
Combined Rulemaking for Industrial, Commercial, and Institutional Boilers and Process Heaters at Major Sources of HAP and Industrial Boilers and Commercial and Institutional Boilers at Area Sources

**Panel SER Outreach Meeting
February 10, 2009**

Agenda

- Introduction
 - Regulatory History
 - Overview of Proposal Ideas
 - Applicable Small Entity Definitions
 - Small Entities Potentially Subject to Regulation
 - List of SERs
 - Regulatory Flexibility Options for Small Entities
 - Comments From Pre-Panel Outreach Meeting with Potential SERs
 - Feedback/Comments From SERs
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INTRODUCTION

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Overview of Section 112

- Section 112 of CAA mandates that EPA develop standards for hazardous air pollutants (HAP) for both major and area sources
 - Major source is a facility that emits or has PTE 10 tpy of single HAP or 25 tpy of total HAP
 - Area source is a facility that is not a major source
- Section 112(d)(2) states that standards are based on the maximum achievable control technology (MACT)
- Section 112(d)(3) sets minimum stringency criteria (MACT Floor)
 - For existing sources:
 - “The average emission limitation achieved by the best performing 12 percent of existing sources..”
 - For new sources, the MACT floor is:
 - “The emission control achieved in practice by the best controlled similar source...”
- Section 112(h) allows EPA to promulgate a work practice standard, if it is not feasible to enforce an emission standard
 - Not feasible means the application of measurement methodology is not practicable due to technological or economic limitations

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Overview of Section 112

- Section 112 requires EPA to publish a list of major and area sources that emit HAP
 - 112(k) area source category list
 - Industrial boilers
 - Institutional/commercial boilers
 - 112(c)(6) list of source categories accounting for 90% of emissions of 7 listed HAP
 - Industrial boilers
 - Institutional/commercial boilers
- Section 112 (d)(1) allows EPA to subcategories based on class, type, or size of sources in establishing standards.
- Rulemakings
 - Industrial, Commercial, and Institutional Boiler and Process Heater NESHAP
 - "Boiler MACT"
 - Applies to boilers at major sources of HAP
 - Area Source Rulemaking for Boilers

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Statutory Provisions for Area Sources

- Section 112(d)(5) allows for area source standards based on GACT (Generally Available Control Technology)
 - Major source standards are based on MACT
 - Under GACT may consider costs and economic impacts
- Focus of standards is on the 30 Urban HAP
- EPA may exempt area sources from Title V if we determine compliance would be impracticable, infeasible, or unnecessarily burdensome
- Section 112(c)(6) requires listed categories be subject to MACT
 - Both industrial boilers and institutional/commercial boilers are on list of 112(c)(6) source categories (for coal, wood, and oil combustion)
 - Mercury
 - POM

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REGULATORY HISTORY

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BOILER MACT

- Industrial Boiler and Process Heater MACT (Boiler MACT)
 - Promulgated on September 13, 2004
 - Subpart DDDDD of part 63
 - Compliance Date - September 13, 2007
 - **Vacated on July 30, 2007**
- Source categories included:
 - Industrial Boilers
 - Institutional/Commercial Boilers
 - Process Heaters
- Boilers not covered
 - Any boiler specifically listed as an affected source in another standard under part 63 or in another standard established under section 129.
 - Boilers located at an area source of HAP

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Boiler MACT

Vacated Boiler MACT

- Subcategories
 - Three main subcategories based on fuel type:
 - Solid fuel units
 - Liquid fuel units
 - Gaseous fuel units
 - Further subcategorized based on size and use
 - Large (Greater than 10 MM Btu/hr heat input)
 - Small (less than 10 MM Btu/hr)
 - Limited-use (less than 10% capacity factor)
 - Total of 9 subcategories
- Standards based on surrogates
 - PM – for non-mercury metals
 - Mercury – mercury
 - HCl – for acid gases
 - CO – for organic HAP
- MACT Floor Technology Basis
 - PM/metals = Fabric Filters
 - Mercury = Fabric Filters
 - HCl = Wet Scrubber
 - CO = GCP (CO limit/monitoring)

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Emissions Limits in Vacated Boiler MACT

