space between the cover and the stacked wood - don't let the cover rest directly on top
- Keep the sides open so air can circulate through the stack

STEP 4 STORE

- Allow enough time to dry
- Softwoods take about 6 months
- Hardwoods take about 12 months
- Cracked ends on the wood typically means it is dry enough to burn

Wood Smoke and Your Health

Small particles and pollutants in wood smoke can trigger asthma attacks. Wood smoke has also been linked to heart attacks in people with heart disease.

Even occasional exposure to wood smoke can cause watery eyes, stuffy noses and chest tightness. Everyone may experience symptoms, but children and elders are especially vulnerable.

Is your wood dry? Take the moisture meter test.

Wet wood can create excessive smoke which is wasted fuel. Moisture meters that allow you to test the moisture level in wood are available in all sizes and can cost as little as $20. Properly dried wood should have a reading of 20% or less. Dry wood creates a hotter fire. Hotter fires save wood - ultimately saving you time and money.

WET WOOD IS A WASTE

www.epa.gov/burnwise

[Link to video PSA: http://www.youtube.com/watch?v=yo1--Zrh11s](http://www.youtube.com/watch?v=yo1--Zrh11s)

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"Wet Wood is a Waste"
Using a Wood Moisture Meter Video PSA

- How to use a simple wood moisture meter
- Properly dried wood should have a reading of < 20%
- Meters are available on-line for as little as $20

Link to Video PSA: http://www.youtube.com/watch?v=jM2WGgRcnm0

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Updated *Strategies for Reducing Residential Wood Smoke* resource guide

- Examples of existing state and local rules
- Example of voluntary options: incentives for fireplace retrofits & wood stove changeouts
- Wood burning control measures table
- Funding options
- Burn Wise consumer education materials
- Strategies document: http://www.epa.gov/burnwise/strategies.html

EPA's Office of Air Quality Planning and Standards Residential Wood Smoke Contacts

Amanda Aldridge (aldridge.amanda@epa.gov; 919.541.5268), lead for
- Hydronic Heater Program

Tom Braverman (braverman.tom@epa.gov**;** 919.541.5383), lead for:
- Fireplace Program: New Construction and Retrofits

Larry Brockman (brockman.larry@epa.gov; 919.541.5398), Overall Team Lead and lead for:
- Wood Burning Appliance Replacement and Retrofit Program
- Wood Burning Appliance Related Settlement Agreements

Leigh Herrington (herrington.leigh@epa.gov; 919.541.0882), lead for:
- Burn Wise education Campaign
- Tribal outreach

Gary Blais (blais.gary@epa.gov; 919.541.3223), lead for:
- Forest Service and BLM Firewood Permits Burn Wise tear sheets

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Questions?

A Case Study:
Public Health Response to a Wood Smoke Health Complaint

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NYS Department of Health
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June 25, 2013

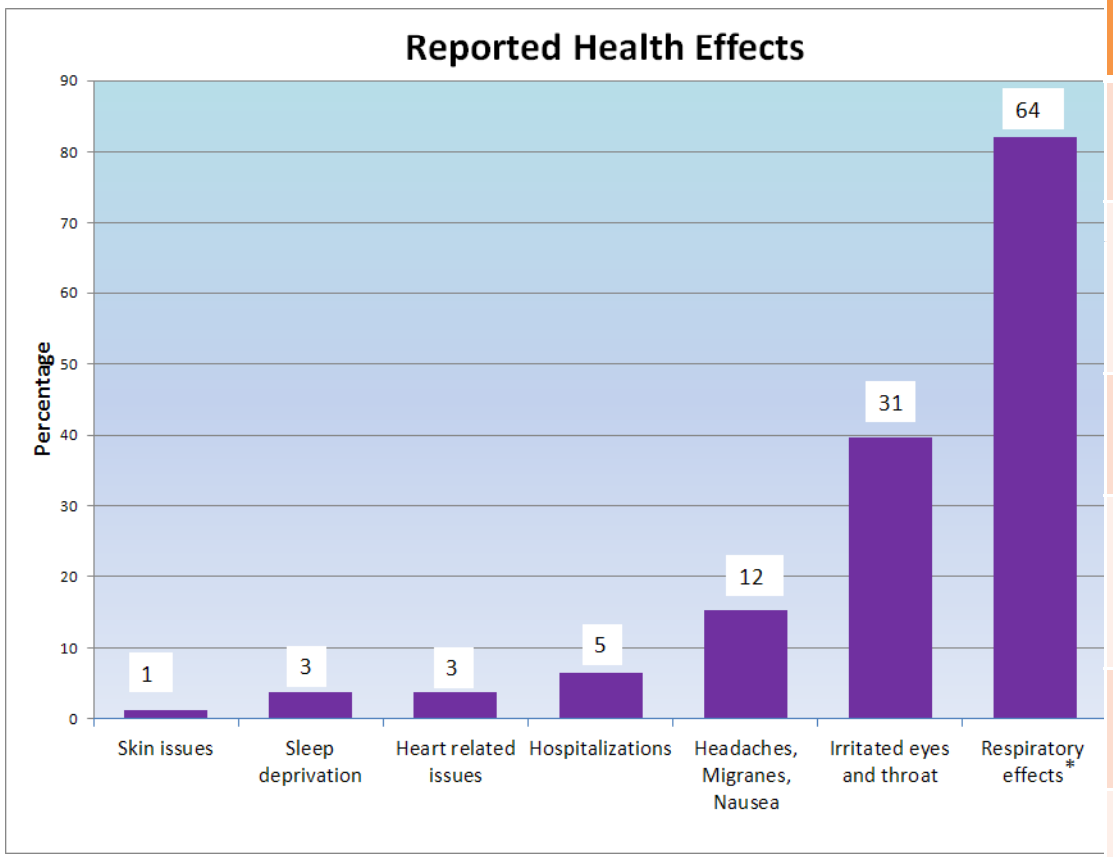
Smoke Complaints

- BTSA receives complaints re: residential burning (wood smoke, garbage, backyard campfires)
- BTSA provides smoke health effects information, provides advice/guidance, and technical support to local health depts.
- Since 2005, BTSA received wood smoke complaints from 78 citizens*
  - 56% are outdoor hydronic heaters
  - 25% indoor wood stoves
  - 19% indoor hydronic heaters, fireplaces, wood stoves, campfires/firepits

**** Only represents those citizens that called BTSA from Winter 2005 to Summer 2012.***

Research shows that in rural NY >90% of carbonaceous (EC/OC) $PM_{2.5}$ is wood smoke and winter night-time town/village peak levels exceed >100 mcg/m^3 on winter nights (NYSERDA, 2008; 2010)

Summary of Health and "Quality of Life" Complaints Reported to BTSA (since 2005)



*Respiratory effects = asthma, bronchitis, cough, chest tightness, sinus problems

Quality of Life Complaints	No.	%
Cannot go outdoors/ use yard; Poor visibility; Smell	70	90.1
Smoke enters complainant's home; Smoke on clothes and pets	45	57.6
Boarded up windows; Cannot open windows	20	25.7
Soot deposition on property; Trees in yard chemically burned	4	5.1
Smoke sets off fire alarms; Fire Department Called	4	5.1
Installed an air purifier system; Excessive A/C use	3	3.8
Considering or actually moving	2	2.5

What's in Wood Smoke?

