

July 18, 2008

Via Overnight Delivery

Dean Ponchak
Division of Air Pollution Control
Ohio EPA-SEDO
2195 Front Street
Logan, Ohio 43138



**RE: American Municipal Power Generating Station
MACT Confirmation Analysis**

Dear Dean:

On February 7, 2008, Ohio EPA issued a final PSD air permit to install to American Municipal Power-Ohio, Inc. ("AMP-Ohio") for AMP-Ohio's proposed American Municipal Power Generating Station ("AMPGS"). Subsequent to the issuance of the final PSD permit to install for AMPGS, the D.C. Circuit Court of Appeals vacated the Clean Air Mercury Rule.

As such, AMP-Ohio submits the attached Clean Air Act Section 112(g) hazardous air pollutant maximum achievable control technology analysis to confirm that the Best Available Control Technology and Best Available Technology requirements established for AMPGS in the final PSD permit to install also satisfy the case-by-case maximum achievable control technology requirements of OAC 3745-31-28, which were not applicable to AMPGS at the time of the issuance of the PSD permit to install.

Please do not hesitate to contact me, Scott Kiesewetter or Chuck Taylor with questions.

Randy Meyer
Director of Environmental Affairs
American Municipal Power-Ohio, Inc.

cc: Rod Windle
Bob Hodanbosi
Mike Hopkins
Scott Kiesewetter

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**CLEAN AIR ACT SECTION 112(g)
HAZARDOUS AIR POLLUTANT (HAP)
MAXIMUM ACHIEVABLE CONTROL
TECHNOLOGY (MACT) ANALYSIS**

**For:
AMERICAN MUNICIPAL POWER
GENERATING STATION**

**Submitted By:
AMERICAN MUNICIPAL POWER-OHIO, INC.**

July 2008

GT

Environmental, Inc.

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**CLEAN AIR ACT SECTION 112(g)
 HAZARDOUS AIR POLLUTANT (HAP)
 MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY (MACT) ANALYSIS
 FOR
 AMERICAN MUNICIPAL POWER GENERATING STATION**

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SECTION 1

INTRODUCTION AND MACT SUMMARY

The Ohio Environmental Protection Agency (Ohio EPA) issued Permit-to-Install (PTI No. 06-08138) to American Municipal Power-Ohio, Inc. (AMP-Ohio) on February 7, 2008. PTI No. 06-08138 authorized the construction of a new pulverized coal-fired power plant known as the American Municipal Power Generating Station (AMPGS) in Meigs County, Ohio. At the time the PTI was issued, Hazardous Air Pollutants (HAPs) emissions from the two main boilers (emissions units B001 and B002) were limited by the following requirements:

- The federally enforceable provisions of the Ohio Clean Air Mercury Rule (CAMR) in Ohio Administrative Code (OAC) Chapter 3745-108;
- The federally enforceable standards for mercury emissions in 40 CFR Part 60, Subpart Da, Section 60.45Da; and
- Best Available Technology provisions that limit the total mercury emissions from each boiler to no more than 1.9 pounds per trillion Btu heat input as a 12-month rolling average and no more than 86 pounds per rolling, 12-month period.¹

The limitations in PTI No. 06-08138 conformed to the requirements of federal law at the time the permit was issued. These requirements were based on two related actions by the United States Environmental Protection Agency (US EPA): (1) On March 29, 2005 US EPA removed electric generating units (EGUs) from the Clean Air Act (CAA) Section 112(c) source category list; and (2) On May 18, 2005 US EPA promulgated the Clean Air Mercury Rule (CAMR) and established standards for mercury control pursuant to the CAA Section 111 NSPS.

Subsequent to the issuance of the PTI for the AMPGS, the United States Court of Appeals for the District of Columbia Circuit (DC Circuit) issued a final opinion in Case No. 05-1097. The DC Circuit's decision prompted the Ohio EPA to review the basis for the HAP emission limitations for the AMPGS in PTI No. 06-08138. Ohio EPA determined that an additional evaluation was warranted pursuant to Section 112(g)(2) of the CAA to confirm that the Best Available Control Technology (BACT) requirements established for the AMPGS were consistent with a case-by-case MACT determination pursuant to OAC rule 3745-31-28 Review of Major Stationary Sources of Hazardous Air Pollutants Requiring MACT Determinations (refer to Appendix A).

This MACT analysis for the AMPGS includes the following:

- A summary of the requirements of OAC rule 3745-31-28 (refer to Section 2);
- Information and data regarding the emissions units that are expected to have HAP emissions and the control systems and emissions limitations that constitute MACT (refer to Section 3);

¹ In the event that the limits are not practically and operationally achievable, AMP-Ohio may demonstrate that different mercury limitations are appropriate and obtain a modification from the Ohio EPA.

- A comparison of the MACT limitations proposed for the AMPGS versus the limitations included in other recent coal-fired EGU permits (refer to Section 4).