- Existing Units
 - large solid fuel units
 - PM or TSM, HCl, Hg
 - No limit for CO
 - limited use solid fuel units
 - PM
 - No limit for Hg, HCl, CO
 - No emissions standards (MACT floor was “no emission reduction”) for
 - existing small solid fuel units
 - any existing liquid
 - any gaseous fuel units
- New Units
 - solid fuel units
 - PM or TSM, HCl, Hg, CO (not for small units)
 - liquid fuel units
 - PM, HCl, CO (not for small units) No limit for Hg
 - gaseous fuel units
 - CO (not for small units)

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Small Business Impacts in Vacated Boiler MACT

- Determined rule will not have significant impact on small entities
 - Although small entities represent 32% of entities within the source categories, they are expected to incur only 4% of the total compliance costs
- Decisions resulting in minimizing impacts on small entities
 - Separate subcategories for small and limited use units
 - Many are located at small entities
 - No MACT floor could be identified for these subcategories
 - MACT floor = “No emission reductions”
 - Final rule contained no emission limitations for these subcategories
 - Establishing the alternative metals emission limit (to PM limit)
 - Some small entities burn a fuel containing very little metals
 - Establishing the health-based compliance alternatives

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Health-Based Compliance Alternatives (HBCA) in Vacated Boiler MACT

- Alternative compliance options available for the HCl limit and TSM limit
 - HCl: Must demonstrate that facility-wide emissions of HCl and Cl₂ do not pose significant risks
 - TSM: Must demonstrate that facility-wide emissions of manganese do not pose significant risks
- Compliance determine by using:
 - Lookup table
 - Site-specific risk assessment
- Sources that comply with HBCA for HCl do not have to comply with the technology-based HCl limit on individual boiler basis
 - Mainly benefited facilities with coal-fired boilers
- Sources that comply with HBCA for manganese can exclude manganese emissions when determining compliance with the TSM limit on an individual boiler basis
 - Mainly benefited facilities with wood-fired boilers
- Of the 271 facilities submitting HBCA demonstrations, 17 (or 6%) were small entities
 - 10 paper or wood products facilities
 - 3 municipalities
- Potential cost (TAC) savings (control costs + testing/monitoring)
 - Coal-fired boiler = \$255K (\$308K w/o HBCA, \$53K w/ HBCA)
 - Wood-fired boiler = \$78K (\$134K w/o HBCA, \$56K w/ HBCA)

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Litigation

- Critical Issues
 - Failed to establish limits for all subcategories and HAP groups
 - “No emission reductions” MACT floor
 - Adopted health-based compliance alternatives
 - Regulated solid waste incineration units under Boiler MACT, instead of the CISWI rule
 - “if a unit burns **any** solid waste it is an incinerator subject to regulation under section 129 of the CAA and is not an industrial boiler regulated under section 112 ”
- Court Decisions
 - March 2007 - Brick Decision
 - “no emission reduction” MACT floors unlawful
 - Cannot use work practice without making finding required by 112(h)
 - Not practicable due to technical or economic limitations
 - June 2007 – Boiler MACT Decision
 - Vacated CISWI Definition Rule
 - Could not define “solid waste” based on type of combustion unit
 - Vacated Boiler MACT
 - Court concluded that the Boiler MACT would be substantially revised due to vacatur of CISWI Definition Rule
 - Did not rule on Boiler MACT issues

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Potential Scope of Area Source Boilers Rule

- Source category includes an estimated 1.3 million units
 - Industrial boilers - <1%
 - Commercial boilers – 47%
 - Institutional boilers – 53%
- Includes boilers used in
 - commercial establishments
 - stores/malls, laundries, apartments, restaurants, hotels/motels,
 - Institutions
 - medical centers (hospitals, clinics, nursing homes),
 - educational and religious facilities (schools, universities, churches),
 - municipal buildings (courthouses, prisons)
- The area source boilers have generally not been subjected to regulation/permitting, so little is known about them.