It Depends – what's being burned (e.g., fuel moisture), combustion temperature and available combustion air

- Fine Particles ($PM_{2.5}$) – Tiny airborne droplets or particles 2.5 microns or less in diameter
- Inorganic gases – carbon monoxide, oxides of nitrogen and sulfur, carbon dioxide, acid gases
- Organic chemicals – aldehydes, benzene, toluene, styrene, dioxins
- Metals

Some wood-fired appliances emit more $PM_{2.5}$ and carbon monoxide than more efficient devices. For example, a conventional OWB burning dry oak can emit 10 pounds of PM while heating a 2,500 ft^2 house on an upstate NY winter day, whereas an oak-fired three-stage hydronic heater emits 1.5 pounds PM per day (NYSERDA, 2012).

What are $PM_{2.5}$ health effects?

- Short-term increases in exposure can be irritating to the eyes, nasal passages and airways
- Inhaled $PM_{2.5}$ can exacerbate respiratory symptoms (*e.g.*, asthma)
- Inhaled $PM_{2.5}$ can exacerbate cardiovascular symptoms (*e.g.*, chest pain, heart rhythm changes, heart attack)
- Recent studies indicate that cardiovascular effects can occur with sub-daily PM exposures (*e.g.*, one to several hours) including cardiac ischemia, vasomotor function, and subtle changes systemic inflammation markers (hemostasis, thrombosis and coagulation).

People with breathing and heart problems (perhaps metabolic disorders too), children and the elderly may be particularly sensitive to $PM_{2.5}$ exposure.

NYS Wood Smoke Response Options

1) Local governments may have their own ordinances/regulations (home rule state).

Local Code Enforcement Officers can assess compliance with existing NYS codes for device installation, termination of chimneys, and exhaust vents (only applies to **adjacent/abutting** properties)

2) NYS Department of Environmental Conservation:

- Outdoor Wood Boilers regulation, 6 NYCRR Part 247 sets emissions and siting requirements for new OWBs , general prohibitions for all OWBs (**opacity** is key enforcement tool)
- Open Fires regulation, 6 NYCRR Part 215
- General Prohibitions, 6 NYCRR Part 211

3) Local Health Departments/Officers have authority to investigate and abate ***public (not private)*** health nuisances

4) Complainants can consult an attorney to explore other actions

Unfortunately, competing/shrinking resources and subjective interpretations of existing rules limit the effectiveness of these options in resolving wood smoke complaints. Opacity can only be measured under certain daytime conditions.

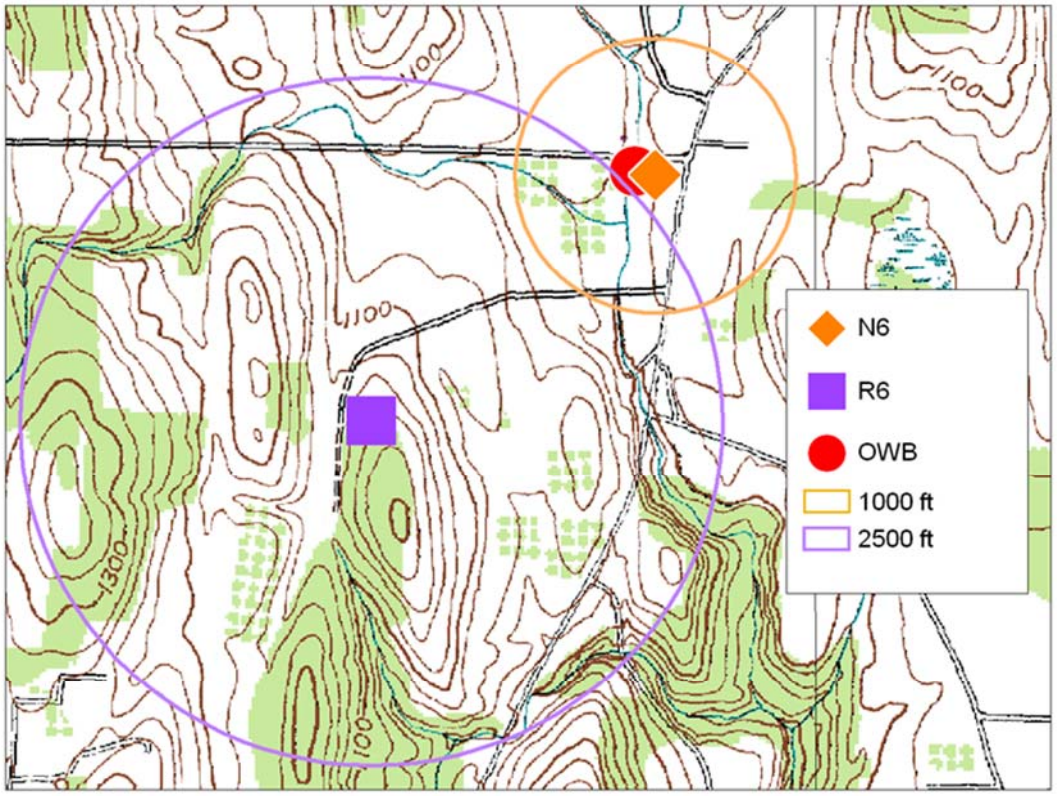
Public Health Nuisance Action
Outdoor Wood-fired Hydronic Heater (OWHH)

- 1998: Neighborhood complaints began, 1 complainant documented health problems
- Town work to resolve situation (raise stack)
- 2007: Town law, subject OWHH 'grand-fathered'
- 2008: DEC Administrative Action undertaken, despite difficulty obtaining opacity violation