AMPGS MACT Summary

The two major MACT sources at the AMPGS are the pulverized coal-fired boilers (emissions units B001 and B002). None of the other emissions units are major MACT sources and the HAP emissions from the other units are negligible and well-controlled to meet the Best Available Control Technology (BACT) requirements of the Prevention of Significant Deterioration (PSD) regulations.

The overall air pollution control systems for each boiler (B001 and B002) includes: Good Combustion Design and Operation; Overfire Air, Low-NOx Burners (OFA/LNB) and Selective Catalytic Reduction (SCR); Pulsejet Baghouse; Wet Flue Gas Desulfurization (Wet FGD); and Wet Electrostatic Precipitator (Wet ESP).²

Although the overall air pollution control system was specified as Best Available Control Technology (BACT) or Best Available Technology (BAT) for the AMPGS in PTI No. 06-08138, the system also constitutes MACT for HAP emissions from boilers B001 and B002. MACT for each of these boilers is defined by the following limitations:

VOC (surrogate for organic HAPs)

- 0.0037 lb/mmBtu (3-hr average);
- 19.2 lb/hr (3-hr average); and
- 83.2 tons per rolling, 12-month period.

PM₁₀ filterable (surrogate for metal HAPs)

- 0.015 lb/mmBtu (3-hr average).

Hydrochloric Acid (also a surrogate for other acid HAPs)

- 0.00793 lb/mmBtu (3-hr average);
- 41.2 lb/hr (3-hr average); and
- 180.3 tons per rolling, 12-month period.

² If the designed control systems do not remove mercury to the levels anticipated, supplemental mercury control systems (for example carbon injection) will be implemented if demonstrated to be cost-effective and offer additional removal ability.

Mercury

- Comply with 40 CFR Part 60, Subpart Da;
- No more than 1.9 lb/trillion Btu heat input as a 12-month rolling average; and
- No more than 86 lb/rolling 12-month period.

SECTION 2**REQUIREMENTS OF OAC RULE 3745-31-28**

OAC rule 3745-31-28 was adopted by the Ohio EPA to incorporate the case-by-case MACT requirements of the Clean Air Act Section 112(g) and 40 CFR Part 63 Subpart B, Section 63.43. The complete text of OAC rule 3745-31-28 is included in Appendix A of this MACT analysis. In addition, Ohio EPA incorporated several definitions in OAC rule 3745-31-01 that are pertinent to the case-by-case MACT determinations. These include:

“Major MACT source” means any process or production unit that in and of itself has the potential to emit ten tons per year or more of any single HAP or twenty-five tons per year or more of any combination of HAPs.

“Process or production unit” means any collection of structures and/or equipment that processes, assembles, applies, or otherwise uses material inputs to produce or store an intermediate or final product. A single facility may contain more than one process or production unit.

“Maximum achievable control technology emission limitation for new sources” or “MACT emission limitation for new sources” means the emission limitation which is not less stringent than the emission limitation achieved in practice by the best controlled similar source, and which reflects the maximum degree of reduction in emissions that the director, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable by the constructed or reconstructed major MACT source.

Table 2-1 lists each item required for a case-by-case MACT determination in OAC rule 3745-31-28(D)(1) and (D)(2) together with the appropriate information/data for the AMPGS.

Table 2-1 Case-by-Case MACT Requirements in OAC Rule 3745-31-28(D)(1) and (D)(2)		
Paragraph	Requirement	Required Information/Data
(D)(1)(a)	The name and address of the major MACT source.	American Municipal Power Generating Station (AMPGS). Site Location: Letart Falls, Ohio (along Route 124, south of Plants Road and north of Cemetery Road) AMP-Ohio Mailing Address: Attn: Randy Meyer 2600 Airport Drive Columbus, Ohio 43219

**Table 2-1
Case-by-Case MACT Requirements in
OAC Rule 3745-31-28(D)(1) and (D)(2)**

Paragraph	Requirement	Required Information/Data
(D)(1)(b)	A brief description of the major MACT sources and an identification of the listed source category from Section 112(c).	The AMPGS includes the following major MACT sources (refer to Section 3 for a complete emissions unit list): B001 – 5,191 mmBtu/hr pulverized coal-fired boiler; and B002 – 5,191 mmBtu/hr pulverized coal-fired boiler. The Section 122(c) category for emissions units B001 and B002 is coal-fired EGUs.
(D)(1)(c)	The expected date that construction of the major MACT sources will commence.	B001 – 2009 B002 – 2009
(D)(1)(d)	The expected date that construction of the major MACT sources will be completed.	B001 – 2012 B002 – 2012
(D)(1)(e)	The anticipated date of start-up of the major MACT sources.	B001 – 2012 B002 – 2012
(D)(1)(f)	The HAPs to be emitted by the major MACT source(s) and the estimated emission rate for each HAP.	B001 and B002 (refer to Section 3 for emissions data): Acetaldehyde Benzene Benzyl Chloride Cyanide Compounds Hydrochloric Acid Isophorone Mercury Methyl Chloride Methyl Ethyl Ketone Propionaldehyde
(D)(1)(g)	The federally enforceable emission limitations applicable to the major MACT sources.	B001 and B002 (each unit): - 40 CFR Part 60, Subpart Da - OAC rules 3745-31-10 through 20 (PSD BACT) - OAC Chapter 3745-14 (NOx Budget) - OAC Chapter 3745-108 (CAMR) - OAC Chapter 3745-109 (CAIR) - OAC Chapter 3745-103 (Acid Rain)

