

financing decisions. On several occasions your staff asked that the emission levels for which guarantees are achievable for purposes of the rulemaking be identified in comments. Accordingly, in response to your specific request, we urge you to revise the MACT standards by adopting the most stringent case-by-case MACT determination recently made by the various state permitting authorities. These MACT determinations were conducted in strict compliance with a most rigorous procedure set forth in regulation by EPA, subjected to public review and comment, and in many cases have undergone administrative and judicial review. We recommend the following emission standards for new EGU facilities, all of which were established as MACT for Wolverine Clean Energy Venture (The surrogate metric strategy as proposed by EPA is followed here, with the exception that filterable PM<sub>10</sub> rather than PM total is the appropriate metric selected in each of the case-by-case MACT analyses):

TABLE 1 – COMPARISON OF ACHIEVABLE VS. EPA PROPOSED MACT LIMITATIONS

	Permit MACT Analysis (Case-by- case)	EPA-proposed MACT for “new units”	EPA-proposed MACT for “existing units”
PM <sub>10</sub> (filterable)	0.010 lb/mmBtu	0.0056 lb/mmBtu	0.030 lb/mmBtu <sup>1</sup>
HCl (bituminous)	0.0011 lb/mmBtu	0.000323 lb/mmBtu	0.0020 lb/mmBtu
Hg (non- Lignite) <sup>2</sup>	0.0077 lb/GWh	0.0002 lb/GWh	0.008 lb/GWh

We note that our proposed emission limitations, while less severe than those proposed by EPA for new units, are also more stringent than those proposed by EPA for existing units. We remind EPA that even our recommended limits, with the exception of PM<sub>10</sub>, have not yet received either vendor or EPC guarantees, nor have they been established by contract(s). Plant Washington’s limits were not established by the case-by-case determination as they were established following the proposal date of the EPA’s EGU MACT. In this situation the permitting authority simply imposed the EPA’s own proposed rule as permit conditions.

Additionally, EPA should establish a subcategory consisting of units that had received air construction permits but had not yet commenced construction as of the date of EPA’s proposed rule. Such a category would be justified because a substantial amount of time, money, and effort have been invested in these units. Imposing new source standards on these units for which EPA’s proposed rule had not been anticipated during

<sup>1</sup> Limitation indicated is for Total PM<sub>10</sub>. EPA has not proposed a limit for filterable PM<sub>10</sub>.

<sup>2</sup> We do not recommend a specific limitation for lignite coal as we do not intend to use lignite as a fuel. However, EPA should retain a sub-category for lignite in the final rule.

their permit consideration would unreasonably and arbitrarily impose additional costs and burdens on these projects and would likely threaten the viability of many of them. The standards for this subcategory would be based on the anticipated performance of these units (as reflected by the permitted case-by-case emission levels), ensuring a reasonable and appropriate level of HAPs control without unreasonably and arbitrarily upsetting the development of these units.

If EPA does not alter the final emission limits consistent with our recommendations, consistent with the timeline in 40 CFR 63.44(b)(1) and (2), EPA should expressly provide in the final rule a period of eight years following commencement of operation for these facilities to demonstrate compliance with the final HCl, Hg, and the non-mercury metal HAP standards. We also recommend that the final rule provide this same period for compliance for the non-major sources in this group as well. This provision would be both necessary and appropriate, given the absence of currently available vendor and/or erector guarantees necessary so that the current projects may be financed.

We appreciate your attention to this letter and are prepared to meet with you as a group to discuss these matters at your convenience. Please contact Wayne Penrod for additional information or with any questions.

