NMA
THE AMERICAN RESOURCE

EPA Docket Center (Air Docket)
U.S. EPA West
Room B-108
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Washington, DC 20460

May 14, 2004

Attn: Docket ID No. OAR-2002-0056

Re: 40 CFR Parts 60 and 63
Proposed National Emission Standards for Hazardous Air Pollutants; and, in the Alternative, Proposed Standards Of Performance for New and Existing Stationary Sources; Electric Utility Steam Generating Units; Proposed Rule; 69 FR 4652 *et seq.*, January 30, 2004

Via Electronic and Hand Delivery

Ladies and Gentlemen::

The National Mining Association ("NMA") takes this opportunity to comment on the above-styled proposed rulemaking.

NMA is a national trade association whose members include the producers, transporters and consumers of coal. NMA member companies produce more than 80 percent of the coal mined in the United States. NMA's members produce coal in every coal-producing region of the United States, representing coals of every rank (anthracite, bituminous, subbituminous and lignite). Most of the coal produced by NMA's members is used by coal-fired electric steam generating units subject to this rulemaking. This rulemaking therefore will have a direct effect upon the ability of NMA member companies' coal to be used by existing and future utility units.

NMA's members include the transporters of coal. For example, railroads deliver about two-thirds of all coal to coal-fired power plants. Coal is by far the most important single commodity carried by rail, accounting for 44 percent of railroad tonnage. NMA's members also include the producers of metals, and industrial and agricultural minerals. Their operations are major consumers of electricity as well as natural gas as a raw material or feedstock. Because energy costs comprise a substantial part of their operating

costs, this rulemaking will have a material impact upon their global competitive position. NMA's membership also embraces the manufacturers of mining and mineral processing machinery and supplies. This rulemaking will affect both their markets as the suppliers of machinery and equipment for coal mines and their competitive position as manufacturers bearing the brunt of higher energy costs.

These comments are organized in six sections:

I. A background statement of NMA's interests and involvement in this proceeding, including NMA's initial analyses of deficiencies in EPA's mercury emission and coal databases;
II. Recommendations concerning EPA's alternative emission trading proposals under sections 111(d) and 112(n)(1) of the Clean Air Act, including the allocation of emission allowances among coal types, and a proposed alternative emission trading program incorporating a mid-course assessment of co-benefits and emission control technology performance and availability;
III. A technical critique of the proposed mercury MACT emission floors for bituminous, subbituminous and lignite coals, with suggestions for alternative approaches to the selection of top-performing units, and related analyses of statistical variability and uncertainty;
IV. Comments on EPA's proposed emission limits for new coal-based electric generating units, including the results of an independent analysis of new source emission limits based on a more comprehensive statistical analysis than performed by EPA;
V. NMA's support for, and clarification of, comments submitted in this proceeding by the Utility Air Regulatory Group ("UARG"), of which NMA is a member organization; and
VI. Responses to specific EPA requests for comments, including exemptions for small-emitting sources, beyond-the-floor regulation, and compliance on a facility-wide basis.

I. Background

Coal-fired power plants face a daunting array of air quality requirements. These requirements are often duplicative, inefficient, and create considerable uncertainly for an industry that is providing the nation with one of its most critical resources: safe, economic and reliable power generation. In principle, NMA and its members prefer a statutory multi-emission approach - along the lines of the Administration's proposed Clear Skies Act - that would streamline overlapping regulatory requirements, provide for certainty in the amount of emissions reductions to be required, and offer sufficient time for emission control compliance planning and implementation.