**Table 2-1
Case-by-Case MACT Requirements in
OAC Rule 3745-31-28(D)(1) and (D)(2)**

Paragraph	Requirement	Required Information/Data
(D)(1)(h)	The maximum and expected utilization of capacity of the major MACT sources.	<p>Maximum Utilization:</p> <p>B001 and B002 – operating at 100% capacity factor 5,191 mmBtu/hr for 8,760 hrs/yr</p> <p>Expected Utilization:</p> <p>B001 and B002 – operating at between 90-100% capacity factor</p>
(D)(1)(i)	The controlled annual emissions (tons/yr or TPY) at the maximum and expected utilization of capacity	<p>B001 and B002 (refer to Section 3 for maximum emissions data for each boiler).</p> <p>The annual emissions at the expected utilization are reduced proportionately.</p>
(D)(1)(j)	The recommended emission limitation for the major MACT sources consistent with paragraph (E) of OAC rule 3745-31-28.	<p>Refer to Section 3 for a further discussion of the basis for these recommended MACT emission limitations.</p> <p>B001 and B002 (each unit):</p> <p><u>VOC (surrogate for organic HAPs)</u> 0.0037 lb/mmBtu (3-hr average); 19.2 lb/hr (3-hr average); and 83.2 tons per rolling, 12-month period.</p> <p><u>PM₁₀ filterable (surrogate for metal HAPs)</u> 0.015 lb/mmBtu (3-hr average).</p> <p><u>Hydrochloric Acid</u> 0.00793 lb/mmBtu (3-hr average); 41.2 lb/hr (3-hr average); and 180.3 tons per rolling, 12-month period.</p> <p><u>Mercury</u> Comply with 40 CFR Part 60, Subpart Da; No more than 1.9 lb/trillion Btu heat input as a 12-month rolling average; and No more than 86 lb/rolling 12-month period.</p>

SECTION 3 EMISSIONS UNITS, HAP EMISSIONS AND CONTROLS

AMPGS Emissions Units

Twenty emissions units are authorized for the AMPGS in PTI No. 06-08138. These emissions units and two exempt diesel engines are listed in Table 3-1 with the HAPs identified for each emissions unit. The two emissions units that are major MACT sources are the main boilers (B001 and B002).

Table 3-1 Emissions Units Authorized by PTI No. 06-08138 for Installation at the AMPGS		
Emissions Unit ID⁽¹⁾	Description	HAPs Emissions
B001 and B002	Two 5,191 mmBtu/hr Pulverized Coal-Fired Boilers	Acetaldehyde Benzene Benzyl Chloride Cyanide Compounds Hydrochloric Acid Isophorone Mercury Methyl Chloride Methyl Ethyl Ketone Propionaldehyde
B003 ⁽¹⁾	150 mmBtu/hr Natural Gas-Fired Boiler	Negligible
F001	Landfill	None
F002 & F003	Paved Roadways and Unpaved Roadways	None
F004	Coal Storage Piles	None
F005	Limestone/Urea Barge Unloading	None
F006	Limestone/Urea Storage Piles	None
P001 & P002	Cooling Cells for B001 and Cooling Cells for B002	None
P003	Ammonium Sulfate Crystallization Process	None
P004	Dry Fertilizer Material Handling	None
P901	Coal Barge Unloading	None
P902	Coal Conveying, Handling and Crushing	None
P903	Limestone/Urea Preparation Building	None
P904	Gypsum Conveying, Handling and Storage	None
P905	Flyash Conveying, Handling and Storage for B001	None
P906	Flyash Conveying, Handling and Storage for B002	None
P907	Dry Fertilizer Barge Loading	None
Z001 ⁽²⁾	Diesel Engine Emergency Electric Generating Unit	Negligible
Z002 ⁽²⁾	Diesel Engine Emergency Fire Water Pump	Negligible
Notes: ⁽¹⁾ The total natural gas input to this boiler is restricted to no more than 131,400 million Btu per rolling 12-month period. ⁽²⁾ The two diesel engines are exempt from air permit requirements pursuant to OAC rule 3745-31-03(A)(4) and are limited to operating no more than 500 hours per rolling 12-month period.		

HAP Emissions from B001 and B002

Table 3-2 presents the maximum hourly (lb/hr) and maximum annual (tons per year) emission estimates for each HAP that will be emitted from the main boilers B001 and B002.

