

# Update of Utility MACT Rule and Cross State Air Pollution Rule

Prepared for

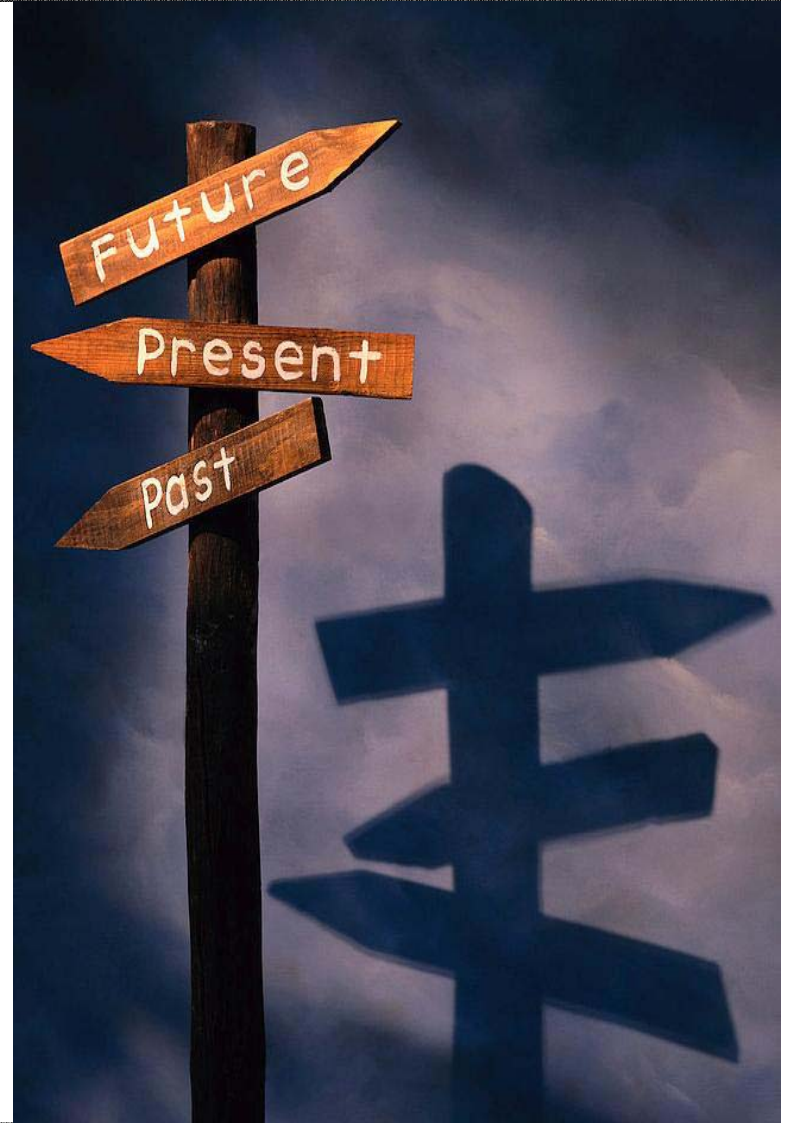
CIBO EE Meeting

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# What We Will Be Covering Today

- Utility MACT - MATS
  - Recent History
  - Highlights
  - Sub Categories
  - EUG Definition
  - What is in it
  - What is missing
  - Issues for Utilities
  - Proposed Limits
- CSAPR
  - Recent History
  - What is in the Rule/Implementation
  - Revisions
  - Allowance Calculations
  - Industrial Units



## Recent History - Utility MACT or MATS

- 2008: DC Circuit Court vacated EPA's action removing power plants from the section 112(c) source category list and CAMR
- 2011: EPA is under consent decree to issue proposed toxics standards for power plants by March 16
- Final rule was issued December 21, 2011, effective by February 2012
- Compliance for existing units within 3 years of the final rule. New units upon startup. 1 year extension possible from State regulators.

# Utility MACT Highlights

**Rule is a data-driven, technology-based regulation.**

- Affects only coal and oil fired EGUs
- Regulates Mercury Emissions w/ numerical limits (Except Liquid Oil\*)
- Regulates PM & HCL w/ numerical limits for Coal Units
- Regulates Total Metals, HCL and HF w/ numerical limits for Oil Units
- Establishes Work Practice Standards for:
  - Organic HAPs (Dioxin/Furan)
  - Startup/Shutdown emissions
  - Limited Use Units

# Sub Categories

- 2 Sub Categories for Coal-Fired EGUs
  - Coal-fired  $\geq$  8300 Btu/lb
  - Coal-fired  $<$  8300 Btu/lb
- 4 Sub Categories for Oil-Fired EGUs
  - Liquid Oil-fired Units
  - Non-continental liquid oil-fired Units
  - Solid Oil-fired Units
  - Limited Use Units
- IGCC Sub Category

## Definition of EGU

*Electric utility steam generating unit (EGU) means a fossil fuel-fired combustion unit of **more than 25 megawatts electric** (MWe) that serves a generator that produces electricity for sale. A fossil fuel-fired unit that cogenerates steam and electricity and supplies **more than one-third of its potential electric output capacity and more than 25 MWe output** to any utility power distribution system for sale is considered an electric utility steam generating unit.*

To be considered a “fossil fuel fired” EGU subject to this proposed rule, the unit must have fired coal or oil for more than **10.0 percent of the average annual heat input** during the previous **3 calendar years** or for **more than 15.0 percent of the annual heat input** during any **one** of those calendar **years**.