The nation's air quality has improved dramatically since the enactment of the Clean Air Act in 1970. As documented in EPA's most recent air quality trends report,

these air quality improvements have occurred even with major increases in energy consumption and economic and population growth:

> "Since 1970, aggregate emissions of the six principal pollutants have been cut 48 percent. During that same time, U.S. gross domestic product increased 164 percent, energy consumption increased 42 percent, and vehicle miles traveled increased 155 percent. ...
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> Sulfates formed primarily from SO2 emissions from coal-fired power plants are a major component of fine particles (known as PM2.5) in the eastern United States. SO2 emissions decreased approximately 33 percent from 1983 to 2002. Nationally, average SO2 ambient concentrations have been cut approximately 54 percent over the same period."[1]

In view of the impressive progress in cleaning the nation's air since 1970, and the increasing costs of securing incremental air quality improvements, NMA believes that new policies to further reduce emissions should be based on sound science, risk analysis, the capabilities of emission control technology, and market-based programs.

Coal's Essential Role in the U.S. Economy

Electric generating units in the United States consumed 976 million tons of coal in 2002, and provided more than half of the nation's electric supply. The average capacity utilization of coal-fired power plants is projected to increase from 70% in 2002 to 83% in 2025, reflecting increased electricity demand and the higher costs of generation from natural gas.[2]

Coal and the low-cost electricity it provides are vital to the reliability of the U.S. electricity supply system, and to the economic vitality of the U.S. economy. A recent study by The Pennsylvania State University estimates that coal production and related electric generation will account for some $411 billion (1999$) of U.S. gross domestic output in 2010, $133 billion of annual household income, and 3.6 million jobs.[3] Because all grades of coal contain mercury in minute concentrations, every aspect of U.S. coal production, transportation and coal-based electric generation will be affected by the outcome of this proceeding.

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[1] U.S. EPA, 2002 Air Quality Trends Report, Highlights; see http://www.epa.gov/airtrends/highlights.html.

[2] DOE/EIA, Annual Energy Outlook 2004 with Projections to 2025 (Washington, DC, 2004)

[3] Adam Z. Rose, Ph.D., and Bo Yang, THE ECONOMIC IMPACT OF COAL UTILIZATION IN THE CONTINENTAL UNITED STATES (The Pennsylvania State University, 2002)

NMA and its members are committed to the long-term goal of utilizing U.S. coal resources through advanced clean coal technologies that will minimize the environmental effects of coal use. Through projects such as FutureGen,[4] a cooperative government-industry effort to produce a new generation of environmentally friendly electric generation technologies, the U.S. will position itself to expand its utilization of its domestic energy resources while reducing our dependence on imported energy.

Significant Costs, No Measurable Benefits

If EPA relies upon the Maximum Achievable Control Technology (MACT) provisions of section 112 of the Clean Air Act, the mercury rule could be among the most costly regulatory mandates ever issued by the agency. Reliance on an emission-trading alternative, with an emission cap and a more stringent ultimate level of control, may reduce overall compliance costs but introduce new compliance burdens, including constraints on the addition of new coal-based generating capacity. One of NMA's principal objectives in this rulemaking is to ensure that new coal-fueled generating sources can be permitted in a timely and economic manner, consistent with the nation's needs for adequate and reliable electric power supplies, in full compliance with all applicable environmental safeguards.

Despite its high potential costs, the regulation of mercury emissions from electric utility boilers stands to produce little, if any, measurable public health benefit. Once mercury is released, it stays in the atmosphere for months or even years, resulting in mercury deposition long distances from its source.

Recent studies by the Electric Power Research Institute (EPRI) have documented the critical role that intercontinental mercury transport from Asia and other nations plays in determining U.S. mercury deposition.[5] Key findings of this work include:

> "'Direct measurements have revealed significant levels of mercury exiting mainland Asia and crossing the Pacific to the U.S. In 2001 and 2002, EPRI, in cooperation with the National Center for Atmospheric Research, the National Aeronautics and Space Administration, the National Oceanographic and Atmospheric Administration, and other agencies, used aircraft to measure mercury in air plumes exiting China near the city of Shanghai, following them over the Pacific for 400 miles. A later set of flights over the Pacific between southern California and Oregon found evidence of the same plume crossing the California coast.'
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> Studies being published in the technical journal *Environmental Science and Technology* by Seigneur, *et al.* and based on computer model

[4] For a description of the U.S. Department of Energy's FutureGen project, *see* http://www.fossil.energy.gov/programs/powersystems/futuregen/.