Table 3-2 Maximum Hourly and Maximum Annual HAP Emissions from Boilers B001 and B002 at the AMPGS		
HAP	Maximum Hourly Emissions⁽¹⁾ (lb/hr)	Maximum Annual Emissions⁽¹⁾ (TPY)
Acetaldehyde	0.18	0.79
Benzene	0.41	1.80
Benzyl Chloride	0.22	0.97
Cyanide Compounds	0.79	3.47
Hydrochloric Acid	41.2	180.3
Isophorone	0.18	0.81
Mercury	0.0098	0.043
Methyl Chloride	0.17	0.74
Methyl Ethyl Ketone	0.12	0.54
Propionaldehyde	0.12	0.53

Notes:
⁽¹⁾ The maximum hourly and annual emissions are per boiler.

HAP Pollution Control Systems

The air pollution control system for the main boilers at the AMPGS (B001 and B002) has been determined to meet the BACT requirements of the PSD regulations and will also minimize emissions of the HAP air pollutants listed above. This system includes the following components:

- Good Combustion Design and Operation to minimize Carbon Monoxide (CO), Volatile Organic Compound (VOC), Organic Compound (OC) and organic HAP emissions;
- Overfire Air, Low-NOx Burners (OFA/LNB) and Selective Catalytic Reduction (SCR) to minimize Nitrogen Oxide (NO_x) emissions;
- Pulsejet Baghouse to minimize filterable Particulate Matter (PM), PM₁₀ and metal HAP emissions;
- Wet Flue Gas Desulfurization (Wet FGD) to minimize Sulfur Dioxide (SO₂) and water soluble HAP emissions;
- Wet Electrostatic Precipitator (Wet ESP) to minimize acid gas, PM₁₀ emissions and HAP emissions; and

- Additional control systems for mercury (for example carbon injection or comparable technology) if needed and cost effective.

Following is a brief explanation of how these emission controls will be utilized at the AMPGS to minimize each category of HAPs emitted by boilers B001 and B002 at the AMPGS:

Organic HAPs. Organic emissions are attributable to incomplete combustion. The design of modern pulverized coal-fired boilers maximizes the efficiency of combustion and thereby minimizes the uncontrolled rate of CO, VOC and other organic emissions. This is accomplished through the proper design and operation of the combustion air delivery systems from boilers B001 and B002 at the AMPGS.

AMP-Ohio proposes that the BACT limitations in PTI No. 06-08138 for VOC emissions be a surrogate for MACT for all of the organic HAPs emitted from B001 and B002 as follows:

- 0.0037 lb VOC/mmBtu (3-hr average);
- 19.2 lb VOC/hr (3-hr average); and
- 83.2 tons VOC per rolling, 12-month period.

Trace Metal HAPs. HAP metals are present in small amounts in coal. As with the other constituents, a small portion of these HAP metals are retained in the bottom ash of the boiler. The trace metal HAP compounds that are present in the boiler flue gases will be controlled by the baghouse, Wet FGD and Wet ESP control systems that are specified as BACT for the control of total (filterable + condensable) PM₁₀, SO₂ and H₂SO₄ emissions. The combination of the baghouse, Wet FGD and Wet ESP control systems also constitutes MACT for trace metals HAP control from boilers B001 and B002 at the AMPGS.

AMP-Ohio proposes that the BACT limitations in PTI No. 06-08138 for filterable PM₁₀ emissions be a surrogate for MACT for all of the metal HAPs emitted from B001 and B002 as follows:

- 0.015 lb PM₁₀/mmBtu (3-hr average).

Hydrochloric Acid and Other Soluble HAPs. Chlorine is present in small amounts in coal. Coals mined in the western United States typically have higher amounts of chlorine than coals mined in the eastern United States. A small portion of the chlorine is retained in the bottom ash of the boiler. The chlorine present in the coal reacts during combustion to form emissions of hydrochloric acid. The hydrochloric acid that is present in the boiler flue gases is water soluble and will be effectively controlled by the Wet FGD and Wet ESP control systems that are specified as BACT for the control of SO₂ and H₂SO₄ emissions. The combination of the Wet FGD and Wet ESP control systems constitute MACT for hydrochloric acid control from boilers B001 and B002 at the AMPGS.

AMP-Ohio proposes that MACT for hydrochloric acid emissions from B001 and B002 be a surrogate for MACT for all of the acid HAPs and be defined as follows:

- 0.00793 lb/mmBtu (3-hr average);
- 41.2 lb/hr (3-hr average); and
- 180.3 tons per rolling, 12-month period

Mercury. Trace amounts of mercury are found naturally in coal. Coal combustion releases elemental mercury into the flue gas where it may be oxidized. Some mercury adheres to the surface of fly ash or unburned carbon and remains particulate bound. Each of these forms of mercury (elemental mercury, oxidized mercury and particulate bound mercury) are found in coal combustion flue gas in varying proportions and have different properties that affect removal efficiencies with various emissions control equipment. Some of the factors that affect the speciation of mercury include flue gas residence time, boiler and flue gas temperature, pollution control equipment, flue gas moisture, quantity of unburned coal (carbon), and coal characteristics including mercury content, fly ash content, chlorine content, and sulfur content. The mercury emissions rate from a specific coal-fired plant is difficult to predict given the complex relationship of all of these factors.