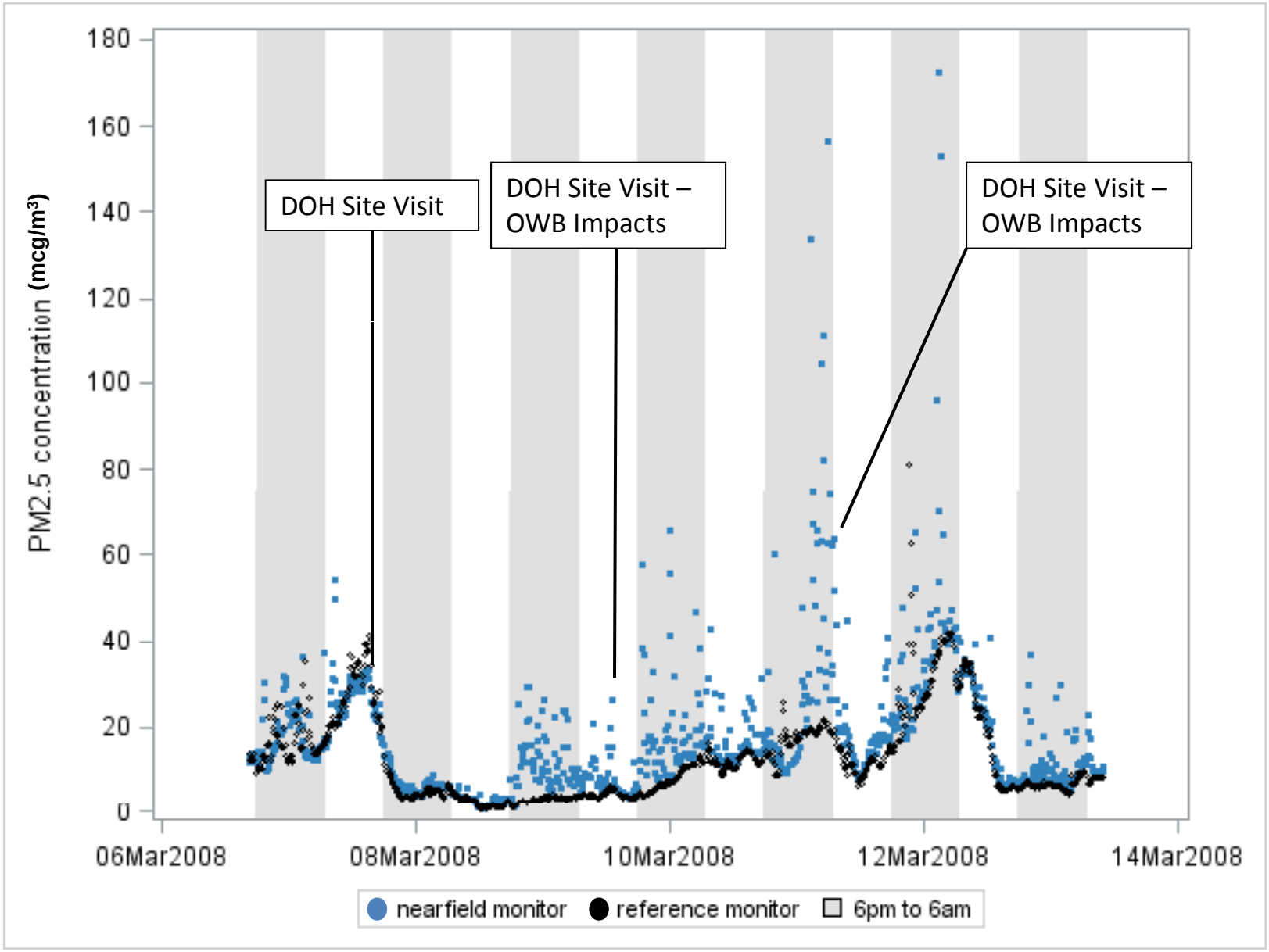
- Part 8 NYS Sanitary Code (Nuisances Which May Affect Life and Health)
- April 2008: Local Health Officer investigated, probable existence of a nuisance, but lacked direct evidence
- BTSA provided technical assistance w/air monitoring & Town Board of Health hearing testimony
- Sept. 2008: Case settled prior to final determination, OWHH owner removed device

Ambient Air Monitoring Study Design

- Deployed DataRAM 4000
  - Nephelometry – real-time $PM_{2.5}$ (smoke indicator)
  - complaint location (nearfield) 100 ft
  - Control location (reference) 2,600 ft
  - No other obvious substantial sources nearby
- Meteorological station (real-time)
- 1 week monitoring period (time-synced instruments)
- Observation logs and site visits