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OVERVIEW OF PROPOSAL IDEAS

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Boiler MACT - Revisions

- Define solid waste versus fuel feedstocks
 - Being developed by EPA's Office of Solid Waste
 - Remove waste-burning units from MACT databases
- Reassess emission limits
 - In accordance with recent court decisions
- Develop MACT floor "emission limits" for subcategories and HAP groups currently having no emission standards
 - Replace "no control floors"
- HBCA - ?
- ICR
 - Purpose: to address court decisions
 - Revise population of units under section 112 and 129
 - Update existing emissions database
 - Two phases
 - Survey/questionnaire
 - Testing
 - Sent to all facilities (~3,000) that would have subject to Boiler MACT
 - Responses due by end of October 2008
 - Over 2,500 responses already submitted

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Boiler MACT – Subcategory Options

- Vacated Boiler MACT – 9 subcategories
 - Solid fuel – large, small, limited use
 - Liquid fuel – large, small, limited use
 - Gaseous fuel – large, small, limited use
- Options
 - Reduce number of subcategories to 4
 - Coal, biomass, liquid, gas
 - Emission characteristics differ between fuel type
 - Size has little effect on emissions or controls
 - Duty cycle has little effect on emissions or controls
 - Simplify regulation and enforcement
 - Reduce number of subcategories to 6
 - Coal, biomass (wet, dry), liquid (light oil, heavy oil), gas
 - Emission characteristics differ between fuel type
 - Based subcategories on industry sectors
 - Pulp & paper, chemical, furniture, refineries
 - Commercial units, institutional units
 - Location/sector has little effect on emissions or controls
 - Limited emissions information on many sectors
 - No technical justification for creating additional special subcategories (similar to boilers in other industries).

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Boiler MACT – Regulatory Option

- Limits = MACT floor
 - MACT floor = Average emission level of lowest emitting 12%
- Options currently being considered
 - MACT floors
 - MACT Floor Technology Basis
 - PM/metals = Fabric Filters/ fuel switching
 - Mercury = Fabric Filters / fuel switching
 - HCl = Wet Scrubber / fuel switching
 - CO = GCP (CO limit/monitoring)/burner replacement
 - Beyond-the-floor
 - fuel switching
 - Energy audits
 - Emission averaging within facility
 - HBCA
 - Others ?

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Boiler MACT – Control Costs

- Estimated Total Annualized Cost (TAC)* of MACT Floor – Per Unit Basis
 - Coal
 - TAC of controls/unit = \$218K (WS) to \$1,138K (WS+FF)
 - TAC of testing (Hg, HCl, PM) = \$28K
 - TAC of monitoring (opacity, CO) = \$24K
 - Biomass
 - TAC of controls/unit = \$74K (ESP) to \$103K (FF)
 - TAC of testing/ monitoring = \$52K
 - PM, HCl, Hg, CO, opacity
 - Liquid
 - TAC of controls/unit = \$79K (FF) to \$500K (FF)
 - TAC of testing/monitoring = \$52K
 - PM, HCl, Hg, CO
 - Gas
 - TAC of controls/unit = ~\$1K
 - TAC of testing/monitoring = \$10K
 - CO
- Estimated TAC for Examples Small Entities to Meet MACT Floor
 - Paper Mill – 4 Boilers (3 unc. oil, 1 biomass/ESP) - \$615K – Adding FF to 2 oil boilers
 - Municipal Utility – 3 coal boilers w/FF - \$1,300K – Adding WS to 3 boilers
 - Wood Products Plant – 2 boilers (1 gas, 1 biomass w/cyclone) - \$150K – Adding WS

* Annualized at a 7% interest rate, and in 2007 dollars.

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Boiler Area Source Options Currently Being Considered

- Mercury & POM
 - MACT emission limits – required under 112(c)(6)
 - Carbon monoxide (CO) limit as surrogate for POM
 - Likely control technology basis
 - Hg: fabric filter/fuel switching
 - POM: GCP (annual tune-up)/burner replacement
 - Work practice standard – if can be justified under section 112(h), that is, it is impracticable to enforce the standards to technical or economic limitations
 - Good combustion controls
 - Annual tune-up
 - Energy audits
 - Reduced fuel use = reduced emissions of Hg and POM
- Other HAP (metals, organic HAP)
 - GACT emission limits
 - PM as surrogate for metals
 - CO as surrogate for organic HAP
 - GACT management practice standard
 - Improved efficiency = Reduced fuel use = reduced emissions
 - Good combustion controls
 - Annual tune-up
 - Energy audits
 - Installation of energy efficient boiler (New boilers)
- Exempting area sources from Title V permitting
 - If we can determine compliance would be impracticable, infeasible, or unnecessarily burdensome
- Others?