AMP-Ohio expects the overall air pollution control system and the fuels employed at the AMPGS will be sufficient to minimize mercury emissions consistent with the limitations in PTI No. 06-08138. Nonetheless, AMP-Ohio will consider the use of a supplemental mercury control system (for example a carbon injection system or comparable technology) to further control mercury emissions if needed and cost effective.

At this point, AMP-Ohio does not believe it is appropriate to commit only to the use of carbon injection at the AMPGS based on three factors: (1) There is evidence that carbon injection may not be an effective supplement to the other control systems that will be employed at the AMPGS; (2) The use of carbon injection will prevent the use of beneficial use of the ash as a concrete additive; and (3) The cost of carbon injection may be disproportionate to the additional mercury reduction achieved.

In summary, there are many variables that affect how carbon injection will impact mercury removal from the flue gases at the AMPGS. The proposed emissions system may remove the different mercury species to the desired level. If this is the case, there may be only a small or no additional benefit associated with the installation and operation of a carbon injection system. In the event that the proposed emissions system does not remove mercury to the desired level, activated carbon injection or other methods that may be available at the time the plant comes on line can be evaluated and tailored to the specific characteristics of the AMPGS and the fuel supplies that are being utilize.

AMP-Ohio proposes that MACT for mercury emissions from B001 and B002 be defined as follows:

- Comply with 40 CFR Part 60, Subpart Da;
- No more than 1.9 lb/trillion Btu heat input as a 12-month rolling average; and
- No more than 86 lb/rolling 12-month period.

SECTION 4 COMPARISON OF HAP EMISSIONS LIMITS FOR EGUs

OAC rule 3745-31-28(E)(1) states that the MACT emission limitation or MACT requirements “shall not be less stringent than the emission control which is *achieved in practice* by the best controlled similar source”. Actual HAPs emissions data are not available for the pulverized coal-fired EGUs that are comparable in terms of air pollution control systems and range of possible coal supplies to the AMPGS. As a result, this MACT analysis relies on comparisons with the HAP emission limitations established in other recent EGU permits (i.e., not yet in operation or achieved in practice) to support the conclusion that the MACT limitations proposed by AMP-Ohio are as stringent, or more stringent, than the HAPs limitations for the best controlled similar sources.

AMP-Ohio has identified four permits for coal-fired EGUs that are comparable to the AMPGS that were issued between December 20, 2000 (the date that EGUs were added to the Section 112(c) category list) and March 29, 2005 (the date that EGUs were removed from the Section 112(c) list). Tables 4-1 through 4-4 summarize the HAP emissions limitations in the four permits.

Table 4-1		
MidAmerican Energy Company - CBEC 4 Boiler (7,675 mmBtu/hr)		
(issued June 17, 2003)		
HAP	Emission Rate	Basis
Mercury	1.7 x 10 ⁻⁶ lb/mmBtu (3-hr average)	Case-by-Case MACT Section 112(g)
HCl	2.9 x 10 ⁻³ lb/mmBtu (3-hr average)	
HF	3.0 x 10 ⁻⁴ lb/mmBtu (3-hr average)	
Total Selected Metals	1.04 x 10 ⁻⁴ lb/mmBtu (3-hr average) (arsenic, beryllium, cadmium, chromium, lead, manganese, nickel and selenium)	
Federal PM	0.018 lb/mmBtu (3-hr average)	
CO	0.154 lb/mmBtu (1-day average)	

Table 4-2		
Santee Cooper Cross Generating Station - Units 3 and 4 (5,700 mmBtu/hr per boiler)		
(issued February 5, 2004)		
HAP	Emission Rate	Basis
Mercury	3.6 x 10 ⁻⁶ lb/mmBtu (3-hr average)	Case-by-Case MACT
Beryllium	8.44 x 10 ⁻⁷ lb/mmBtu (3-hr average)	
HCl	2.4 x 10 ⁻³ lb/mmBtu (3-hr average)	
HF	3.0 x 10 ⁻⁴ lb/mmBtu (3-hr average)	
Antimony	7.0 x 10 ⁻⁷ lb/mmBtu (3-hr average)	
Arsenic	1.6 x 10 ⁻⁵ lb/mmBtu (3-hr average)	
Cadmium	2.1 x 10 ⁻⁶ lb/mmBtu (3-hr average)	
Chromium	1.4 x 10 ⁻⁵ lb/mmBtu (3-hr average)	
Cobalt	4.0 x 10 ⁻⁶ lb/mmBtu (3-hr average)	
Manganese	2.0 x 10 ⁻⁵ lb/mmBtu (3-hr average)	
Nickel	1.1 x 10 ⁻⁵ lb/mmBtu (3-hr average)	
Selenium	5.2 x 10 ⁻⁵ lb/mmBtu (3-hr average)	