[5] *See, e.g.*, http://www.epri.com/journal/print.asp?id=747 and references cited therein.

simulations also show most of the mercury deposited within the U.S. coming from globally distant sources. These results indicate that most of the mercury appears to originate in Asia, which releases roughly half of the global human-origin mercury emitted, and is carried eastward across the Pacific by prevailing global wind patterns. ...

Recently published work performed in Florida by a number of researchers has also found evidence that most of the mercury entering south Florida originates in other countries and is carried west into Florida by the dominant trade winds there. Another Florida study found that, after mercury sources in the state (mostly municipal and medical waste incinerators) were controlled, thus reducing mercury emissions, the levels of mercury in Everglades fish did not show a clear pattern of response. Some fish in some locations did show a mercury decline, while mercury levels in other fish populations remained unchanged and several, in fact, exhibited increasing levels of mercury."[6]

The principal pathway for human mercury exposure is through fish consumption. Several studies have evaluated the statistical impact of maternal mercury levels on childhood developmental disorders. One of the largest long-term epidemiological studies, conducted in the Seychelles Islands, did not find a statistical association between high levels of maternal mercury and subsequent childhood developmental disorders.[7] To date, analysts have been unable to quantify potential public health benefits associated with EPA's mercury rulemaking, including statistically significant reductions in mercury exposure or related risks among women of childbearing age.

Because mercury is emitted and transported globally, reductions of U.S. mercury emissions from electric generating sources would have only a small effect on mercury deposition in the United States. The negligible impact of regulating U.S. electric utility mercury emissions on global mercury budgets, and the concentration of mercury in fish, was recently highlighted by the Committee on Resources of the U.S. House of Representatives:

February 19, 2004
Contact Nicol Andrews or Matt Streit at (202) 226-9019

U.S. Plants Emit Only 1% of Global Mercury

Washington, DC - Studies reveal that despite alarmist claims, reducing emissions from U.S. energy sources would have negligible, if any, effect on mercury levels in fish. In fact, global contributors dwarf mercury

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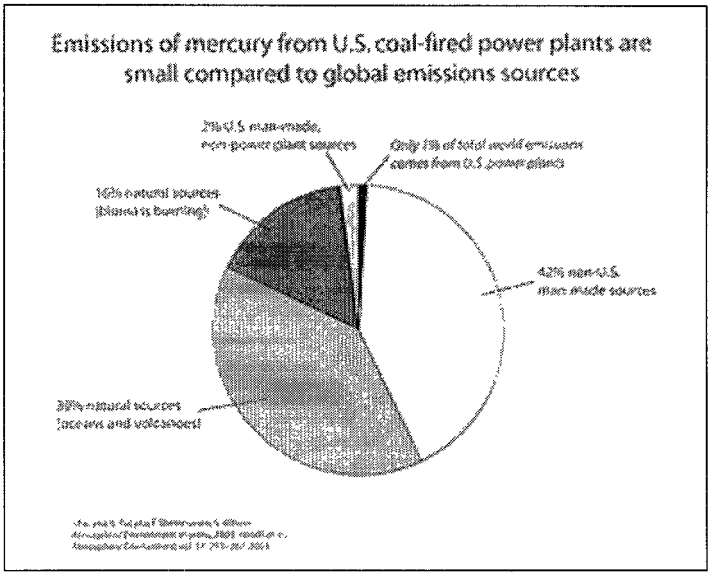
[6] *Id.*, "Research Shows Most Mercury Deposited in U.S. Originates Outside the Country," EPRI Journal Online, December 22, 2003.
[7] *See,* Statement of Gary Myers, MD, before the U.S. Senate Environment & Public Works Committee, July 29, 2003, at http://epw.senate.gov/108th/Myers_072903.htm.