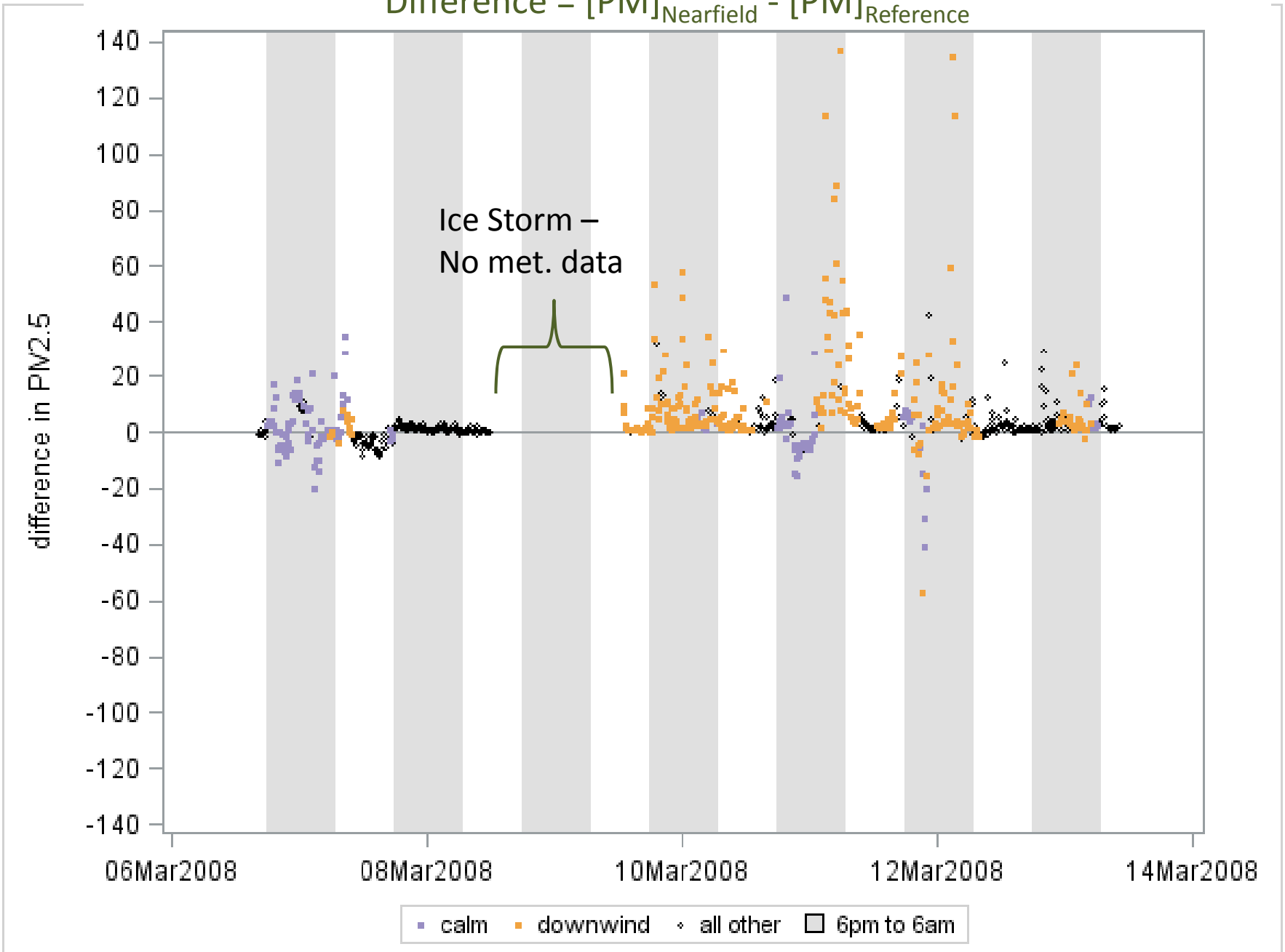


Time Series of Fine Particulate Concentrations



Longitudinal Graph of $PM_{2.5}$ Differences

Difference = $[PM]_{Nearfield}$ - $[PM]_{Reference}$



Case Study: Results

- $PM_{2.5}$ level averaged higher at the complaint location than the control location & smoke impacts observed frequently at night

	Nearfield (mcg/m^3)	Reference (mcg/m^3)
Geometric Mean	13.3	9.1
Minimum	0.8	0.7
Maximum	172.5	80.9

- Differences in $PM_{2.5}$ levels were greatest when the complaint location was down-wind and near control levels when upwind of OWHH
  - Downwind: Average $PM_{2.5}$ levels were 7.5 mcg/m^3 higher at nearfield than reference
  - Upwind: Average $PM_{2.5}$ levels were 0.6 mcg/m^3 higher at nearfield than reference
- Monitoring data was only one element of the case's evidence.

Summary

- Wood smoke can cause health effects, consistent with $PM_{2.5}$ exposure - DOH recommends avoiding smoke exposure and encourages use of more efficient, less polluting devices
- Although there are some limitations, simple field instrument techniques can be used to study wood smoke impacts and support enforcement actions
- Other BTSA work at OWHHs (including 5 non-complaint locations)
  - $PM_{2.5}$ levels significantly elevated at 5 of 6 monitoring locations near OWHHs relative to distant location ($p \leq 0.01$)
  - Downwind and calm winds (often at night) were associated with elevated $PM_{2.5}$ levels

***More information*:**

NYSDOH: http://www.health.ny.gov/environmental/outdoors/air/owb/

NYSDEC: http://www.dec.ny.gov/chemical/51986.html

References for Cited Literature

NYSERDA (New York State Energy Research and Development Authority). 2008. Assessment of Carbonaceous PM2.5 for New York and the Region. Albany, NY: Report 08-01. March 2008.

NYSERDA (New York State Energy Research and Development Authority). 2010. Spatial Modeling and Monitoring of Residential Woodsmoke Across a Non-Urban Upstate New York Region. Albany, NY: Report 10-02. February 2010.

NYSERDA (New York State Energy Research and Development Authority). 2012. Environmental, Energy Market, and Health Characterization of Wood-Fired Hydronic Heater Technologies. Albany, NY: Report 12-15. June 2012.

Judy Abbott's Contact Info: jaa06@health.state.ny.us,

Questions?

Residential Wood Smoke Monitoring Kit: A Tool to Consider

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EPA Webinar on Innovative Strategies and Case Studies to Reduce Residential Wood Smoke

June 25, 2013

Context: What's the Need?

- Use of large wood-fired furnaces (outdoor wood boilers) increasing
  - Huge fireboxes
  - High PM emissions
- Lack of effective regulations leads to complaints from neighbors
  - Short-term OWB stack emissions can be 200-300 grams/hour ("clean" is a few grams per hour)

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Context: What's the Need? (2)

- Data needed to support complaints to local air/health agencies
  - Assess woodsmoke PM impacts at near-source receptor site
  - Data should be highly time-resolved (~ 1-minute)
  - Robust wind measurements at low speeds are critical

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The Concept

- An integrated woodsmoke kit for stand-alone field deployment
  - Self-contained except for power
  - Winterized and waterproof
  - Thermo pDR-1500 nephelometer for PM2.5 (BGI scc-0.732 cyclone inlet)
  - Gill 2-d heated sonic wind and sonic temperature sensor

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The Concept (2)

- But wait, there's more:
  - Mini-PC for data capture, instrument control, and remote access
  - Survives power-failures
  - Optional 2-channel Aethalometer: Delta-C woodsmoke indicator (or other instruments such as CO)
- System documentation
  - detailed "credible evidence" operating procedures

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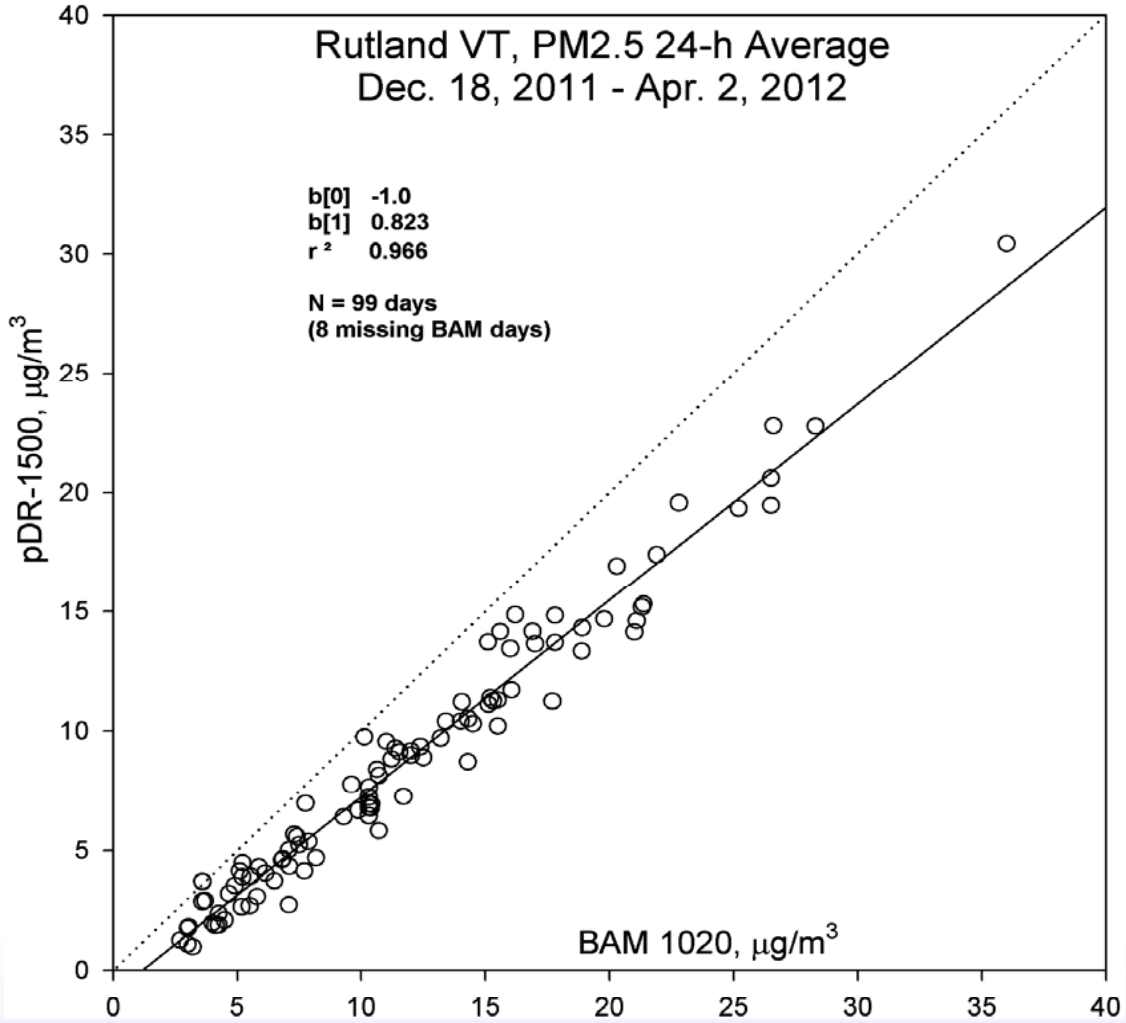
pDR-1500 collo:

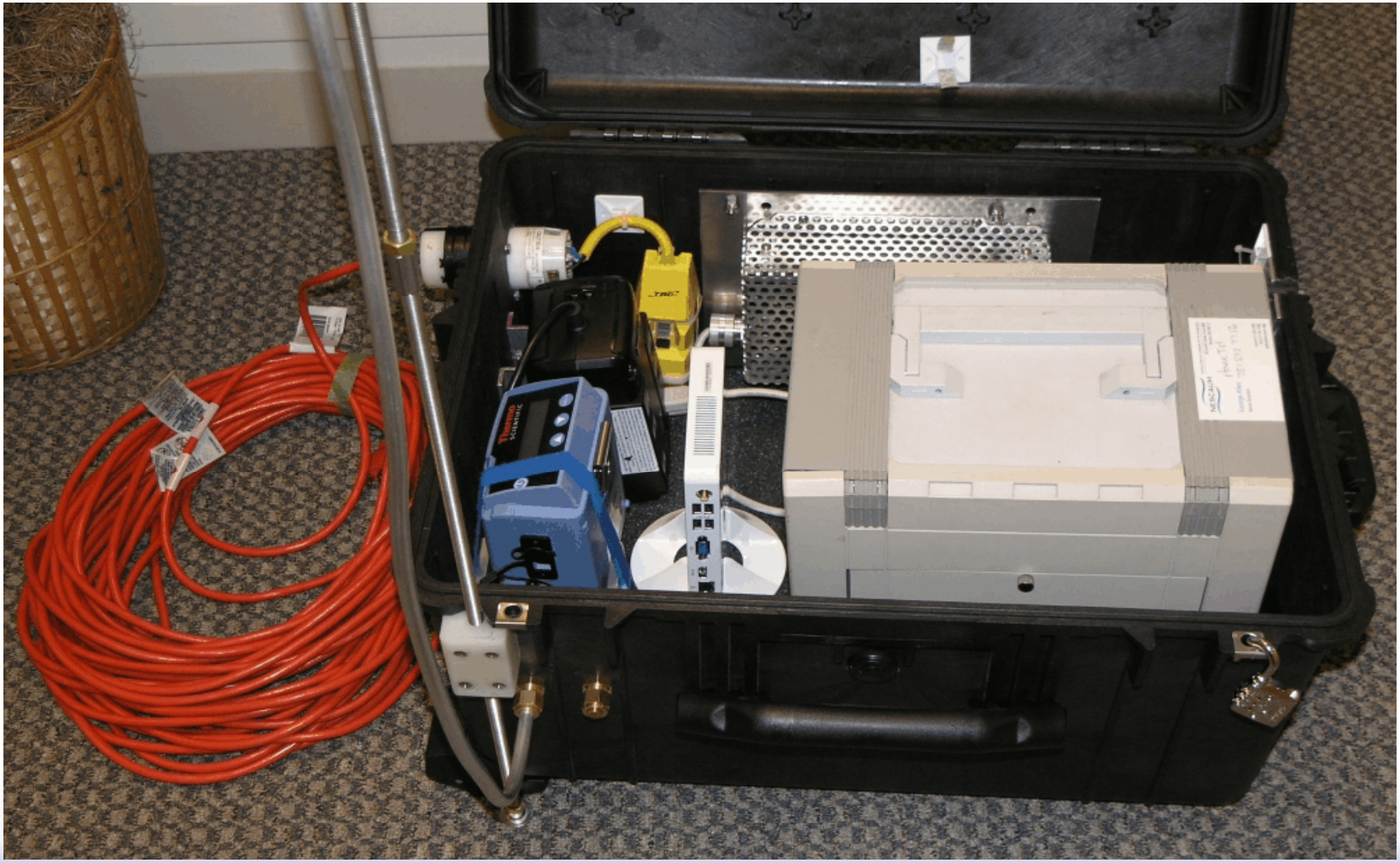
High PM primarily WS

pDR lower than BAM FEM

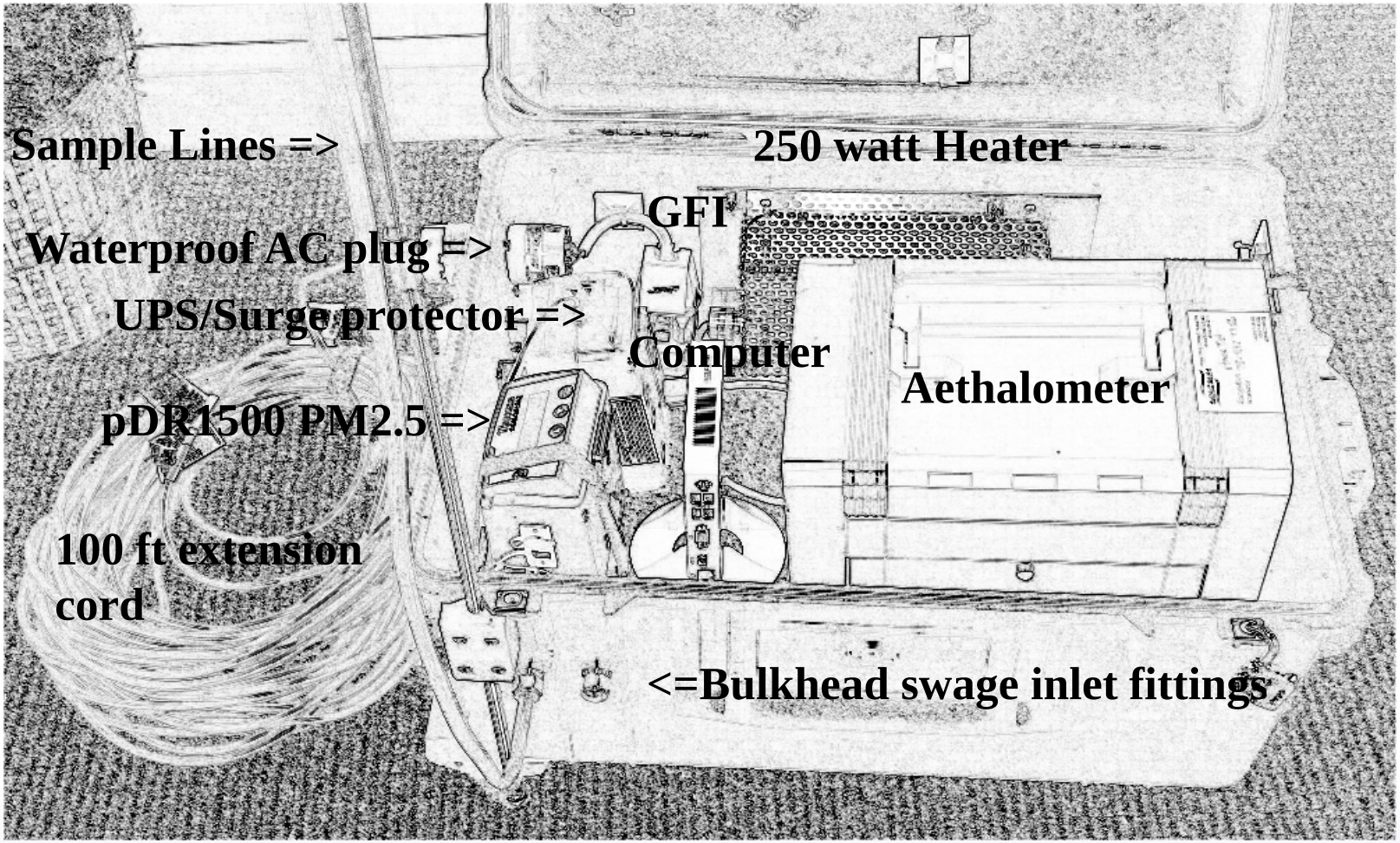
Good match to FRM PM2.5



Inside of woodsmoke kit, with