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Air Issues Update

117th IOMSA Annual Summer Convention

Nashville, Tennessee
June 21st, 2011

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Agenda

- NAAQS Update
- GHG Update
 - ◆ Mandatory Reporting Rule
 - ◆ PSD GHG Tailoring Rule
- Boiler MACT “Final” Rule

National Ambient Air Quality Standards (NAAQS)

- A primary foundation of the Clean Air Act
- The threshold levels of air pollution below which no adverse effects will be experienced by humans or the environment
- Establishes numerical criteria that are to be applied uniformly throughout the country

National Ambient Air Quality Standards (NAAQS)

■ Criteria Pollutants

- ◆ PM₁₀
- ◆ PM_{2.5}
- ◆ SO₂
- ◆ NO₂
- ◆ Ozone
- ◆ CO
- ◆ Lead

Particulate Matter Standard

- PM_{10} annual standard revoked on September 21, 2006
- PM_{10} Standard
 - ◆ $150 \mu\text{g}/\text{m}^3$ 24-hour average
- $PM_{2.5}$ Standard
 - ◆ $15 \mu\text{g}/\text{m}^3$ annual average
 - ◆ $35 \mu\text{g}/\text{m}^3$ 24-hour average (effective December 17, 2006)
- $PM_{2.5}$ Significant Impact Limits
 - ◆ $0.3 \mu\text{g}/\text{m}^3$ annual average
 - ◆ $1.2 \mu\text{g}/\text{m}^3$ 24-hour average

Implementation of the New PM_{2.5} Standard

- Implementation of PM_{2.5} NAAQS
 - ◆ May 2011 – EPA repeals Grandfathering Provision
 - ◆ *Immediate issues for permit applications which trigger PSD for PM₁₀*
 - *If a facility triggers PSD for PM₁₀, then PM_{2.5} would need to be quantified as well and compared to PSD SER of 10 tpy*
 - *If a facility triggers for PM_{2.5}, then BACT and modeling for PM_{2.5} is needed*
 - ◆ *Other NSR permits to require PM_{2.5} quantification and FNSR applicability analysis*

New PM_{2.5} Standard—Things to Watch For

- The regulatory definition of PM_{2.5} (and PM₁₀) includes both filterable and condensible particulate matter
- Testing for Particulate Matter
 - ◆ Filterable Particulate Matter
 - Method 5 (for Total PM)
 - Method 201A (for PM₁₀ and PM_{2.5})
 - ◆ Condensible Particulate Matter (CPM)
 - Method 202
- The new EPA methods have limitations/issues and could result in discovery of previously not quantified (or permitted) emissions

Changes to NO₂ Standard

- January 22, 2010 – EPA strengthened NAAQS for NO₂
- Establish a 1-hr standard at 100 ppb (primary, there is no secondary)
- Retain the current annual standard of 53 ppb
- Increase NO₂ monitoring network
- Attainment designations will be made by January 2012

Changes to SO₂ Standard

- June 2, 2010 – EPA strengthened NAAQS for SO₂
- Establish a 1-hr primary standard at 75 ppb
- Revoke existing 24-hr and annual primary standards
- No revisions to secondary standard at this time
- Increase SO₂ monitoring network
- Attainment designations will be made in June 2012

EPA Revisions to NAAQS

- Final (recent) – 1/2010 NO₂, 6/2010 SO₂
- 2011 Schedule
 - 1/2011 – EPA proposes to retain CO primary standard (final 8/2011)
 - 10/2011 – PM_{2.5} primary standard to be final (designations effective 11/2013)
 - 5/2011 – SO₂/NO_x secondary standard to be proposed (final 3/2012)

Potential Issues

◆ Modeling

- New standards for PM_{2.5}, NO₂, SO₂ are very rigorous when compared to existing standards
- NO₂ is the only criteria pollutant that previously had no established standard with an averaging period less than annual
- Some areas have very high “background” concentrations that will affect NAAQS compliance demonstration

◆ Permitting

- PSD and BACT for PM_{2.5}
- Quantification/authorization of Condensable Particulate Matter
- Authorization of combustion sources for future modifications/expansions

GHG Updates



GHG MRR Delay

- First report was to be due March 31, 2011
- Now due on September 30, 2011
 - ◆ CBI concerns
 - ◆ e-GGRT issues
- New deadline for registration in e-GGRT is August 1, 2011





PSD GHG Tailoring Rule

PSD Applicability (Overview)