Table 4-3 Longview Power, LLC - Pulverized Coal-Fired Boiler (6,114 mmBtu/hr) (issued March 2, 2004)		
HAP	Emission Rate	Basis
Mercury	0.0146 lb/hr (3-hr average) 0.0638 TPY (12-mo rolling average)	Not specified in permit
Beryllium	0.00546 lb/hr (3-hr average)	
HCl	0.00214 lb/hr (1.0 x 10 ⁻⁵ lb/mmBtu) (3-hr average)	
HF	0.00214 lb/hr (1.0 x 10 ⁻⁵ lb/mmBtu) (3-hr average)	

Table 4-4 Thoroughbred Generating Company, LLC - Units 1 & 2 (7,443 mmBtu/hr per boiler) (issued October 29, 2004 and revised February 17, 2005)		
HAP	Emission Rate	Basis
Mercury	0.00000321 lb/mmBtu (quarterly average)	BACT
Beryllium	0.000000944 lb/mmBtu (quarterly average)	BACT
Lead	0.00000386 lb/mmBtu (quarterly average)	BACT
HF	0.000159 lb/mmBtu (30-day rolling average)	BACT
VOC (HAPs)	5.154 TPY per unit	Case-by-Case MACT pursuant to 40 CFR § 63.43(d)
Mercury	0.1047 TPY per unit	
HCl	26.90 TPY per unit	
HF	5.1684 TPY per unit	
Arsenic	0.0288 TPY per unit	
Beryllium	0.0308 TPY per unit	
Chromium	0.3419 TPY per unit	
Manganese	0.6825 TPY per unit	
Lead	0.126 TPY per unit	
Cadmium	0.0119 TPY per unit	

AMP-Ohio has identified five permits for coal-fired EGUs that are comparable to the AMPGS that were issued between May 18, 2005 (the date that CAMR rules were adopted) and February 8, 2008 (the date of the DC Circuit decision). Tables 4-5 through 4-9 summarize the HAP emissions limitations in the five permits.

Table 4-5 Prairie State Generating Company, LLC - Units 1 & 2 (750 MW net per unit) (effective June 8, 2005)		
HAP	Emission Rate	Basis
Mercury ¹	Option A: 95% reduction; or Option B: activated carbon injection	Case-by-Case MACT pursuant to Section 112(g)
Fluorides	0.00026 lb/mmBtu (3-hr average)	
HCl ¹	Option A: 0.0032 lb/mmBtu; or Option B: 98% control	
¹ The permit options take effect 12 months after initial start-up of the boiler if US EPA has not adopted an EGU MACT. If US EPA adopts an EGU MACT, the boilers must meet the mercury and HCl limitations in those rules.		

Table 4-6 LG&E Trimble - Unit 2 (6,942 mmBtu/hr) (issued January 4, 2006)		
HAP	Emission Rate	Basis
Mercury	13 x 10 ⁻⁶ lbs/MWh (12-month rolling average)	40 CFR 60.45a (NSPS Subpart Da)
HF	1.55 lb/hr (3-hr rolling average)	401 KAR 51:017 (PSD)

Table 4-7 Western Farmers Electric Cooperative Hugo Generating Station Unit 1 (4,600 mmBtu/hr) (issued either December 6, 2006 or January 29, 2007)		
HAP	Emission Rate	Basis
Mercury ¹	66 x 10 ⁻⁶ lbs/MWh (12-month rolling average)	40 CFR 60.45a (NSPS Subpart Da)
¹ The mercury limit is based on US EPA's October 28, 2005 notice of reconsideration of the CAMR. If this rule is not adopted, the mercury limit reverts to the original CAMR rate of 42 x 10 ⁻⁶ lbs/MWh (12-month rolling average).		

Table 4-8 Longleaf Energy Associates, LLC - Units 1 & 2 (600 MW per unit) (effective May 14, 2007)		
HAP	Emission Rate	Basis
Mercury	PRB – 15 x 10 ⁻⁶ lbs/MWh (annual average) CAPP – 6 x 10 ⁻⁶ lbs/MWh (annual average)	40 CFR 60.45a (NSPS Subpart Da)
HF	PRB – 9.5 x 10 ⁻⁴ lb/mmBtu (3-hr average) CAPP – 1.4 x 10 ⁻³ lb/mmBtu (3-hr average)	BACT
HCl	PRB – 0.0013 lb/mmBtu (3-hr average) CAPP – 0.0083 lb/mmBtu (3-hr average)	Georgia Air Toxic Guideline