emissions from U.S. coal-fired power plants. Overall, estimates show only 1% of total world emissions come from U.S. utilities. China, on the other hand, is responsible for more than half of the non-U.S. man-made sources of mercury. China's coal-fired power plants already emit more than 495 tons annually, with an expected increase of 40+ tons over the next 2 to 5 years (*Atmospheric Environment*, 2003). Studies confirm that while mercury is widespread in the global environment, once again, American ingenuity is leading the way toward reducing overall mercury emissions. Since 1995, U.S. emissions have dropped by a whopping 42%. A decade of drastic decline in mercury is the result of new air pollution control technologies. Despite these advances, mercury levels in fish have not changed since 1977. Princeton University scientists compared methylmercury in today's tuna with similar tuna caught in 1977 and found no change. The study concluded that mercury taken up by fish does not come from land sources such as power plants (*American Society for Limnology and Oceanography*, January 2003). Regardless of scare tactics and a politically driven attempt to draw a link between fish consumption and U.S. energy production, science tells the truth. This evidence reveals the holes in the faulty, twisted logic used in the name of "protecting" the American public."



The House Resources Committee is right to question the environmental benefits of stringent mercury controls. Modeling and risk assessment studies by Brookhaven National Laboratory have found no support for plant-specific mercury controls, and negligible benefit to local populations from mercury controls at specific coal-fired electric power plants.[8]

[8]T. Sullivan, "The Local Impact of Mercury Emissions from Coal Fired Power Plants on Human Health Risk" (Progress Report, May 2003, BNL-71554-2003): "Risks resulting

NMA agrees with EPA's assessment of the lack of scientific data that would permit any reliable quantification of human health benefits associated with the instant proposals:

> "Fish consumption dominates the pathway for human and wildlife exposure to methylmercury. There is a great deal of variability among individuals in fish consumption rates. ... The typical U.S. consumer eating a wide variety of fish from restaurants and grocery stores is not in danger of consuming harmful levels of methylmercury from fish and is not advised to limit fish consumption. ...
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> The EPA's 1997 Mercury Study RTC supports a plausible link between anthropogenic releases of Hg from industrial and combustion sources in the U.S. and methylmercury in fish. However, these fish methylmercury concentrations also result from existing background concentrations of Hg (which may consist of Hg from natural sources, as well as Hg which has been re-emitted from the oceans or soils) and deposition from the global reservoir (which includes Hg emitted by other countries). Given the current scientific understanding of the environmental fate and transport of this element, it is not possible to quantify how much of the methylmercury in fish consumed by the U.S. population is contributed by U.S. emissions relative to other sources of Hg (such as natural sources and reemissions from the global pool). As a result, the relationship between Hg emission reductions from Utility Units and methylmercury concentrations in fish cannot be calculated in a quantitative manner with confidence. In addition, there is uncertainty regarding over what time period these changes would occur. This is an area of ongoing study."[9]

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from Hg emissions from coal fired power plants are small for the general population, and ... risks are borne by a small fraction (0.1%) of the population. ... The population risk is much more sensitive to fish consumption rates than additional deposition from the coal fired power plant." *Id.*, at 45.

[9] 69 FR 4652, 4658 (emphasis added.)

Public Education More Effective than Regulation

Concerns about mercury consumption by the population at risk - women of child-bearing age with a propensity to consume seafood containing high levels of methylmercury – may be addressed more effectively through dietary educational programs than through multi-billion dollar regulatory programs whose impact on maternal methylmercury blood concentrations cannot even be estimated.