MageeSci AE-42 portable Aethalometer



Woodsmoke Kit Core Components



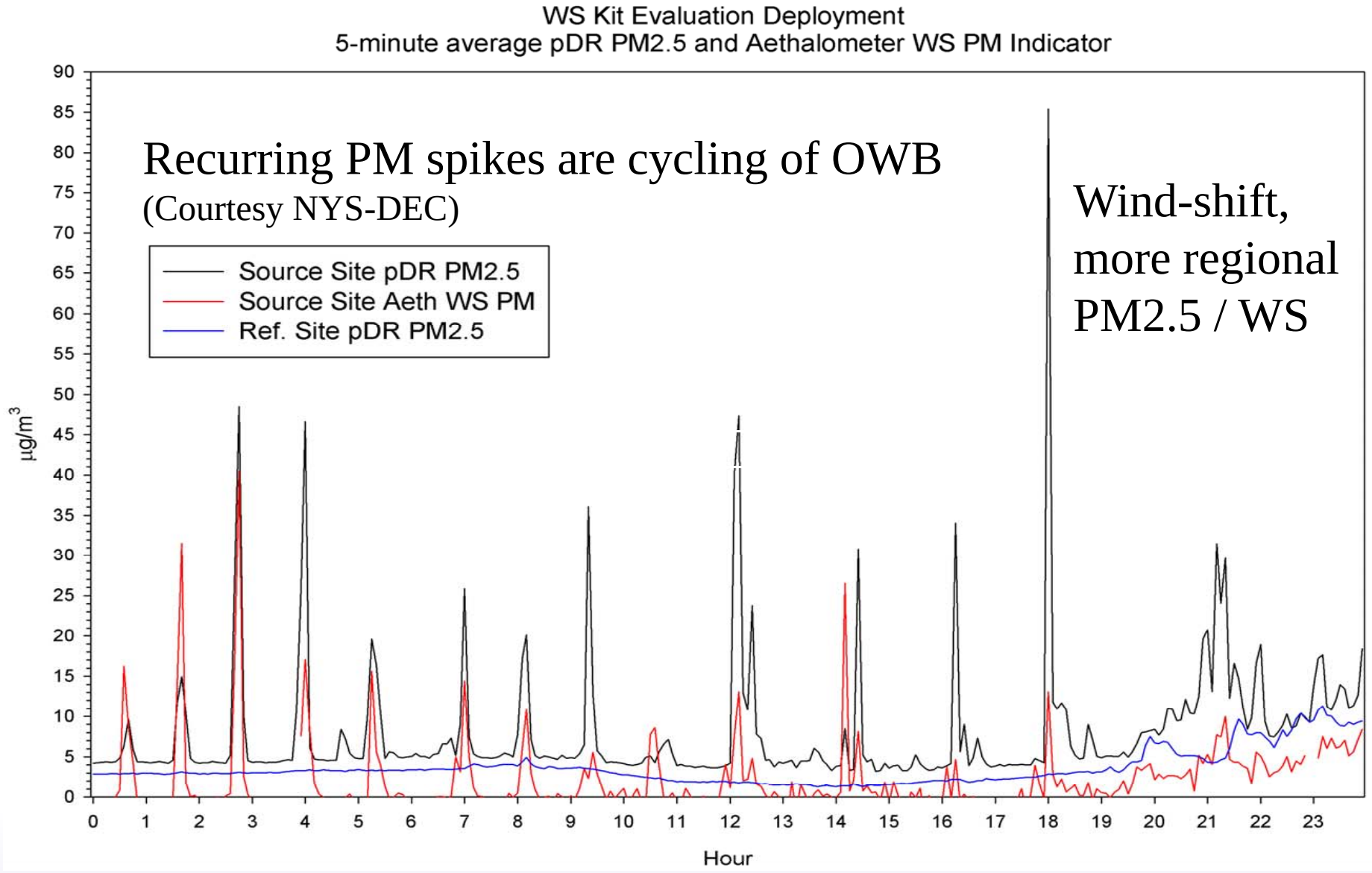
Woodsmoke kit with inlet assembly.

Pictured for scale: a happy user.