- Federal pre-construction permitting program
- Applies to new “major sources” of regulated air pollutants
 - ◆ Sources that emit or have the potential to > 100/250 tpy
- Existing major source undertaking a “major modification”
 - ◆ Physical or operational change that results in a significant net emissions increase of a regulated pollutant (and not otherwise subject to an exclusion)
 - Significant emission rate (SER)
- Existing minor sources undergoing a modification that by itself is above the major source threshold

EPA's PSD V GHG Tailoring Rule

- Rule finalized on June 3, 2010; Effective August 2, 2010
- Why?
 - ◆ Without “tailoring,” CAA statutory levels for major sources (e.g., 100/250 tpy for PSD) would apply as of January 2, 2011
- What GHGs?
 - ◆ Regulation of 6 GHG compounds as identified in LDVR and Endangerment & Contribution findings
 - *“the single air pollutant defined as the aggregate mix of these six well-mixed greenhouse gases”*
 - CO₂, CH₄, N₂O, HFCs, PFCs, & SF₆

Step 1 PSD - Tailoring Rule

Item	Requirement & Criteria
Start Date	<ul style="list-style-type: none">• January 2, 2011
Coverage	<ul style="list-style-type: none">• New construction or modification subject to PSD for GHGs ONLY if undergoing PSD anyway for non GHG pollutants (“anyway PSD sources”) AND exceed major modification threshold for GHGs• No additional PSD permitting <u>solely</u> for GHG emissions
Major Modification Threshold	<ul style="list-style-type: none">• GHG emissions (or net emissions increase) due to construction (or modification) calculated as the sum of the six well-mixed GHGs equal or exceed:<ul style="list-style-type: none">➤ on a mass basis, 0 tpy, AND➤ on a CO₂e basis, 75,000 tpy CO₂e
Requirement	<ul style="list-style-type: none">• PSD Permit, GHG emission calculations and BACT for GHGs

Step 2 PSD - Tailoring Rule

Item	Requirement
Start Date	<ul style="list-style-type: none">• July 1, 2011
Coverage	<ul style="list-style-type: none">• “Anyway PSD Sources” from Step 1, AND• Major sources for GHG pollutants• PSD permitting solely for GHG emissions is possible
Major Source Threshold	<ul style="list-style-type: none">• GHG potential emissions (sum-of-six well-mixed GHGs) equal or exceed:<ul style="list-style-type: none">➤ on a CO₂e basis, 100,000 tpy CO₂e
Major Modification Threshold	<ul style="list-style-type: none">• GHG net emissions increase resulting from the project (sum-of-six well-mixed GHGs) equal or exceed:<ul style="list-style-type: none">➤ on a mass basis, 0 tpy, AND➤ on a CO₂e, 75,000 tpy CO₂e
Requirement	<ul style="list-style-type: none">• PSD Permit, GHG emission calculations and BACT for GHGs

Step 3 and Beyond

(Beginning July 1, 2013)