Modifying dietary behavior - now occurring on a widespread basis to reduce consumption of fats, carbohydrates and cholesterol – is likely a more cost-effective means of reducing mercury exposure among the population at risk. This approached is suggested by the FDA advisory that cautions against the consumption of only certain fish species, because not all fish contain mercury at levels of concern. The FDA advisory further states that a variety of fish should be eaten, but in quantities not to exceed a weekly average of 12 ounces. Moreover, emerging scientific research on the undersea sources of mercury affecting tuna and other ocean fish – such as the Princeton research cited by the House Resources Committee - suggest that strategies to control airborne deposition will not have a measurable impact on the reduction of risks to relevant populations.

Indeed, the environmental community is becoming increasingly aware that dietary modification and education are the keys to an effective mercury risk-management strategy. Environmental Defense ("ED"), for example, provides an online resource, the "Seafood Selector," to advise consumers of the risks associated with different fish species.[10] The site lists information for fish and consumption advice keyed to gender and age groups. ED's Health Program Director, John Balbus, MD, MPH, notes that: "Eating fish, especially those high in omega-3 acids, is good for the heart, but consumers should be aware of the potential risks from contamination."[11]

NMA Participation in EPA's Mercury Working Group

NMA participated actively in, and joined the position offered by the "Industry Stakeholder Group" to the Mercury Working Group of the EPA Clean Air Act Advisory Committee.[12] The industry position set forth illustrative mercury emission limits for

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[10] *See*, http://www.environmentaldefense.org/pdf.cfm?ContentID=1980&FileName=pocket_seafood_selector%2Epdf

[11] Environmental Defense, "Fishing for Answers on Healthy Seafood?" (News Release, March 10, 2004)

[12] "Industry Advice Paper to the Working Group for the Utility MACT," September 9, 2002.

different types of boilers (*e.g.*, hot stack, wet stack and saturated stack) and for different varieties of coal (bituminous, subbituminous and lignite). The industry position also endorsed an alternative form of compliance measurement based on meeting the less stringent of an emission limit or a percentage reduction of mercury from raw coal mercury content. At U.S. EPA's direction, the Mercury Working Group focused solely on potential MACT-based approaches to emission limitation, and did not consider emission trading alternatives.

The following points regarding the industry "consensus" group position should be emphasized:

> • The subcategorization scenarios presented by the Industry Stakeholder Group were illustrative and not definitive recommendations for a MACT floor, or for alternative mercury emission limitations. They were "not offered as endorsements of any particular MACT limits. Indeed, many issues still need to be addressed before MACT floor values can be set including possible bias in the plants selected for ICR Part III sampling, and compliance issues such as identifying the compliance method and an averaging time for any standard."[13]
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> • The Industry Stakeholders concluded that "none of the methods that have been presented at the Working Group meetings fully accounts for all the variability in mercury emissions from a coal-fired plant."

In the course of its assessment of EPA's Information Collection Request ("ICR") databases for coals and utility stack test results, NMA prepared and provided to U.S. EPA a preliminary technical critique of the analytical data upon which EPA proposed to rely to determine MACT emission floors. Attachment 1, hereby incorporated by reference, is a copy of NMA's technical critique of the ICR data provided to U.S. EPA on April 10, 2003.

As demonstrated in Attachment 1, the majority of the ICR emissions data fall outside reasonable limits of experimental accuracy and precision. The ICR emissions data represent, at best, a limited "snap shot" of emissions from a few units, taken over a very short period of time, with a limited number of fuels, and cannot account for the wide variability of coals and process conditions encompassed by the full fleet of U.S. utility boilers. In addition, the units chosen by EPA for mercury emissions sampling in the ICR program is unrepresentative of U. S. coal-fueled power plants. The ICR sample is skewed toward wet- and dry-scrubbed units that are more likely to show lower emissions than the majority of plants, which are not equipped with scrubbers.

NMA's initial analysis of the ICR data demonstrated that data deficiencies and variability in coal and unit operation will make it difficult or impossible for EPA to

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[13]UARG, "Bases and Assumptions for Modeling Scenarios," April 3, 2002.

establish emission limits that are technically achievable for all affected units within a given subcategory. Therefore, any unit- or plant-specific emission requirement should have enough flexibility to allow an affected unit or plant to seek an alternative emission limit if the standard is shown to be unachievable.