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## EXHIBIT A – PERMITTED EGUS IMPACTED BY EPA-PROPOSED NEW UNIT MACT

<i>Plant Name</i>	<i>Developer/Utility</i>	<i>Size (MW)</i>	<i>Type</i>	<i>State</i>	<i>Permit Date</i>
Trailblazer	Tenaska	900	SCPC w/ CCS	Texas	12/14/2010
Taylorville	Tenaska	770	IGCC w/ CCS	Illinois	6/5/2007
Longleaf	LS Power	1200	SCPC	Georgia	5/15/2007
Plant Washington	POWER4Georgians	800	SCPC	Georgia	4/8/2010
<b>Holcomb 2</b>	<b>Sunflower Electric Power</b>	<b>895</b>	<b>SCPC</b>	<b>Kansas</b>	12/16/2010
White Stallion Energy Center	White Stallion Energy	1320	CFB	Texas	12/27/2010
<b>Holland Board of Public Works</b>	<b>City of Holland</b>	<b>78</b>	<b>CFB</b>	<b>Michigan</b>	2/11/2011
<b>Wolverine Clean Energy Venture</b>	<b>Wolverine Power Cooperative</b>	<b>600</b>	<b>CFB</b>	<b>Michigan</b>	6/29/2011
<b>Coletto Creek 2</b>	<b>South Texas Electric Cooperative</b>	<b>650</b>	<b>SCPC</b>	<b>Texas</b>	4/28/2010
Limestone 3	NRG Texas LP	750	SCPC	Texas	12/1/2009
<b>Karn-Weadock Complex</b>	<b>Consumers Energy</b>	<b>830</b>	<b>SCPC</b>	<b>Michigan</b>	12/29/2009
Summit	Texas Clean Energy Project	375	IGCC	Texas	12/31/2010
		9168			

Note: Owners/developers/participants of the projects in bold are members of the Coalition of New Units.

**EXHIBIT B - COALITION OF NEW UNITS MEMBERS**

City of Holland Michigan Board of Public Works — Mr. Loren Howard

CMS Energy Corporation — Ms. Nancy A. Papa

South Texas Electric Cooperative, Inc. — Mr. John Packard

Sunflower Electric Power Corporation — Mr. Wayne E. Penrod

Wolverine Power Supply Cooperative, Inc. — Mr. Brian Warner

# RMB Consulting & Research, Inc.

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## MEMORANDUM

**FROM:** Ralph L. Roberson, P.E.   
**DATE:** August 1, 2011  
**SUBJECT:** Comments on EPA's 2011 Proposed Utility MACT Rule

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### INTRODUCTION

On May 3, 2011 EPA proposed its National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units<sup>1</sup> (76 Fed. Reg., 24,976). Because the emission standards set forth in this NESHAPs are based on emission reductions assuming application of maximum achievable control technology (MACT), such rules are often referred to as "MACT rules" or "MACT standards." I, in my capacity as a Senior Consultant with RMB Consulting & Research, Inc. was asked to review and to provide technical comments on EPA's proposed EGU MACT Rule. Specifically, I was asked to focus on the proposed emission limits that affect new, coal-fired units, recognizing that the emission limits for new units are applicable to any EGU that commenced construction after the proposed MACT Rule was published in the Federal Register.

Based on my review of the proposed MACT Rule, and based on my ~40 years of experience in air pollution control, I have significant concern that new coal-fired electric generating units will be unable to meet the standards for new units in EPA's proposed MACT rule.<sup>2</sup> If my concerns are correct and EPA fails to increase the emission limits in the final rule, the result will be that constructing new coal-fired electrical generation capacity in the United States will no longer be a viable option. The basis for my conclusion is provided in this memorandum.

### OVERVIEW

Over the 20 plus years since the U.S. Congress amended Section 112 of the Clean Air Act (CAA), it has generally become accepted that EPA is required to determine MACT floors for new units that reflect the emission control that is achieved in practice by the best controlled similar source. On first glance, this may appear to be a relatively straightforward procedure. However, in reality, determining what "achieved in practice" actually means as well as defining a similar source has proven to be very challenging for the Agency.

I have several levels of concern as to the effect the new unit emission limits presented in Table 1 of the proposed rule will have on new coal-fired units.<sup>3</sup> First, EPA employs what has become known as a "Franken-Plant" approach to set emission limits for individual hazardous air

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<sup>1</sup> 76 Fed. Reg., 24,976 (May 3, 2011).

<sup>2</sup> My review and reference to new coal-fired units does not include IGCC units, which are regulated in a different subcategory from coal-fired units in EPA's proposed MACT rule.

<sup>3</sup> 76 Fed. Reg., 25,124 (May 3, 2011).