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Boiler Area Source – Estimated Costs*

- Coal boilers
 - Limits for PM, mercury, and CO
 - MACT floor controls – Baghouse/combustion control system
 - TAC (controls) = \$76K to 115K/boiler
 - TAC (testing-PM,Hg/monitoring-CO,opacity) = \$45K/boiler
 - Work Practices – Tune-up, energy audit
 - TAC (GCP) = \$2.5K
- Biomass boilers
 - Limits for PM, mercury, and CO
 - MACT floor controls – Baghouse/combustion control system
 - TAC (controls) = \$77K to 270K/boiler
 - TAC (testing-PM, Hg/monitoring-CO,opacity) = \$45K/boiler
 - Work Practices – Tune-up, energy audit
 - TAC (GCP) = \$2.5K
- Oil-fired boilers
 - Limits for PM, mercury, and CO
 - MACT floor controls – Baghouse/combustion control system/fuel switch to distillate oil
 - TAC (controls) = \$76K to 160K/boiler
 - TAC (testing-PM, Hg/monitoring-CO,opacity) = \$45K/boiler
 - Work Practices – Tune-up
 - TAC (GCP) = \$2.2K
- Gas-fired boilers
 - Limits for CO
 - GACT controls – combustion control system
 - TAC (controls) = \$19K/boiler
 - TAC (testing/monitoring) = \$10K/boiler
 - Management Practice (GACT) – Tune-up
 - TAC (GCP) = \$2.2K
- National TAC
 - Limits: \$27 billion (\$11 billion if limits only on coal, biomass and oil boilers)
 - Work practices:\$2.9 billion (\$2.2K/boiler)

* See attachment to Appendix C of Convening Document – Memorandum “Preliminary Small Entity Cost and Emission Impacts for Boiler and Process Heater Rulemaking”

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Boiler Area Source – Estimated TAC for Example Small Entities*

- EPA Option 1 – MACT Limits for Mercury and CO Limits
 - Hospital – 5 gas boilers – \$64K (GACT CO limit)
 - controls (annual tune-up) = \$11K, testing & monitoring = \$50K
 - Lumber Mill – 3 biomass boilers w/multiclones - \$195K
 - controls = \$57K, testing & monitoring = \$138K
 - Wood Products Plant – 1 biomass w/multicyclone) - \$163K
 - controls (adding FF) = \$118K, testing & monitoring = \$45K
 - School – 2 boilers (1 gas, 1 biomass) - \$67K
 - controls = \$21K, testing & monitoring = \$45K
 - Church – 1 gas boiler - \$12K
 - controls (annual tune-up) = \$2K, testing & monitoring = \$10K
- EPA Option 2 – Work Practice (Annual tune-up)
 - Hospital – 5 gas boilers – \$11K
 - Lumber Mill – 3 biomass boilers w/multiclones - \$6.7K
 - Wood Products Plant – 1 biomass w/multicyclone) - \$2.2K
 - School – 2 boilers (1 gas, 1 biomass) - \$4.4
 - Church – 1 gas boiler - \$2.2K

* See attachment to Appendix C of Convening Document – Memorandum “Preliminary Small Entity Cost and Emission Impacts for Boiler and Process Heater Rulemaking”

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Economic Screening Analysis

- Appendix D of Convening Document - Memorandum "Draft Small Entity Screening Analysis: Industrial Boilers and Process Heaters">
 - Area Source Boiler Rule
 - EPA Option 1 – MACT floor standards for Hg and CO
 - 25% had (cost-to-sales) ratios exceeding 3 percent
 - EPA Option 2 – Work Practice (annual tune-up)
 - None had (cost-to-sales) ratios exceeding 3 percent
 - EPA Option 3 – Work Practice and Energy Audit for Coal and Biomass Boilers
 - None had (cost-to-sales) ratios exceeding 3 percent
 - Boiler MACT
 - EPA Option 1 – MACT floor standards for Hg,CO,HCl and PM
 - 75% had (cost-to-sales) ratios exceeding 3 percent
 - EPA Option 2 – MACT floor standards with HBCA for HCl and Manganese
 - 73% had (cost-to-sales) ratios exceeding 3 percent

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APPLICABLE SMALL ENTITY DEFINITIONS

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Small Entity Definitions

- Regulations under development will affect a number of different industrial, commercial, and institutional sectors
 - Small entity definitions are those established by SBA in their current table of small business size standards.