Dave Snyder, UW-Stevens Point

LADCO WS Study Report:

http://tinyurl.com/ladco-ws


WS Kit Evaluation Deployment
5-minute average pDR PM2.5 and Aethalometer WS PM Indicator
Recurring PM spikes are cycling of OWB
(Courtesy NYS-DEC)
Source Site pDR PM2.5
Source Site Aeth WS PM
Ref. Site pDR PM2.5
Wind-shift, more regional PM2.5 / WS
µg/m3
Hour

Other Possible Applications

- Mobile monitoring
  - add a car and recording GPS
- Other PM hotspot measurements
  - e.g., prescribed burns
- PM10 (fugitive dust) using BGI scc-1.829 cyclone
  - pDR response for fine and coarse PM modes is similar
  - http://bgiusa.com/aam/sccphoto.htm

NESCAUM

Acknowledgements

- Thanks to NYSERDA and LADCO
  - for initial development with NESCAUM
- Thanks to Maine DEC
  - for CO monitor implementation

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Questions?

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Oregon's Wood Stove Removal Upon Sale of Home Program: How it Came To Be

Innovative Strategies and Case Studies to Reduce Residential Wood Smoke - EPA Webinar

June 25, 2013

Rachel Sakata: SAKATA.Rachel@deq.state.or.us

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Overview

- History
- Key components of the woodstove removal requirement
- Success of the program
- Enforcement & Implementation

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How did the Heat Smart Program come about?

- Longtime woodstove issues
- Local cities and counties adopted removal requirements

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Heat Smart – Legislative History

- 2007 – 1st version of Heat Smart bill failed
- 2009 – Passed – Oregon Senate Bill 102
  - Effective: August 1, 2010

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Key Components to the Success of the Bill

- Worked closely with hearth products, realtors, league of cities
- Noncompliance does not undo home sale
- Created a uniform statewide disclosure form
- Relied on experience of communities already implementing these requirements
- Instituted program during housing boom

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Heat Smart Program- Uncertified Stove Removal through Home Sale Requirement

- Requires removal of old, uncertified stove upon home sale
  - Includes EPA-exempt stoves and outdoor wood boilers
  - Includes uncertified stoves in garages, backyard “workshop”

- Stove must be removed prior to close of sale

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What is required?

- Uncertified stove must be destroyed (or rendered inoperable)
  - Can be taken to any metal recycler or landfill

- Obtain a receipt showing proof of destruction

- Notify DEQ of removal and destruction

Who is responsible for removing the stove?

- <u>The seller is responsible</u>
  - Stove must be removed prior to close of sale
  - Responsibility can be transferred to buyer

- *If the buyer assumes responsibility*
  - Remove stove within 30 days after the sale closing date

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What does not need to be removed?

Pellet stove

Antique stove

Cookstove

Masonry heater

Fireplaces

Central, indoor wood fired furnaces

How is the program working?

- Overall, people are complying with the law
- 996 submissions (as of 6/28/13)
- Monitoring craigslist ads
  - In Oregon, it is illegal to sell or advertise to sell an uncertified stove

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Additional Heat Smart Enforcement Tools

- Prohibition on <u>installation</u> of uncertified devices in Oregon

- Local building codes department will not issue a residential building permit unless the device is certified

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Contact Information

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Webpage:
http://www.deq.state.or.us/aq/burning/woodstoves/heatSmart.htm

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Questions?

Survey: Woodsmoke Health Risks Outreach Methods

Abby Nelson
Intern for Gillian Mittelstaedt , Program Director, Tribal Healthy Homes Northwest

Email: anelson@thhnw.org

Objective of internship: to obtain, summarize and report on the different outreach methods used by environmental and public health organizations, to communicate woodsmoke exposure risks to the general public and at-risk populations.

Link to survey:

https://docs.google.com/forms/d/13dRjkW5NF5DjAhaPl-HpgxnB8-PMWCmPNoOJolJpvFA/viewform

AIR. ON THE SAFESIDE

Tacoma-Pierce County Smoke Reduction Zone Public Outreach

Melissa Paulson
Puget Sound Clean Air Agency

6/25/2013

Today's talk

- Context for the problem
- Using public outreach to:
  - Craft solutions
  - Reduce pollution
- What worked? What didn't?
- Questions

AIR. ON THE SAFESIDE

So what's the problem?

- Where: Greater Tacoma (WA) metro area
- What: Designated PM2.5 nonattainment area (daily)
- When: 2008 designation; 2014/2017 reduction goals
- Why: Residential wood smoke
  - 80,000 total wood stoves
  - 25,000 uncertified stoves
  - 31,000 fireplaces

Tacoma-Pierce County Smoke Reduction Zone

Additional Context

- Population ~535,000 (~810,000 countywide)
- 220,000 households
- 12 local jurisdictions (cities/towns, Pierce County, Puyallup Tribe)
- Urban and rural areas
- Range of wood burning practices
- Environmental Justice audiences

AIR. ON THE SAFESIDE

Community-based solutions

- Tacoma-Pierce County Clean Air Task Force (May-Dec 2011)
- 22 stakeholder members
  - Public agencies
  - Elected officials
  - Business interests
  - Utilities, Joint Base Lewis-McChord
  - Health interests
  - Citizens (incl. wood burners)
- Considered range of possible solutions (60+ options)
- Make recommendations to PSCAA

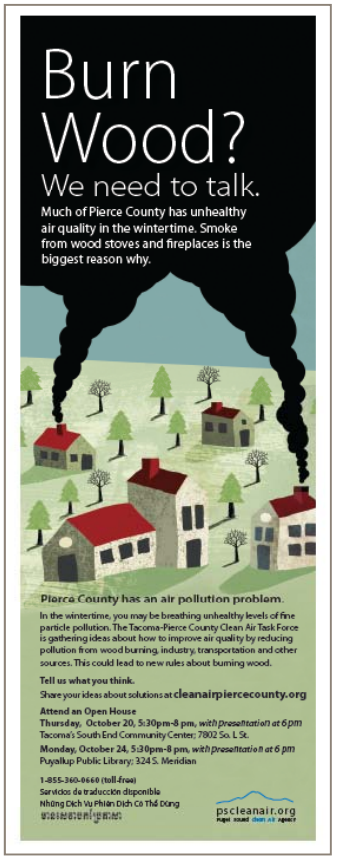
Clean Air Task Force report available at www.cleanairpiercecounty.org

Community-based solutions (cont.)