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pollutants (HAPs) under which no single existing unit has been shown to meet all of the proposed standards. Second, given the huge database generated by EPA's massive 2010 EGU information collection request (ICR), simple probability theory informs us that there will be some extremely low concentrations measured – even though those measurements likely cannot be replicated. Third, when EPA identifies the best performing unit as the one with the lowest emissions, the Agency is often working with data points that are at or below the method detection limits.

**TECHNICAL DISCUSSION**

Franken-Plant Approach

The way in which EPA developed its proposed MACT emission limits has become known as the “Franken-Plant” approach. EPA has determined each individual MACT limit based on emissions of the best performing unit for that particular pollutant or HAP. In reality, however, no actual single plant meets all of the MACT standards that EPA has proposed, just as Dr. Frankenstein's fictitious monster bore no resemblance to an actual human being.

Although EPA's “Franken-Plant” approach for setting emission limits for existing sources is equally flawed to the Agency's approach for setting emission limits for new sources, it is easier to demonstrate and comprehend the Agency's error for new sources. The relevant statutory provision is, *the maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory shall not be less stringent than the emission control that is achieved in practice by the best controlled similar source.*<sup>4</sup> Note that the statute refers to a single source – not multiple sources. If Congress had intended for EPA to set emission limits based on a “Franken-plant” approach, the statute would read -- *best controlled similar sources*.

Using three EPA spreadsheets that the Agency posted on one of its web sites,<sup>5</sup> it is fairly straightforward to determine which individual unit EPA used to set the MACT floor for new units. Those units are listed in Table 1. From Table 1, it should be obvious that no existing unit meets all of the proposed emission limits for a new EGU.

**Table 1. EPA's Franken Plant Approach For New Units.**

Pollutant	Facility	99% UPL (lb/MWh)	Total Metal Ranking
Total PM	AES Hawaii	0.049	11 <sup>th</sup>
Total Metals	Cedar Bay Unit A	3.3 x 10 <sup>-5</sup>	--1 <sup>st</sup> --
Antimony (Sb)	AES Hawaii Unit 2	7.6 x 10 <sup>-8</sup>	11 <sup>th</sup>
Arsenic (As)	Oak Grove Unit 1	1.6 x 10 <sup>-7</sup>	104 <sup>th</sup>
Beryllium (Be)	Chamber Cogen Unit 2	2.2 x 10 <sup>-8</sup>	7 <sup>th</sup>
Cadmium (Cd)	Walter Scott Unit 4	3.7 x 10 <sup>-7</sup>	3 <sup>rd</sup>
Chromium (Cr)	PSEG Mercer Unit 1	1.7 x 10 <sup>-5</sup>	56 <sup>th</sup>
Cobalt (Co)	Cholla Unit 3	7.2 x 10 <sup>-7</sup>	62 <sup>nd</sup>

<sup>4</sup> 42 U.S.C. §7412(d)(3), emphasis added.

<sup>5</sup> See, *floor\_analysis\_coal\_pm\_031611.xlsx*, *floor\_analysis\_coal\_hcl\_031611.xlsx*, and *floor\_analysis\_coal\_hg\_051811.xlsx*.

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Lead (Pb)	Oak Grove Unit 1	$8.8 \times 10^{-7}$	104 <sup>th</sup>
Manganese (Mn)	Weston Unit 4	$3.1 \times 10^{-6}$	3 <sup>rd</sup>
Nickel (Ni)	Weston Unit 4	$3.2 \times 10^{-6}$	3 <sup>rd</sup>
Selenium (Se)	PSEG Mercer Unit 1	$2.5 \times 10^{-5}$	56 <sup>th</sup>
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Hydrogen Chloride (HCl)	Logan Unit 1	$2.6 \times 10^{-4}$	n/a
Mercury (Hg)	Nucla Unit 1	$1.7 \times 10^{-5}$	n/a

In the above table, I have included dotted horizontal lines to differentiate among the optional emission limits for non-Hg metallic HAPs. The mercury and hydrogen chloride limits must be complied with individually, independent of the option chosen for non-mercury metallic HAPs.