Table 4-9 AEP John W. Turk, Jr. Power Plant – Unit #1 (600 MW) (draft permit May 25, 2007)		
HAP	Emission Rate	Basis
Mercury ¹	66 x 10 ⁻⁶ lbs/MWh (12-month rolling average)	40 CFR 60.45a (NSPS Subpart Da)
HF	5.4 lb/hr and 23.7 TPY	General rule to prevent unacceptable air pollution
HCl	17.4 lb/hr and 76.2 TPY	
Lists all other HAPs	lb/hr and TPY for each HAP	

As expected, with the exception of the Prairie State Generating Company, LLC (Prairie State), none of the permits issued for EGUs subsequent to May 18, 2005 but before February 8, 2008 (the date of the DC Circuit decision) reference Section 112(g). It appears the Prairie State permit references Section 112(g) (i.e., the case-by-case MACT) because this facility was well into the permitting process when the US EPA removed coal-fired EGUs from the Section 112(c) source category list.

The five coal-fired EGU permits³ that established HAP emissions limitations pursuant to the CAA Section 112(g) case-by-case MACT requirements contain significantly different lists of HAPs and significantly different emission rates. For example, the permit for Prairie State includes emission limitations for three HAPs (mercury, fluorides and hydrochloric acid) while the permit for the Santee Cooper Cross Generating Station includes emissions limitations for those three HAPs plus nine additional HAPs. The mercury limitations specified in these five permits vary significantly as indicated in Table 4-10, from 1.7 lb/mmBtu in the permit for the MidAmerican Energy Company CBEC 4 Boiler to 3.6 lb/mmBtu in the permit for the Santee Cooper Cross Generating Station Units 3 and 4.

Table 4-10 Comparison of Mercury Emission Limitations Established for Coal-Fired EGUs Pursuant to Section 112(g)		
Facility/Unit	Permit Date	Mercury Emission Limit
MidAmerican Energy Company CBEC 4 Boiler	June 17, 2003	1.7 x 10 ⁻⁶ lb/mmBtu
Santee Cooper Cross Generating Station Units 3 and 4	February 5, 2004	3.6 x 10 ⁻⁶ lb/mmBtu
Longview Power, LLC	March 2, 2004	2.39 x 10 ⁻⁶ lb/mmBtu (0.0146 lb/hr/6,114 mmBtu/hr)
Thoroughbred Generating Company, LLC Units 1 & 2	October 29, 2004 Revised: February 17, 2005	3.21 x 10 ⁻⁶ lb/mmBtu
Prairie State Generating Company, LLC Units 1 & 2	June 8, 2005	Option A: 95% reduction Option B: activated carbon injection

³ Although the Longview Power, LLC permit does not include a reference to Section 112(g), AMP-Oho assumes the HAPs emissions limitations are based on the case-by-case MACT requirement.

The permits for the MidAmerican Energy Company CBEC 4 Boiler and the Thoroughbred Generating Company, LLC Units 1 & 2 both use surrogate pollutants to reflect a MACT level of control for HAPs. The permit for MidAmerican Energy Company CBEC 4 Boiler establishes emissions limitations for PM, total selected metals, and CO as surrogates for limits for individual HAPs. The permit for Thoroughbred Generating Company, LLC Units 1 & 2 establishes an emissions limitation for VOC as a surrogate for limits for specific volatile HAPs.

AMP-Ohio believes that a review of these other coal-fired EGU permits supports the proposed HAP emission limitations for the AMPGS as follows:

VOC (surrogate for organic HAPs)

- 0.0037 lb/mmBtu (3-hr average);
- 19.2 lb/hr (3-hr average); and
- 83.2 tons per rolling, 12-month period.

PM₁₀ filterable (surrogate for metal HAPs)

- 0.015 lb/mmBtu (3-hr average).

Hydrochloric Acid

- 0.00793 lb/mmBtu (3-hr average);
- 41.2 lb/hr (3-hr average); and
- 180.3 tons per rolling, 12-month period.

Mercury

- Comply with 40 CFR Part 60, Subpart Da;
- No more than 1.9 lb/trillion Btu heat input as a 12-month rolling average; and
- No more than 86 lb/rolling 12-month period.

APPENDIX A

OAC Rule 3745-31-28

3745-31-28 Review of major stationary sources of hazardous air pollutants requiring MACT determinations.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, federal rules, and federal statutory provisions referenced in this rule, see "Incorporation by Reference" at the end of rule 3745-31-01 of the Administrative Code.]

(A) Applicability

Except as provided in paragraph (C) of this rule, the requirements of this section apply to the construction or reconstruction of a major MACT source.

(B) Requirements

On or after June 29, 1998, no person may cause, permit, or allow the beginning of actual construction or reconstruction of any process or production unit that is a major MACT source without first applying for and obtaining a MACT determination from the director unless specifically exempted under paragraph (c) of this rule.