Sector	NAICS Code	Number of Employees	Millions of Dollars Revenue or Budget	Major Source	Area Source
Wood Product Manufacturing	321	500		Yes	Yes
Furniture	337	500		Yes	Yes
Utilities (Municipal)	221		4 million megawatt hours	Yes	No
Food Manufacturing	311	500		Yes	Yes
Elementary and Secondary Schools	611110		\$7.0	No	Yes
Hospitals	622		\$34.5	No	Yes
Religious Organizations	813110		\$7.0	No	Yes
Full-Service Restaurants	722110		\$7.0	No	Yes
Commercial Printing	323	500		Yes	Yes

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Number of Boilers Located at “Named*” Locations

<u>Named Location</u>	<u>Texas</u>	<u>New Jersey</u>	<u>Projected U.S. Total</u>
School	10,800	5,740	166,850
Church/Temple	1,780	2,500	54,000
Hotel/Motel/Inn	2,630	1,370	40,800
Apartments	8,900	3,400	117,300
Nursing Home	170	230	5,100
YMCA/YWCA	170	100	2,800
Mall	40	80	1,700
Restaurant	400	250	7,000
Hospital/Medical Center	500	400	20,000
Municipal Facilities	840	330	21,120
Funeral Home	50	100	2,200
Bank	400	400	9,900
Store	90	140	2,800
Dry Cleaners/Cleaners	2,000	1,500	38,800
Theater	13	9	250
Car Wash	320	90	3,650
Office	140	325	6,380
Total	56,707	57,583	1,345,800

* The facility name contains the sector name (e.g., Northern High School)

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SMALL ENTITIES POTENTIALLY SUBJECT TO REGULATIONS

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Identification of Small Entities

- Boiler MACT
 - EPA identified facilities in each of the sectors using the ICR Survey Database
 - Revenue, employment, population data were obtained for parent entities:
 - Dun & Bradstreet, Standard & Poor's and American Business Information
 - Energy Information Administration
 - U.S. Census Bureau
- Boiler Area Source
 - Sectors potentially affected was identified from U.S. Census Bureau
 - Economic Census
 - Survey of Current Business

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Identification of Small Entities – Boiler MACT

- Total number of major sources that are small entities = 158
 - Or 9% of major sources

Sector	Number of Small Entities
Food and Kindred Products (NAICS 311)	7
Plastics and Rubber Products (NAICS 326)	12
Lumber and Wood Products (NAICS 321)	20
Furniture and Fixtures (NAICS 337)	9
Paper and Allied Products (NAICS 322)	16
Chemical and Allied Products (NAICS 325)	18
Electric, Gas, and Sanitary Services (i.e., Municipal Boilers) (NAICS 221)	26
Fabricated Metals Products (NAICS 332)	9
Petroleum Refining and Related Industries (NAICS 324)	8
Transportation Equipment Manuf. (NAICS 336)	6
Primary Metal Manuf. (NAICS 331)	6

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Identification of Small Entities – Boiler Area Source

Sector	Estimated Number of Small Entities
Food Manufacturing (NAICS 311)	18,230
Wood Product Manufacturing (NAICS 321)	1,280
Religious Organizations (NAICS 8131)	37,465
Wholesale Trade (NAICS 422)	1,885
Real Estate (NAICS 531)	329,000
Educational Services (NAICS 611)	210,000
Traveler Accommodations (NAICS 7211)	42,700
Hospitals (NAICS 622)	23,800
Food Services and Drinking Places (NAICS 722)	21,200