NMA notes that none of the EPA, U.S. DOE, West Associates or UARG methodologies accounts for uncertainty and variability in either coal or process operation. The lack of adequate analytical data and tools has limited the ability of EPA and the regulated community to recommend appropriate mercury emission standards. The EPA model for analyzing emission variability in the 80 plant ICR sample does not adequately or accurately account for coal and process variability and experimental uncertainty in mercury emission measurements; the Utility Air Regulatory Group (UARG) statistical model does not account for plant operational variability or control technology capability by coal rank. Failure to consider all of these factors could produce costly and unworkable mercury standards with the potential to disrupt both national coal and electric power markets.

Recognition of these deficiencies in the ICR data – and the methodologies employed by EPA and others - led NMA to pursue a more rigorous statistical assessment of the ICR data, related EPA variability analyses, and the MACT floors proposed in this rulemaking. The findings of this assessment, conducted by AEMS, LLC and RWCrawford Energy, are discussed in Section III below.

II. EPA's Alternative Emission Trading Proposals

EPA is well-justified to reassess the technical, legal and policy bases underlying the agency's December 2000 determination[14] that regulation of coal- and oil-fired electric utility units was "appropriate and necessary." The agency's proposed alternative emission trading programs, under sections 111(d) and 112(n)(1), recognize the inherent cost-effectiveness of emission trading compared to traditional command-and-control regulation.

In general, NMA prefers the flexibility inherent in well-designed national emission trading programs, such as the Title IV acid rain program, to the rigidities of unit- or source-specific controls. For this reason, NMA supported in principle the Administration's proposed Clear Skies Act, including its general approach to a two-phase national market-based trading program for reducing electric utility mercury emissions.

Similarly, given a well-designed comprehensive national program, NMA favors the longer timeframes for compliance that are available under cap-and-trade alternatives. With the absence of commercially demonstrated technologies for controlling mercury emissions from coal-fired power plants, a longer compliance timetable such as 2018

[14] 65 FR 79825 (December 20, 2000).

would provide needed time for the testing, demonstration and commercialization of Activated Carbon Injection and similarly promising mercury control technologies.

Upon consideration of EPA's proposed 111(d) and 112(n)(1) emission trading alternatives, NMA is concerned about potential difficulties and uncertainties associated with the implementation of these proposals:

1) The "opt-in" nature of state participation in the Section 111(d) emission trading program provides too much uncertainty associated with individual State Implementation Plan ("SIP) determination processes, including i) the potential for non- participation in a national trading program; ii) arbitrary confiscation or other limitations on the use of emission allowances, and iii) reallocation of emission allowances among non-emitting source sectors.

2) Section 111(d) also would place an unfair burden on many States that are already required to develop and approve controversial ozone and $PM_{2.5}$ SIPs. Moreover, the inclusion of mercury emission programs within often time-consuming State SIP submission and approval processes would effectively reduce the time available for source compliance planning and control strategy implementation.

3) A national emission trading program structured under Section 112(n)(1) would avoid many of the SIP-related uncertainties inherent in the Section 111(d) alternative, but could introduce additional uncertainties due to the open-ended potential for risk-based assessment of long-term mercury reduction requirements.

In this regard, we note that the proposed Section 111(d) SIP-based trading program has been rejected in principle by 11 of the 12 northeastern states of the Ozone Transport Commission (OTC).[15] Eleven of the 12 OTC states have voted to oppose any cap-and-trade program for mercury, with Virginia abstaining. Other states have voiced similar concerns about emissions trading for mercury. These developments underscore the potential difficulties associated with an emission trading plan implemented through Section 111(d).