(C) Exemptions

The following major MACT sources are exempt from the requirements of this rule:

- (1) Any major MACT source that has been specifically regulated or exempted from regulation under a federal standard issued pursuant to Section 112(d) or Section 112(h) of the Clean Air Act and incorporated in a subpart of 40 CFR Part 63, or under a determination issued pursuant to Section 112(j) of the Clean Air Act;
- (2) Any major MACT source that has received a final permit-to-install before June 29, 1998;
- (3) Any major MACT source that is an electric utility steam generating unit, unless and until such time as these units are added to the source category list pursuant to Section 112(c)(5) of the Clean Air Act;
- (4) Any major MACT source that is within a source category which has been deleted from the source category list pursuant to Section 112(c)(9) of the Clean Air Act; or
- (5) Any major MACT source that is a research and development activity.

(D) Data submission

The permit application for a major MACT source to which this rule applies shall specify a control technology selected by the applicant that, if properly maintained and operated, will satisfy the requirements of paragraph (e) of this rule.

- (1) In each case where a constructed or reconstructed major MACT source would require additional control technology or change in control technology, the application for a MACT determination shall contain the following information:

(a) The name and address (physical location) of the major MACT source to be constructed or reconstructed.

(b) A brief description of the major MACT source to be constructed or reconstructed and identification of any listed source category or source categories from Section 112(c) of the Clean Air Act in which it is included.

(c) The expected commencement date for the construction or reconstruction of the major MACT source.

(d) The expected completion date for the construction or reconstruction of the major MACT source.

(e) The anticipated date of start-up for the constructed or reconstructed major MACT source.

(f) The HAPs to be emitted by the constructed or reconstructed major MACT source, and the estimated emission rate for each such HAP, to the extent that this information is required by the director.

(g) Any federally enforceable emission limitations applicable to the constructed or reconstructed major MACT source.

(h) The maximum and expected utilization of capacity of the constructed or reconstructed major MACT source, and the associated uncontrolled emission rates for that source to the extent this information is needed by the director to determine MACT.

(i) The controlled emissions for the constructed or reconstructed major MACT source (in tons per year) at expected and maximum utilization of capacity to the extent this information is needed by the director to determine MACT.

(j) A recommended emission limitation for the constructed or reconstructed major MACT source consistent with the principles set forth in paragraph (e) of this rule.

(k) Any other relevant information required pursuant to 40 CFR Part 63, Subpart A.

(l) The control technology selected to meet the recommended MACT emission limitation, including technical information on the design, operation, size, and estimated control efficiency of the control technology.

(m) Supporting documentation including identification of alternative control technologies considered by the applicant to meet the emission limitation, and analysis of cost and non-air quality health and environmental impacts or energy requirements for the selected control technology.

(2) In each case where an applicant contends that a constructed or reconstructed major MACT source will be in compliance, upon start-up, with case-by-case MACT without a change in control technology, the application shall contain the following information:

- (a) The information described in paragraphs (D)(1)(a) to (D)(1)(j) of this rule; and
- (b) Documentation of the control technology in place.

(E) Principles of MACT determination

The following general principles shall govern preparation by the applicant of each permit application requiring a MACT determination, and all subsequent review of and actions taken concerning such an application:

- (1) The MACT emission limitation or MACT requirements recommended by the applicant and approved by the director shall not be less stringent than the emission control which is achieved in practice by the best controlled similar source, as determined by the director.
- (2) Based upon available information as defined in this rule, the MACT emission limitation and control technology recommended by the applicant and approved by the director shall achieve the maximum degree of reduction of HAP emissions which can be achieved by utilizing those control technologies identified in the available information, considering the costs of achieving such emission reduction and any non-air quality health and environmental impacts and energy requirements associated with the emission reduction.
- (3) The applicant may recommend, and the director may approve, a specific design, equipment, work practice, operational standard, or combination thereof, if the director determines that it is not feasible to prescribe or enforce an emission limitation.
- (4) If a federal emission standard has been proposed pursuant to Sections 112(d) or 112(h) of the Clean Air Act, or if the United States environmental protection agency has adopted a presumptive MACT determination for the source category which includes the constructed or reconstructed source, then the MACT requirements applied to the source shall have considered those emission limitations and requirements of the proposed MACT standard or presumptive MACT determination.
- (5) Any permit-to-install containing a MACT determination shall include all monitoring, testing, record keeping, and reporting requirements necessary to ensure initial and ongoing compliance of the major MACT source with the MACT determination.

(F) Prohibition

No person may begin actual construction or reconstruction of a major MACT source until the director has made a MACT determination for that source and included the requirements of that determination in a final and effective permit-to-install.

(G) The effective date of the MACT determination shall be the date of issuance of the permit-to-install.

(H) On and after the date of start-up, a major MACT source which required a case-by-case MACT determination shall be in compliance with all the applicable requirements of the MACT determination as specified in the final permit-to-install.

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