- Additional public input
  - Comment invited to Task Force, PSCAA Board
  - 220,000 postcards
  - 2 public open houses (200 attendees)
  - Online survey (600 responses)
- Three adopted solutions:
  - Enhanced enforcement of burn bans
  - Required removal of uncertified wood stoves
  - Increased public education and outreach

Pollution-reducing programs

- Enhanced burn ban enforcement
  - Increase patrol staff from 8 to 60
  - Add nighttime enforcement
  - Visible smoke vs. opacity
  - Burn ban alerts (text*/email/hotline/web)
- Wood stove program
  - Replacement incentives (full cost/$1500/$1000)
  - Buy-back ($350/$200)
  - Low-income free replacements
- Public outreach campaign

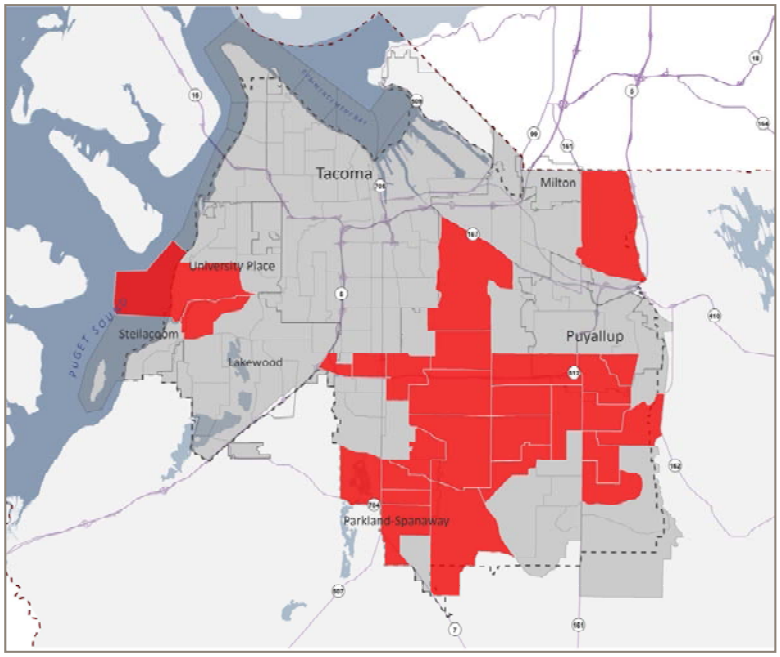


Getting outreach ready

- How: Our Approach
  - Positive tone, multi-year effort
- Who: Our Audiences
  - Wood burners (frequent, occasional)
  - Low income and environmental justice populations
- What: Our Messages
  - Wood stove program (sign up)
  - Burn ban enforcement (compliance, alerts)
- When: November 2012–March 2013
- Budget: $270,000
- Consultant: BCRA Communications (Tacoma, WA)

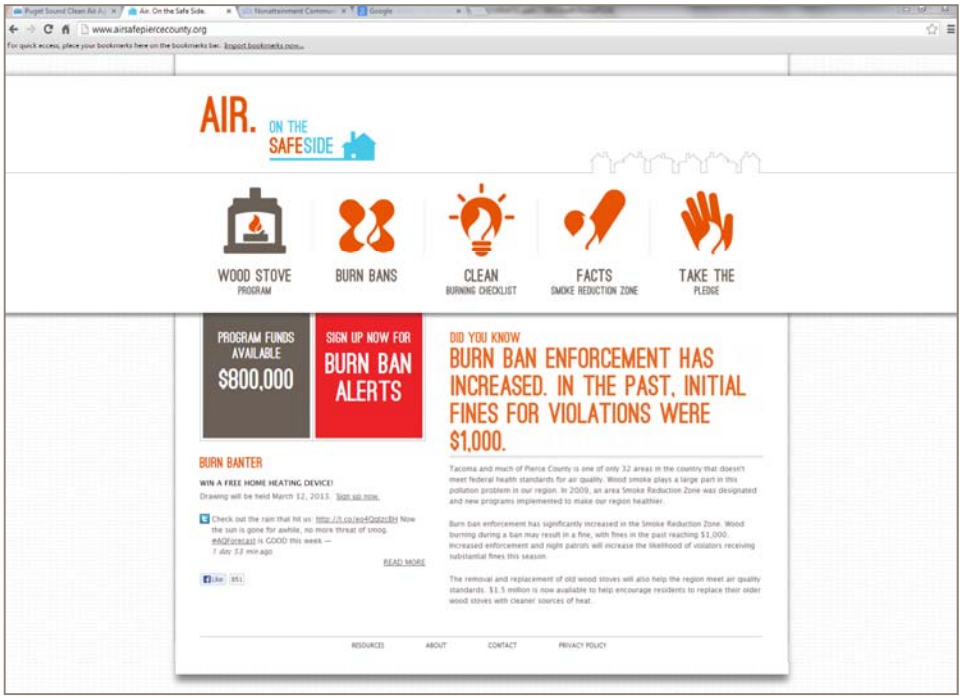
Getting set…

- Consumer research
  - Geographics, demographics, psychographics
- "Air. On the Safe Side" brand
- Message development
  - "Smoke Reduction Zone"
  - "Leave your old flame behind."
  - "Burn ban enforcement has begun."
  - "Avoid fines. Get free alerts.""



Getting set… (cont.)

- www.airsafepiercecounty.org
- Key print materials
  - Flyers
  - Posters
  - Table tents
  - Quick-View
- Burn ban text alerts



Go, go, go!

- Nov. 9 Communications briefing (PIOs, outreach staff)
- Website launched
- Paid advertising begins
  - Print – Ads 2x weekly, major pubs
  - Digital – The News Tribune online; 452,000 impressions
  - Outdoor – 5 boards at a time, 8-week rotations

Go, go, go! (cont.)

- Earned media
  - Print, TV, radio news, editorial
  - Government access
- Direct mail postcard
  - Targeted 80,000 pieces
- Community outreach
  - 60+ local presentations
  - Articles in 40 publications
  - 28,000 flyers distributed locally
- Engaged partners
- Social media

AIR. ON THE SAFESIDE

So, what worked well?

- Political and public buy-in
- Program support (500 stoves, 1500 NOVs)
- Consumer research/plain-speaking
- Clean creative, clear calls to action
- Website visits (8200 unique, 41,250 views)
- Outdoor, print ads (10M impressions)
- Text alert sign-ups (2300 vs. 1650 email)
- Partnerships (Washington Department of Ecology, local agencies)
- Surprise funding ($40K – Thanks, Ecology!)

What didn't work so well?

- Online ads
  - TNT run-of-site placement
  - Mid-course correction
- Direct mail
  - Low response to tested postcard (only 275 web visits)
  - Very costly element
- Timeline realities
  - Pressure on programs
  - Launch date after start of heating season

Year 2 planning underway

- Wood stove and enforcement programs under evaluation
- Likely outreach budget: ~$210,000
- Early discussions about campaign elements/messages
- Focus groups early June – barriers and motivators
  - Money and rules talk
  - Health not a motivator
  - Enforcement word-of-mouth
- Planning earlier launch in 2013-14 (September?)

AIR. ON THE SAFESIDE

(Can you believe it???)