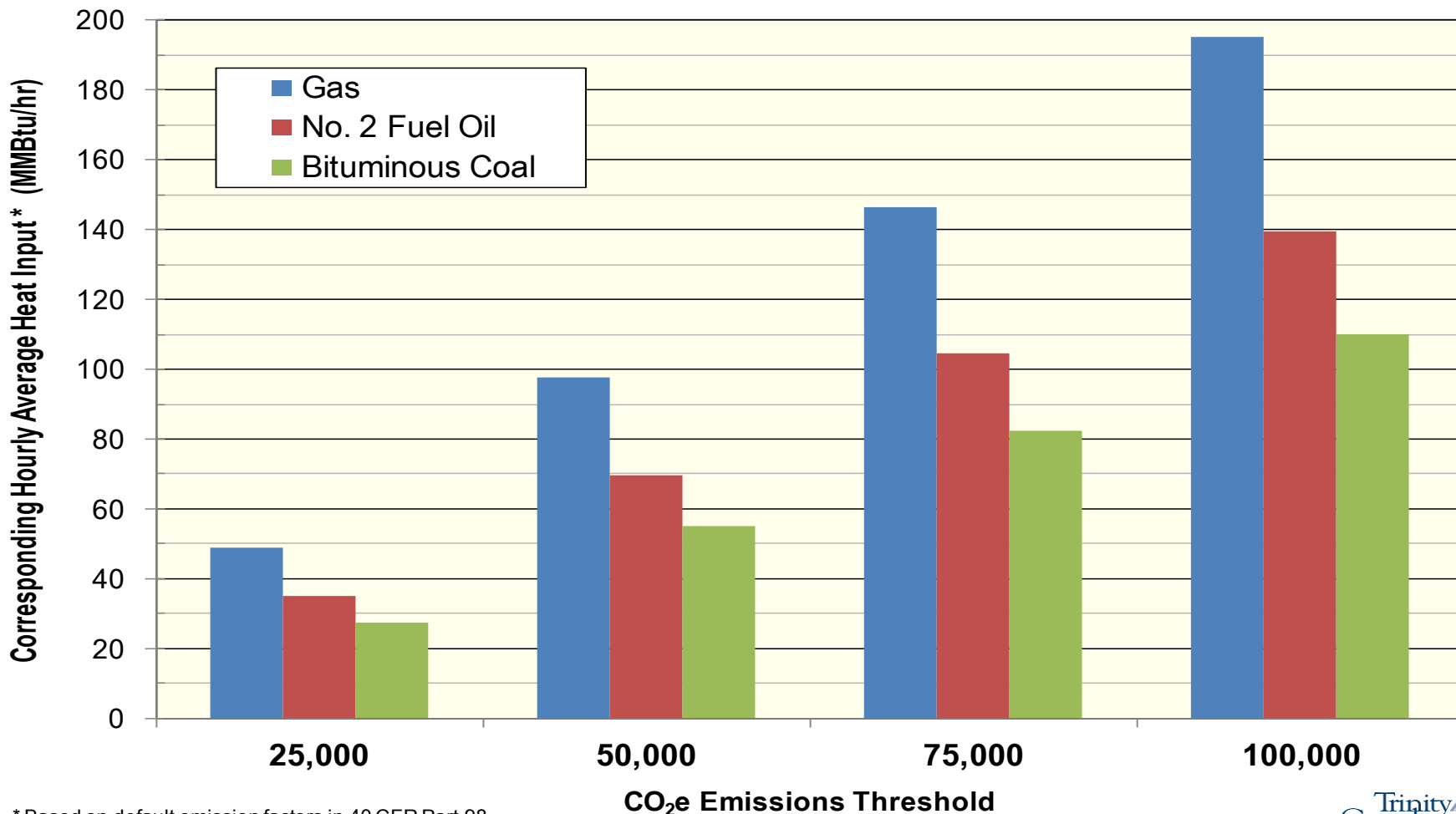
- EPA will complete another rulemaking action no later than July 1, 2012 for Step 3 phase-in
- May propose lower thresholds in this rulemaking
- May also consider permanent exclusion of certain source categories (based on Chevron “absurd results” doctrine)
 - ◆ Sources that are too small and inconsequential for GHGs
 - ◆ Sources that would be required to obtain an “empty permit”

Exclusion of Smaller Sources

- Rule provides for 6-year exclusion of smaller sources < 50,000 tpy CO₂e
- Exclusion will remain in effect until EPA takes action to address these sources in Step 4 – required by 4/30/2016
- Exclusion provides more time for permitting agencies to gear up for large number of permit actions
- Also provides time to develop and adopt streamlining measures to reduce permitting burden

Translation: Step 3 will establish major source threshold and/or significance level no more than 50,000 tpy CO₂e

What does 75,000 tpy CO₂e look like?



* Based on default emission factors in 40 CFR Part 98

PSD Permitting Requirements

- If PSD triggered for GHGs, PSD Permit Applications will require:
 - ◆ Emissions Calculations
 - ◆ Best Available Control Technology (BACT) for GHGs...in most instances, BACT will likely be an efficiency standard or work practice
 - ◆ No modeling
- Less straightforward would be the recordkeeping and monitoring/testing procedures for assuring compliance

Tailoring Rule Strategies

- What is your facility GHG potential to emit? Major source of GHGs? Title V implications after July 1, 2011.
- Evaluate future projects into 2011+
- Develop a schedule and permitting strategy for PSD permitting for planned projects (if applicable)
- Understand what BACT may mean for your proposed project – likely to center around efficiency and monitoring for most sources



The Final Boiler MACT

For Now

Boiler MACT History 1 of 3

- First round:
 - ◆ January 13, 2003
proposed Boiler MACT
 - ◆ September 13, 2004
final Boiler MACT
- June 19, 2007 – Boiler MACT vacatur/remand
 - ◆ “EPA incorrectly included boilers that combust solid waste in the development of the standards in the MACT determination, which skewed the numerical limits proposed”