I believe Table 1 clearly demonstrates the fallacy in the EPA's Franken-Plant approach. Consider the following EPA statements:

*For the non-Hg metallic HAP, we chose to use PM as a surrogate. Most, if not all, non-Hg metallic HAP emitted from combustion sources will appear on the flue gas fly-ash. Therefore, the same control techniques that would be used to control the fly-ash PM will control non-Hg metallic HAP.<sup>6</sup>*

Oak Grove Unit 1 is EPA's basis for two individual metallic HAP emission limits, arsenic and lead. The key question is how or what control technology could the Oak Grove owners add to meet the other metallic HAP limits given (1) EPA's statement that the same control techniques that work for fly-ash PM also work for non-Hg metallic HAPs and (2) Oak Grove is already the best performing unit for not one but two non-Hg metallic HAPs. EPA's rejoinder to this argument may very well be that compliance with the individual non-Hg metallic HAP limits is an option and not a requirement. This is an inadequate response and misses the point. EPA should not be permitted to base a portion of a suite of emission limits upon the performance of a single unit when that same unit cannot comply with the other enforceable components of that same suite of emission limits. Moreover, the unit that formed the basis for one of the regulated HAPs (e.g., total PM) may not meet one of the other mandatory limits (e.g., HCl). AES Hawaii Unit 1 is the basis of the new unit total PM limit, but the HCl results reported in the ICR data are 66 times the proposed new unit HCl limit. Nucla Unit 1 is the basis of the new unit total Hg limit, but the total PM results reported in the ICR data are almost an order of magnitude higher than the proposed new unit total PM limit.

Best Performing Similar Source

Section 112(d)(3) of the CAA has been interpreted to direct EPA to set emission limits for new sources no *less stringent than the emission control that is achieved in practice by the best controlled similar source*. As noted in Table 1, EPA's PM limit for new coal-fired EGUs units is based on test results from AES Hawaii Unit 1. AES Hawaii is the only coal-fired plant in Hawaii, and the plant has a generating capacity of 180 MW. Unit 1 is only capable of supplying

<sup>6</sup> 76 Fed. Reg. 25,039, col. 3 (May 3, 2011).

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one-half of the steam required by the 180 MW turbine/generator, so Unit 1 in effect has a capacity of 90 MW. The AES Hawaii unit burns coal, which is imported from Indonesia. To supplement the imported coal, the unit also burns old tires, used motor oil, and carbon from Board of Water Supply filters. While EPA is mandated to set limits for new sources based on the *maximum degree of reduction in emissions that is deemed achievable*, such degree of emission control must be *achieved in practice by the best performing similar source*. It is quite clear there is not or most probably will not be another similar source to AES Hawaii in the continental United States.

Beyond the *similar source* issue, I believe EPA made a computational error in converting the AES Unit 1 total PM results from input units (lb/10<sup>6</sup> Btu) to output-based units (lb/MWh). EPA mistakenly assumed that both AES units have a capacity of 180 MW; in point of fact, the capacity of the two-unit plant is 180 MW. This error is easily verified in EPA's spreadsheet, because the spreadsheet shows Unit 1 to have a heat rate of 5.03 million Btu per MWh, when the correct value is exactly twice that or 10.06 million Btu per MWh. When I correct the heat rate or conversion error in three individual total PM runs and simply repeat EPA's UPL calculation, I obtain 0.10 lb/MWh. Even as an unrepresentative unit that AES Hawaii may be, it does not support an emission limit of 0.05 lb/MWh.

EPA's approach is also flawed with respect to "achieved in practice." It is possible and perhaps even likely that emission rate at which the AES Hawaii Unit 1 was tested at is not achieved very often. Clearly, EPA analysis has no way of knowing whether the reported AES emission rate can be achieved 10 percent of the time, 50 percent of the time or maybe even 90 percent of the time. Regardless, EPA has used this value to propose an emission limit that must be complied with continuously and even include periods or start-up and shutdown. However, EPA has placed no data or analysis in the rulemaking docket to demonstrate that its proposed emission limits can be achieved in practice.<sup>7</sup>

### Issues With EPA's Variability Analysis

EPA's attempt to address emission variability through the use of an upper prediction limit (UPL) is fundamentally flawed. The UPL approach does not accomplish what the Agency purports it to accomplish. Failing to address variability correctly means EPA's proposed rule is technically