## Provided in Utility MACT

- Alternative Surrogates Allowed for Non Mercury Metal HAPs
  - PM (**Filterable Only**)
  - Total non-Hg HAP metals (Filterable Only)
  - Individual HAP Metals [Antimony (Sb), Arsenic (As), Beryllium (Be), Cadmium (Cd), Chromium (Cr), Cobalt (Co), Lead (Pb), Manganese (Mn), Nickel (Ni), and Selenium (Se)]
- Alternative Surrogate Allowed for Acid Gas HAPs
  - HCL
  - SO<sub>2</sub> (If FGD is installed)

## Provided in Utility MACT (Cont.)

- Emission Averaging between **existing** units that are in the same sub category
- Affirmative Defense (Malfunctions)
- Fuel Analysis for Liquid Oil HAPs Metals (Including Hg)
- Waste coal included in coal category



## Not Included in Utility MACT

- Gas-fired EGU Units
- Biomass EGU Units
- Units firing waste
- No Health-Based Emissions Limits (HBEL)
- No Minor HAP Source category

**Note that all non EGU units will be subject to other MACT rules.**

## Issues for Utilities

- All emission limits are very stringent given CEMs compliance over stack test – New Units may be impossible
- Cherry picking of emission rates a problem
- Compliance Timing very short
- Compliance Cost - Kentucky utility asking for a 20% rate increase by 2015/2016 to pay for Utility MACT compliance

# Revised Emission Limits for Existing

Sub Category	Coal $\geq$ 8,300 Btu/lb		Coal < 8,300 Btu/lb		IGCC		Solid Oil	
	lb/MWh	lb/MMBtu	lb/MWh	lb/MMBtu	lb/MWh	lb/MMBtu	lb/MWh	lb/MMBtu
<b>PM Total</b>	3.0E-01	3.0E-02	3.0E-01	3.0E-02	4.0E-01	4.0E-02	9.0E-02	8.0E-03
<b>Total Non Hg Metals</b>	5.0E-04	5.0E-05	5.0E-04	5.0E-05	5.0E-04	6.0E-05	6.0E-04	4.0E-05
<b>Individual HAPs</b>	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies
<b>HCL</b>	2.0E-02	2.0E-03	2.0E-02	2.0E-03	5.0E-03	5.0E-04	8.0E-02	5.0E-03
<b>SO<sub>2</sub></b>	1.5E-00	2.0E-01	1.5E-00	2.0E-01	N/A	N/A	2.0E-00	3.0E-01
<b>HF</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Hg</b>	1.3E-05	1.2E-06	4.0E-05	4.0E-06	3.0E-05	2.5E-06	2.0E-06	2.0E-07

# Revised Emission Limits for New Or Reconstructed

Sub Category	Coal $\geq$ 8,300 Btu/lb		Coal $<$ 8,300 Btu/lb		IGCC		Solid Oil	
	lb/MWh	lb/MMBtu	lb/MWh	lb/MMBtu	lb/MWh	lb/MMBtu	lb/MWh	lb/MMBtu
Pollutant	lb/MWh	lb/MMBtu	lb/MWh	lb/MMBtu	lb/MWh	lb/MMBtu	lb/MWh	lb/MMBtu
<b>PM Total</b>	7.0E-03	N/A	7.0E-03	N/A	7.0E-02	N/A	2.0E-02	N/A
<b>Total Non Hg Metals</b>	6.0E-05	N/A	6.0E-05	N/A	4.0E-04	N/A	6.0E-04	N/A
<b>Individual HAPs</b>	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies
<b>HCL</b>	4.0E-04	N/A	4.0E-04	N/A	2.0E-03	N/A	4.0E-04	N/A
<b>SO<sub>2</sub></b>	4.0E-01	N/A	4.0E-01	N/A	4.0E-01	N/A	4.0E-01	N/A
<b>HF</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Hg</b>	2.0E-07	N/A	4.0E-05	N/A	3.0E-06	N/A	2.0E-06	N/A