Boiler MACT History 3 of 3

- December 7, 2010 – EPA asks court for 15-month extension to re-propose the rules to address stakeholder concerns
- January 20, 2011 – Deadline for final rules extended approximately one month to February 21, 2011
- March 21, 2011 – New final rules published (some slight differences compared to Feb. 21st signed version)
 - ◆ 40 CFR 63 DDDDD (5 Ds) for Major Sources
 - ◆ 40 CFR 63 JJJJJ (6 Js) for Area Sources
 - Concurrent with reconsideration notice
 - Concurrent with definition of “solid waste” and rules for SSI and CISWI

Applicability 1 of 2

- Excluding any unit combusting *solid waste*
- Industrial, commercial, and institutional (ICI) boilers
 - *Boiler* is an enclosed device using controlled flame combustion and having the primary purpose of recovering thermal energy in the form of steam or hot water
- Process heaters (at major sources only)
 - ◆ *Process heater* is a unit in which the combustion gases do not directly contact the process material or gases

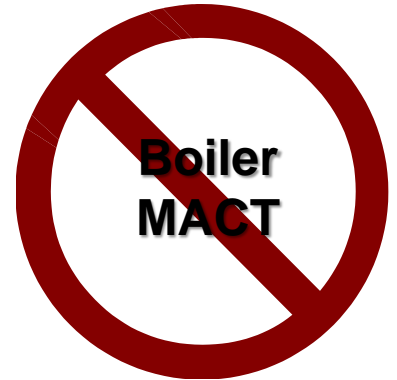
Applicability 2 of 2

- Affected source definition
 - ◆ Collection of all existing units within a subcategory
 - ◆ Each new or reconstructed unit
 - *New Unit* – A unit that commenced construction or reconstruction, or switched from natural gas to a solid fossil fuel, biomass, or a liquid fuel, after June 4, 2010 (date of proposed rule, which has already passed)



Exclusions/Exemptions

- Units combusting *solid waste* (i.e., CISWI)
- Units subject to another MACT
- R&D units
- Hot water heaters
(be sure to review specific definition based on fuel, size, and pressure & temperature limitations)
- Units used as control devices for another Part 63 source
(if 50 % or more of heat input is derived from controlled gas stream)
- Temporary units (at major sources only)
(be sure to review specific definition)
- No exclusion/exemption, but relief is provided for “small” (< 10 MMBtu/hr) units



Compliance Deadlines



- March 21, 2014 for existing units (3 years after final rule publication)
- For new/reconstructed units, upon startup or May 20, 2011, whichever is later
- For existing area source units that become major, 3 years after becoming a major source
- UPDATE – May 16, 2011 – Major Source requirements under Boiler MACT stayed by EPA

Regulated Pollutants

- Five categories of HAPs
 - ◆ Mercury (Hg)
 - ◆ Non-mercury metals
 - $PM_{\text{filterable}}$ as surrogate
 - ◆ Non-metal inorganics
 - HCl as surrogate
 - ◆ Non-dioxin organics
 - CO as surrogate
 - ◆ Dioxins/Furans (D/F)
- The specific pollutants within each group depend on fuel type and unit design, but all pollutants within each group can be controlled and monitored with the same techniques



15 Subcategories

1. Pulverized coal / solid fossil fuel units
2. Stokers designed to burn (DTB) coal / solid fossil fuel
3. Fluidized bed units DTB coal / solid fossil fuel
4. Stokers DTB biomass / bio-based solid
5. Fluidized bed units DTB biomass / bio-based solid
6. Suspension burners / Dutch Oven DTB biomass / bio-based solid
7. Fuel Cells DTB biomass / bio-based solid
8. Hybrid suspension / grate burners DTB biomass / bio-based solid
9. Units DTB solid fuel
10. Units DTB liquid fuel
11. Units DTB liquid fuel in non-continental areas
12. ***Units DTB “gas 1” fuels: nat. gas, refinery gas, & other qualifying gaseous fuels***
13. Units DTB “gas 2” fuels
14. Metal processing heaters/furnaces
15. Limited-use boilers and process heaters

Summary of Requirements 1 of 2

- New and existing “Gas 1” fired units
 - ◆ Work Practice Standards instead of emission limits
 - ◆ Annual tune-up for each, performed by operator

- Existing units with a heat input capacity < 10MMBtu/hr
 - ◆ Work Practice Standards instead of emission limits
 - ◆ Tune-up once every two years performed by operator