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<sup>7</sup> I am aware of some informal discussion that EPA may realize that the AES Hawaii Unit 1 is not a representative unit to rely on for setting the PM standard and that it might now seek to justify its proposed, new unit PM limit based on the performance of NRG's Dunkirk Unit 1. I observe at least three problems with such a potential revision. First, the EPA spreadsheet that is posted on the web and used to calculate the PM floors for coal-fired units is linked directly to AES Hawaii for the new unit PM limit. Second, Dunkirk Unit 1 has a new fabric filter and a dry sorbent injection (DSI) system. However, Dunkirk 1 does not comply with EPA's proposed new unit HCl emission limit. Undoubtedly, Dunkirk will need additional technology (e.g., flue gas desulfurization (FGD) system) to comply with the new unit HCl limit. Since the mist eliminators required by FGD systems are less than 100 percent efficient, I would expect PM emissions to increase on the Dunkirk unit once an FGD system is installed. (This is another fallacy in EPA's "Franken-Plant" approach.) Third, the same EPA spreadsheet that shows AES Hawaii to be the basis of the new unit PM limit (UPL = 0.049 lb/MWh) also shows that Dunkirk's UPL is equivalent to 0.14 lb/MWh. Thus, if EPA wishes to rely on Dunkirk Unit 1 rather than AES Hawaii Unit 1, it will have to significantly increase the new unit PM emission limit.

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deficient and also at odds with several rulings by the D.C. Circuit Court of Appeals.<sup>8</sup> EPA used the following formula to estimate the UPL for the best performing unit:

$$UPL = \bar{x} + t(0.99, n - 1) \times \sqrt{s^2 \left( \frac{1}{n} + \frac{1}{m} \right)}$$

Where:

n = the number of test runs for best performing source

m = the number of test runs in the compliance average

$\bar{x}$  = mean of the data for top performing unit

t(0.99, n - 1) = 99<sup>th</sup> percentile of the T-Student distribution with n - 1 degrees of freedom

s<sup>2</sup> = variance of the data from the top performing source.

The problem with EPA's approach is that the Agency is applying the UPL formula to very incomplete data, especially for the new unit analysis. For each HAP, EPA typically has three sampling runs that were performed very close in time (i.e., at a maximum, over 3 consecutive days) for the single, best performing unit. The variance (s<sup>2</sup>) that EPA calculates using the formula above is only representative of a very limited set of operating conditions and probably little, if any, fuel variability. Thus, EPA is only predicting the 99<sup>th</sup> percentile of a very limited range of operation and not necessarily a level that can be complied with at all times and under all operating conditions.

#### Issues With Detection Limits

EPA's handling of measurements at or below method detection limits (MDLs) exacerbates the variability flaws discussed above. For example, the proposed emission limit for hydrogen chloride (HCl) for new, coal-fired units is 0.30 lb/GWh. This limit is based on measurements from Logan Unit 1, all of which are reported to be less the MDL. EPA's proposed MACT floor for HCl is calculated as three times the highest MDL for the three sampling runs. In other words, the HCl floor is based in one constant (3) multiplied by another constant (MDL). Thus, the proposed HCl limit is not only based on non-detected concentrations, but also fails to account for any process variability.

A simple calculation further demonstrates why the proposed HCl limit for new units is neither feasible nor achievable, expect perhaps for a unit burning coal with low chlorine content. The proposed limit, 0.30 lb/GWh, is equal to 0.000033 lb/10<sup>6</sup> Btu, assuming a heat rate of 9,000 Btu/KWh. As the following calculation shows, to burn bituminous coal with a nominal chlorine content equal to 750 ppm will require approximately 99.95 percent removal to comply with the proposed new unit limit. This is a significant scrubbing requirement and will almost certainly require wet scrubbing.

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<sup>8</sup> See, for example, *National Lime Association v. EPA*, 627 F.2d 416 (DC Cir 1980) (holding that EPA failed to show how the standard proposed was achievable under the range of operating conditions that might affect the emission that was being regulated).