# Revised Emission Limits Oil

Sub Category	Existing Liquid Oil Continental		Existing Liquid Oil Non-Continental		New Liquid Oil Continental		New Liquid Oil Non-Continental	
	lb/MWh	lb/MMBtu	lb/MWh	lb/MMBtu	lb/MWh	lb/MMBtu	lb/MWh	lb/MMBtu
<b>Pollutant</b>								
<b>PM Total</b>	3.00E-01	3.00E-02	3.00E-01	3.00E-02	7.00E-02	N/A	2.00E-01	N/A
<b>Total Non Hg Metals</b>	8.00E-03	8.00E-04	7.00E-03	6.00E-04	2.00E-04	N/A	7.00E-03	N/A
<b>Individual HAPs</b>	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies
<b>HCL</b>	1.00E-02	2.00E-03	2.00E-03	2.00E-04	4.00E-04	N/A	2.00E-03	N/A
<b>SO2</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>HF</b>	4.00E-03	4.00E-04	5.00E-04	6.00E-05	4.00E-04	N/A	5.00E-04	N/A
<b>Hg</b>	2.00E-06	2.00E-07	4.00E-07	4.00E-08	1.00E-07	N/A	4.00E-07	N/A

## CSAPR Recent History

- Final rule replaced EPA's CAIR rule that was remanded by the DC Circuit
- Final Rule issued July 6, 2011
- EPA proposed technical adjustments published in the Federal Register October 14, 2011
- Effective date was January 1, 2012
- Stayed December 30, 2011
- Final Briefs due March 16, 2012
- Hearing expected in April –June
- Decision expected 3 to 4 months after Hearing (September – October)

# Cross State Air Pollution Rule (CSAPR)

- Rule is intended to address upwind state emissions causing violations of 1997 (annual) and 2006 (24 hour) PM<sub>2.5</sub> NAAQS and the **1997 (8 hour) Ozone NAAQS**
- Rule reduces power plant SO<sub>2</sub> emissions by 73% and NO<sub>x</sub> emissions by 54% over 2005 levels by 2014
- Twenty-eight states are required to reduce both annual SO<sub>2</sub> and NO<sub>x</sub> emissions as well as most will be required to reduce NO<sub>x</sub> emissions during the ozone season (May through September)
- **Restricted to EGU only** - No Opt in Opportunities
- **Sets method to calculate attainment for future NAAQS rules**

# Implementation

- Implemented by FIP until SIPs can be approved for States to speed implementation as directed by the Court
- Allowances assigned to Utility units for 2012 Annual SO<sub>2</sub>, Annual NO<sub>x</sub> and Ozone season NO<sub>x</sub>  
<http://www.epa.gov/crossstaterule/pdfs/UnitLevelAlloc.pdf>
- Cap and Trade allowed intrastate - Controlled interstate trading allowed without penalty up to a 20% cap



# CSAPR Revisions

- Postponement of assurance provision penalties
  - Compliance entities in states which exceed the assurance levels will not incur penalties until the 2014 compliance year
  - EPA wants to **allow time for CSAPR allowance trading market to develop**
- Adjustment of state budgets
  - Affected states: MI, **TX**, AR, NE, MS, NJ, **FL**, LA, NY, WI
  - Will change several state budgets to reflect new information regarding planned NO<sub>x</sub> and SO<sub>2</sub> control device installation
  - Adjusts some state budgets to account for changes in projected emissions, availability of non-fossil units, and operational constraints
- Will reflect existing consent decrees
  - Change will decrease allowances given to units which were allocated emissions greater than consent decree limits

# How Allowances are calculated

## Another Data Driven Rule

Determination of “significant contribution” through air modeling to determine upwind States that are affected

- Use a numerical threshold of 1% of the applicable NAAQS in another State

“**Base case**” emissions were determined for each EGU using an Integrated Planning Model (IPM)

- An economic model to forecast how the power sector produces electricity at least cost while meeting energy demand, reliability constraints and environmental requirements
- Using the average of years 2003 to 2007 as base line air quality data

## How Allowances are calculated (cont.)

“**State significant contribution**” was determined by the amount of emissions that could be reduced at a specific cost threshold for each EGU in the upwind State

- Annual Group 1 SO<sub>2</sub> threshold cost for 2012 was \$500/ton
- Annual Group 1 SO<sub>2</sub> threshold cost for 2014 was \$2300/ton
- Annual NO<sub>x</sub> and Group 2 SO<sub>2</sub> threshold cost was \$500/ton

The State allowances were then equal the “**base case**” minus the “**State significant contribution**”

# Industrial Units

- Not covered under rule
- CAIR eliminated - All allowances are expected to be retired
- NO<sub>x</sub> SIP Call – Acid Rain Allowances still required
- CSAPR allowances not available to industrials
- States not clear on what Industrials should do in 2012
- Round 2 of CSAPR will likely require inclusion of Industrial Units to address 2006 Ozone standards - Allowances will likely be assigned to Industrial boilers at that time



A photograph of a nuclear power plant with several large cooling towers and yellow buildings, set against a blue sky with white clouds. The plant is situated in a green field with trees in the foreground and power lines stretching across the middle ground.

**Questions?**

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