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LIST OF SERs

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SERs

	Company	Sector	Rule
1	City of Orrville, Ohio	Electric Generation	Boiler MACT
2	Sugar Cane Growers Cooperative	Food Manufacturing	Boiler MACT
3	Hartzell Hardwoods	Lumber	Boiler MACT
4	Waccamaw Community Hospital	Hospitals	Boiler Area Source
5	Bulter Printing	Printing	Boiler Area Source
6	Darby Schools	Educational Services	Boiler Area Source
7	Port Townsend Paper	Paper Manufacturing	Boiler MACT
8	Monadnock Paper Mills	Paper Manufacturing	Boiler MACT
9	Bamberg County Hospital	Hospitals	Boiler Area Source
10	Cedar Lane Farms	Green House	Boiler Area Source
11	American Forest & Paper Association	Paper Manufacturing Wood Product Manufacturing	Boiler MACT Boiler Area Source
12	National School Boards Association	Educational Services	Boiler Area Source
13	American Home Furnishings Alliance	Furniture and Related Product Manufacturing	Boiler MACT Boiler Area Source
14	Interfaith Coalition on Energy	Religious Organizations	Boiler Area Source
15	American Hotel & Lodging Association	Hotels/Motels	Boiler Area Source

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REGULATORY FLEXIBILITY OPTIONS for SMALL ENTITIES

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Small Entity Flexibilities

- Note: CAA mandates a minimum stringency (i.e., MACT Floor) which can't be reduced solely on business or entity size.
- Boiler MACT
 - Health-based compliance alternatives for the HCl limit and TSM limit
 - Provision was issue in litigation, court did not rule on it
 - Emission averaging
 - Subcategorization
 - Alternate metals standard
 - Reduced monitoring
 - Reduced compliance requirements
 - Others?
- Boiler Area Source
 - Based standards on GACT (Generally Available Control Technology)
 - MACT required for Hg and POM
 - Promulgate a work practice standard instead of emission limits
 - if it is not feasible to enforce an emission standard
 - Stack testing and monitoring not required
 - Exempt area sources from Title V if compliance is determine to be impracticable, infeasible, or unnecessarily burdensome
 - Others?

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COMMENTS FROM PRE- PANEL OUTREACH MEETING WITH POTENTIAL SERs

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Potential SERs Comments

- **Potential SERs Outreach Meeting held on November 13, 2008**
- **Management Practices**
 - Not aware of any state requirements for boiler "tune-ups"
 - Only 11 states and 18 major cities have some program with respect to boiler operator licensing.
 - Large boilers are operated and maintained to the highest criteria. Smaller boilers – commercial and institutional - are not operated or maintained as vigorously.
 - Smaller boiler operators are not sophisticated on good combustion practices.
- **Subcategorization and Bagasse Boilers**
 - Bagasse-fired boilers should be regulated as separate subcategory. Bagasse-fired boilers have several unique characteristics.
 - Operated only during the sugarcane harvest.
 - Design of furnace, combined with high moisture content and other characteristics of bagasse, produces a relatively unique combustion process and a characteristic mix of emissions.
 - A comment raised was whether EPA could have a separate subcategory for units at small entities?
 - EPA investigated issue and based on review of legislative history determined that economic grounds are not to be the basis for creation of section 112 categories. The types of factors that are rational bases for subcategorizing are emissions differences and the technical feasibility of applying emissions controls.
- **Health Based Compliance Alternatives (HBCA)**
 - The HBCA for both HCl and manganese should be a critical component of any future rule to lessen impact on small entities.
 - The HBCA provision was main issue in litigation of the Boiler MACT but the Court did not rule on this issue in vacating the Boiler MACT.
- **Potential Adverse Economic Impact**
 - One SER commented that their interpretation of these rulings would find them in a financial awkward situation. With little profit, how will they get and repay capital to install new equipment required by the rules.
 - The SER also commented that they know of several other local green industry companies that will also be negatively affected by the rules. The impact of these rules, as they understand them, will put them out of business. This is due to the fact that the estimate for the equipment and installation to bring their seasonal boilers up to the new rule standards would be over \$500,000 which is nearly half of their yearly sales.
- **Emission Averaging**
 - Allowing averaging to achieve requirements will lower compliance costs

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SCHEDULE

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Schedule

- Convene SBAR Panel – Jan. 22 2009
- Panel SER Outreach Meeting – Feb. 10, 2009
- SERs Written Comments Due – February 24, 2009
- Panel Report Complete/Panel Concludes – March 19, 2009
- Proposal – July 2009

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