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$$\text{HCl inlet} = \frac{750 \text{ ppm}}{12,000 \text{ Btu/lb}} \times \frac{36.5 \text{ lb HCl}}{35.5 \text{ lb Cl}} = 0.064 \text{ lb}/10^6 \text{ Btu}$$
$$\text{Removal} = \frac{\text{In} - \text{Out}}{\text{In}} = \frac{0.064 - 0.000033}{0.064} \times 100\% = 99.95\%$$

It is inconceivable that any vendor would ever warrant or guarantee 99.95 percent removal of any pollutant. Another touchstone comparison that EPA staff apparently did not address is comparing the proposed existing unit HCl limit to the proposed new unit limit. The proposed limit for new units is 66 times more stringent than for existing units; yet all of the existing units selected for acid gas testing pursuant to EPA's 2010 ICR used either wet or dry scrubbing systems. There is no plausible explanation for how a new scrubber can be 66 times more efficient than the average of the best performing 12 percent of existing scrubbers.

Lastly, while working on several new coal-fired facilities (e.g., Plant Washington, Longleaf Energy and Holcomb 2) in various phases of the permitting process, I did not observe any willingness of PM control technology vendors to entertain performance guarantees below the range of 0.009 to 0.01 lb/10<sup>6</sup> Btu. Of course, this was for filterable PM – not total PM. I do not believe it will be possible to obtain a performance guarantee for EPA's proposed total PM limit. If a prospective power developer cannot obtain a performance guarantee, project financing will be jeopardized and no new coal-fired units will be constructed.

Issues With the Form of the PM Emission Limits

EPA proposes to regulate total PM, which is defined as the sum of filterable PM and condensable PM, solely on the basis of the behavior of selenium (Se). I disagree with EPA's decision on several levels. First, there is overwhelming data (both historical and the 2010 EGU ICR) that support using filterable PM as the surrogate for antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, and nickel. While there is variability in the Se results, EPA's own data show exceptionally high removal percentages for all of the metals for all coals and all control technology configurations.<sup>9</sup> EPA states that the results for Se removal were less consistent. However, when we examine EPA's results closely, it appears that EPA is trying to distinguish Se where there is very little real difference. For example, EPA states that the results for Se control were consistently very good when subbituminous coal was fired. EPA also states that when a fabric filter was the primary control device, Se control was consistently good. Thus, the only questionable configuration for Se control appears to be when bituminous coal is fired and an electrostatic precipitator (ESP) is the only control technology. I believe EPA has unnecessarily complicated the control and regulation of non-Hg HAP metals based on shaky technical grounds. My analysis of the ICR data leads us to conclude that a unit cannot comply with the emission limits in the proposed rule while burning bituminous coal and only having ESP control technology. EPA's own analysis projects the installation of fabric filters for 166 GW of capacity.<sup>10</sup>

<sup>9</sup> 76 Fed. Reg. 25,038, col. 3 (May 3, 2011).

<sup>10</sup> *Regulatory Impact Analysis of the Proposed Toxics Rule*, U.S. Environmental Protection Agency, p. 8-14, March 2011.

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Second, total PM consists of two components, filterable PM and condensable PM. Since no single EPA method measures both filterable and condensable PM, a minimum of two different EPA sampling methods must be utilized to determine total PM emissions. For the ICR, EPA specified OTM-28 for condensable PM measurement. Since the section 114 ICR letters were mailed by EPA to EGUs (December 2009), the requirements of OTM-28 have been incorporated into EPA Method 202, which is one of the proposed compliance methods. Method 202 has been flawed since it was issued by the Agency 20 years ago. Despite recent cosmetic changes to Method 202 by the Agency, the method remains flawed and yielded very inconsistent ICR test results. As EPA is aware, the Electric Power Research Institute (EPRI) has conducted numerous analyses on the EGU ICR data, and EPRI will be submitting detailed comments under its own cover. Among the EPRI results I am privy to are a series of regression analyses of the individual metals versus the various PM fractions (i.e., filterable, condensable and total). The PM component with clearly the least explanatory power was condensable PM. Part of the reason for lack of correlation is likely due to the poor quality of condensable PM data collected with EPA Method 202.