Summary of Requirements 2 of 2

- All other existing and new boilers and process heaters located at major sources will have to meet emission limits.
- Existing major source facilities will also be required to conduct an energy assessment

Work Practice Standards 1 of 2

Tune-ups

- Frequency (*applies to new and existing units*)
 - ◆ Biennial for small and limited-use units
 - ◆ Annual for large Gas 1 units and metal processing furnaces
 - ◆ Burner inspections may be delayed based on scheduled shutdowns, but not more than 36 months
- Requirements
 - ◆ Inspect burner; clean/replace parts as needed
 - ◆ Inspect flame pattern; adjust burner as needed
 - ◆ Ensure calibration & function of air:fuel ratio control sys.
 - ◆ Optimize CO emissions per manufacturer's specs
 - Does this affect NO_x? Not a Boiler MACT issue, but is a concern nonetheless
 - ◆ Measure CO before and after adjustments



Work Practice Standards 2 of 2

Energy Assessment (“Beyond The Floor”)

- One-time EA for all existing units
 - ◆ Except for facilities that only operate limited-use units (no requirement)
 - ◆ Previous assessments conducted after 1/1/2008 may be acceptable
- Scope and duration dependent on total annual heat input – **see rule definition for “energy assessment”**
- Assessments must be conducted by a “qualified energy assessor”
 - ◆ “Someone who has demonstrated capabilities to evaluate a set of the typical energy savings opportunities...for steam generation and major energy using systems...”
- Requirements:
 - ◆ Visual inspection of affected source(s)
 - ◆ Evaluation of operating characteristics, plans, specifications, O&M procedures and logs, fuel usage, and unusual operating constraints
 - ◆ Inventory of major energy consuming systems – **see rule definition for “energy use system”**
 - ◆ List major energy conservation measures and potential energy savings

Key Dates To Keep In Mind

(Existing Units)

- Initial Notification – September 17, 2011 (delayed due to stay)
- Compliance Date – March 21, 2014
- Initial Performance Tests – Completed by September 17, 2014 – see 63.7(a)(2)
 - ◆ NOI is due 60 days prior to tests
- Notification of Compliance Status (NCS)
 - ◆ 60 days following completion of performance tests
 - ◆ First tune-up should be done by the end of 2014 (NCS due 60 days later)
 - ◆ The one-time energy assessment must be completed before NCS submitted and after January 1, 2008

Area Source Boiler MACT

40 CFR 63, Subpart JJJJJJ, § 63.11193-11237



Area source is a facility that emits:

- <10 tpy of any single HAP, and
- < 25 tpy of total HAP

Compliance Deadlines

- Existing boilers subject to work practice standard / tune-up requirement
 - March 21, 2012
- Existing boilers subject to emissions standards and/or energy assessment requirement,
 - March 21, 2014
- New boilers
 - May 20, 2011 or upon startup, whichever is later

Regulated Pollutants

- Mercury
- CO
 - ◆ Surrogate for POM
- PM_{filterable}
 - ◆ Surrogate for non-mercury metals

Subcategories

- Industrial / commercial / institutional (ICI) *boilers*
 - ◆ Not process heaters
- Three subcategories based on type of fuel combusted (no breakout for type of combustion):
 1. Coal
 2. Biomass
 3. Oil
- Gas-fired units are exempt
 - ◆ Including units using a liquid fuel as backup as long as usage is restricted to periods of gas curtailment and supply emergencies or testing not to 48 hours per year

Summary of Requirements

- Existing Large Boilers (> 10MMBtu/hr)
 - ◆ Coal-fired units will be required to meet emission limits for mercury and CO
 - ◆ Biomass and oil-fired units would need to meet limits for CO
 - ◆ All area source facilities with large boilers will be required to conduct an energy assessment
- Existing Small Boilers(< 10MMBtu/hr)
 - ◆ No emission limits
 - ◆ Work Practice Standards is a biennial tune-up

Work Practice Standards

- Minimize startup and shutdown periods following the manufacturer's recommended procedures
 - ◆ For existing and new coal units ≥ 10 MMBtu/hr
- Biennial Tune-ups
 - ◆ For existing and new coal units < 10 MMBtu/hr; and
 - ◆ For existing and new biomass and liquid fuel units of any size
- One-time energy assessment
 - ◆ For existing coal, biomass, and liquid fuel units ≥ 10 MMBtu/hr

For Additional Information

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