

# Implementation of the MACT Rule

Prepared for

McIlvain Hot Topic Hour

February 9, 2012

# What We Will Be Covering Today

- History
- Highlights
- Sub Categories
- EUG Definition
- What is in it
- What is missing
- Issues for Utilities
- Proposed Limits



# History

- 1990: Clean Air Act Amendments required EPA to issue HAPs standards. Since then, EPA has issued air toxics standards for most major source categories – except power plants.
- 1998: EPA released the Utility Toxics Study Report to Congress.
- 2000: EPA listed power plants for regulation under the Clean Air Act (CAA) air toxics provisions. EPA determined it was “appropriate and necessary” to regulate emissions of hazardous air pollutants (HAP) from power plants.
- 2005: EPA reversed power plant finding. EPA determined it was neither “appropriate nor necessary” to regulate HAP emissions from power plants and removed those units from the CAA section 112(c) source category list.

## History (Cont.)

- EPA issued the Clean Air Mercury Rule (CAMR), which regulated mercury from power plants through a cap and trade program under CAA section 111
- 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
- May 3, 2011: Federal Register publishes proposed rule.
- July 5, 2011: End of comment period on proposed rule.
- Final rule to be issued December 21, 2011, effective by March 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-01                  | 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 |
| <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      |

A large industrial facility, likely a nuclear power plant, is shown in the background. It features several tall, cylindrical cooling towers and two tall smokestacks. The plant buildings are yellow and blue. The facility is situated behind a green field with trees and power lines. The sky is blue with some white clouds.

**Questions?**

**Bill Campbell**  
**Vice President**  
**704 643-5196**  
**[William.Campbell@AECOM.com](mailto:William.Campbell@AECOM.com)**