## CONCLUSION

For the reasons provided in this memorandum, proposing MACT emission limits based on an EGU that is not similar to other EGUs; that no EGU in existence now meets; and that are below detection limits for many of the regulated HAPs is not a technically defensible approach. EPA's approach to setting MACT limits will, in all likelihood, result in reversible error that simply will lead to delay in new EGU construction without any quantifiable environmental benefits whatsoever.

## **COALITION OF NEW UNITS**

Comments On  
National Emission Standards for Hazardous Air Pollutants from Coal and Oil-Fired  
Electric Utility Steam Generating Units

Submitted Electronically to:  
The Environmental Protection Agency  
Air Docket  
Attention Docket ID NO. EPA-HQ-OAR-2009-0234

August 4, 2011

### **COALITION OF NEW UNITS MEMBERS:**

City of Holland Michigan Board of Public Works  
CMS Energy Corporation  
South Texas Electric Cooperative, Inc.  
Sunflower Electric Power Corporation  
Wolverine Power Supply Cooperative, Inc.

August 4, 2011

VIA ELECTRONIC MAIL TO: [a-and-r-docket@epa.gov](mailto:a-and-r-docket@epa.gov)

US Environmental Protection Agency  
1200 Pennsylvania Avenue, NW  
Washington, D.C. 20460

Attention: Docket ID Nos. EPA-HQ-OAR-2009-0234 and EPA-HQ-OAR-2011-0044

Re: *National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units*, 76 Fed. Reg. 24976 (May 3, 2011).

Ladies and Gentlemen:

We are all developers of new electric generating units using coal or oil-based solid fuels (pet coke)—collectively referenced as solid-fueled units. Our units have received air construction permits and are at risk of becoming subject to EPA's new-unit standards for purposes of EPA's proposed EGU Mercury and Air Toxics Rule. In all, twelve projects totaling over 9,000 MW of new generation including supercritical pulverized-coal, circulating fluidized bed, and integrated gasification combined-cycle units are affected. Five of those project developers (including project participants) join here to respond to EPA proposed NESHAPs rule; Exhibit A identifying said participants is attached. We write to express grave concern that the Maximum Achievable Control Technology (MACT) standards that EPA has proposed will foreclose development of new solid-fueled units. Many of us intend to file separate comments on this and other issues, but we join together to highlight the issues and show that the effect of the rule is not limited to one or a small group of units but applies to all such new solid-fuel units in general.

A report has already been filed in this docket by Ralph L. Roberson, P.E., of RMB Consulting & Research, Inc., that highlights methodological problems with EPA's proposed rule and demonstrates why he believes new solid-fuel generation cannot be built under the proposed rule. Roberson, who has decades of relevant experience and has worked with many of us on our new units, accurately describes the major problems. His report is attached for convenience.

As set forth in Roberson's report, EPA's approach to standard-setting was to establish a MACT standard for each individual pollutant based on the performance of the best-controlled individual plant for that particular pollutant. However, no existing plant actually meets all of the individual new-unit MACT standards, and EPA did not attempt to show that any existing plant does so. Further, while each of these proposed projects will utilize one of the three current solid-fuel technologies, and while some of them contemplate the use of blended fuels (including biomass), we know of none that have been able to obtain the commercial guarantees based upon meeting the proposed standards guarantees necessary to allow their construction to proceed.

Our conclusion has been reinforced repeatedly in our discussion with vendors; no vendor has offered a guarantee that they can meet the emission limitations proposed in the EGU MACT. The largest air pollution control technology company in the world has stated to EPA representatives at a meeting that Sunflower had with them on June 30, 2011 that they could not guarantee these standards as proposed. Further, Bechtel, the largest utility plant constructor in the US, has confirmed that they will not make any guarantee that is not first offered by a vendor and that has not been adequately demonstrated in practice.

This point is also reinforced in comments filed in this docket on July 8, 2011, by the Union for Jobs and the Environment (UJAE). As shown in the tabular information attached to those comments, data that EPA provided UJAE show that no existing unit meets *all* of the proposed new-unit MACT standards. As the UJAE concluded

The proposed MATS rule would preclude the construction of any new coal-based electric generating units due to the severity of its emission limitations for mercury, acid gases, and particulate matter (PM). Data provided by EPA on June 8, 2011, show that no unit in EPA's sample of more than 200 coal-based generating units meets the combined MATS new source emission limits for mercury, acid gases, and PM (see Attachment 1 and table below).

Additionally, the plant that EPA selected as the best-controlled similar source for PM, the AES Hawaii Unit 1, is not a representative unit.

- It burns Indonesian coal.
- Its generating capacity is nominally 180 MW; but the emissions source identified, in reality, is only half that, and it also burns old tires, used motor oil, and carbon from the State's Board of Water Supply filters.
- The performance data for the unit, moreover, do not appear to be representative of what the unit will regularly achieve in practice.
- Therefore, EPA's PM standard is not representative of what is achievable in practice.

Finally, Roberson's report sets forth concerns as to whether the standards are set so low as to be below method detection limits. For example, as shown in Roberson's report, burning bituminous coal with a nominal chloride content equal to 750 ppm will require approximately 99.95 percent removal to comply with the proposed HCl standard. No vendor will guarantee 99.95 percent removal, which would be necessary to secure financing. Moreover, the proposed HCl standard is 66 times more stringent than the proposed standard for existing units even though all of the existing units selected for acid gas testing in EPA's 2010 ICR used either wet or dry scrubbing systems. As Roberson states, "There is no plausible explanation for how a new scrubber can be 66 times more efficient than the average of the best performing 12 percent of existing scrubbers." Similar control efficiencies for Hg would also be required, again with no guarantees available.

In addition to the *similar source* issue, Roberson also believes EPA made a computational error in converting the AES Hawaii Unit 1 total PM results from input units (lb/mmBtu) to output-based units (lb/MWh). EPA mistakenly assumed that both AES units have a capacity of 180 MW; actually, the capacity of the two-unit plant is 180 MW. This error is easily verified in EPA's spreadsheet because it shows Unit 1 has a heat rate of 5.03 mmBtu/MWh, but the correct value is exactly twice that or 10.06 mmBtu/MWh. When the corrected heat rate (or conversion error) is incorporated into the three individual total PM runs, a repeat of EPA's UPL calculation yields a calculated PM value of 0.10 lb/MWh. Even as unrepresentative as AES Unit 1 may be for the purpose of determining MACT, it does not appear to support an emission limit of 0.05 lb/MWh. We respectfully request that EPA revisit the MACT determinations to ensure that these computational errors are corrected prior to advancing the final rule.

We believe that the decision to adopt standards that foreclose new generation technology using coal or other solid-fuel is not a wise one, nor do we think it is permissible under the Clean Air Act. Since our units are new, they are subject to very recent Best Available Control Technology requirements. In fact, a case-by-case Maximum Achievable Control Technology analysis was performed in nine of these permit applications (In the other three situations the sources were evaluated as not major sources of HAPs, and the case-by-case analysis is not applicable in those situations.). Thus, for all applicable air pollutants, our units will be among the very cleanest coal-fueled units in the country. Constructing our units will ultimately allow the retirement of much older, higher-emitting units with a very significant net air quality improvement. Constructing our units will also create needed new jobs and economic development. We estimate that all of the new units that are now permitted collectively create 17,750 construction jobs and \$21.7 billion in economic investment. Yet these benefits will be sacrificed if EPA finalizes the new-unit standards as proposed and they are applied to those units. Moreover, the very substantial amount of baseload generation we propose to develop will need to be replaced by other baseload resources, either nuclear or natural gas.

The adoption of the proposed standards would constitute a major energy policy determination that has implications far beyond just the units we propose to develop. The adoption of the proposed rule will have significant consequences for the reliability and cost of electricity in this country and for the economy in general. Critically, the proposed rule does nothing to acknowledge the possibility that the construction of new coal units may have been foreclosed because they cannot meet the new limits. EPA should acknowledge and discuss this possibility so that the country does not unintentionally adopt a major new energy policy, without the opportunity to consider the possible outcomes of the decision; especially since the majority of US citizens are unaware of this new policy and its potential negative consequences.

Sunflower staff, and our consultant, Roberson, participated in a meeting with EPA staff in Washington on June 30, 2011, during which we discussed at length our inability to secure vendor and erector guarantees for EPA's proposed limitations that are below detection levels and the fatal flaw that the absence of guarantees bring to project