For the reasons discussed below, NMA would support an alternative national cap-and-trade program for controlling mercury emissions from existing coal-fired power plants, provided that the rule offered:

[15] Ozone Transport Commission, "Multi-Pollutant Strategy Position of the Ozone Transport Commission," (Final, January 27, 2004).

1) Reliance upon the co-benefits of mercury reductions achieved through the SO2 and NOx reductions of the proposed Interstate Air Quality Rule[16] for Phase I mercury reductions;
2) Full allocation of mercury emission allowances among coal-fueled electric generating units;
3) An equitable assignment of emission allowances based on heat input, coal chemistry and emission control technologies that would neither encourage fuel-switching as a compliance strategy, nor effectively preclude any coals from the national electric generation market;
4) Adequate time before the implementation of a final emissions cap for the commercialization of cost-effective mercury-specific control technologies such as Activated Carbon Injection and advanced sorbent technologies that can be used in conjunction with existing pollution control devices;
5) Regulatory assurance against undue risk of subsequent "ratcheting" or other reduction of mercury allowance allocations; and
6) Reasonable provisions for minimizing emissions from new coal-based generating units, and for obtaining allowances necessary to operate such plants.

Of the two cap-and-trade alternatives that EPA is considering, the Section 112(n)(1) option appears more likely to achieve these objectives, because it offers the basis for a national allocation of emission allowances independent of state SIP processes. For this reason, if EPA elected to proceed with an emission cap-and-trade alternative, NMA would prefer a program structured under Section 112(n)(1).

Emission Trading Allowance Allocations and Timing

NMA strongly encourages initial reliance on the "co-benefit" mercury reductions achieved by the sulfur and nitrogen oxides reductions required by EPA's proposed Interstate Air Quality Rule (IAQR). As demonstrated in Section III below, adequate technical data do not exist at this time to provide a reasoned basis for the allocation of allowances among coal types for purposes of an initial reduction in 2010.

We note that EPA's mercury co-benefit reduction estimates associated with the IAQR are comparable to those resulting from implementation of the agency's MACT proposal. EPA estimates that compliance with the IAQR will result in an overall level of 34 tons of mercury emissions from the electric generating sector in 2010, due to the installation of 49 Gigawatts (GW) of scrubbers and 24 GW of SCR capacity by 2010.[17]

EPA should implement a phased approach to the determination of mercury emission allowance allocations under any form of an emissions trading rule. A phased approach should be designed with the following milestones:

[16] 69 FR 4566 (January 30, 2004).
[17] EPA Clean Air Markets Division, "Economic & Energy Analysis for the Proposed Interstate Air Quality Rulemaking," January 9, 2004, at 3-4.

- 2008 – Require installation and initial testing and operation of mercury emission monitoring equipment on affected units;
- 2009-11 – Collect and analyze monitor data to determine mercury emissions and reductions achieved by IAQR emission reductions in 2010;
- 2012 – Determine prospective emission allocations by coal type for an interim 2015 emissions cap, based on results of the 2009-11 co-benefits analysis, and an assessment of the expected future commercial availability and performance characteristics of mercury control technologies for different coal types;
- 2015 – Affected plants meet an interim emissions cap determined by EPA in 2012; banking and trading of allowances commences;
- 2018 – Final emissions cap of 15 tons is imposed.

NMA recognizes that the development of mercury-specific control technologies may – or may not - reduce the need for specific emission allowance allocations by coal type at some point in time. The proposed 2009-2011 analysis of the efficacy of co-benefit control reductions, coupled with an assessment of mercury-specific control technologies, would facilitate a determination of the appropriateness of coal-specific emission allowance allocations to meet an interim 2015 and a final 2018 cap.

Under this phased approach, no mercury allowances would be assigned until 2015, for purposes of meeting an interim cap, and no banking or trading of allowances could occur prior to that date. For the reasons discussed below, NMA strongly opposes use of the agency's proposed MACT floor values for any allocation of mercury emission allowances. These floor values are not statistically defensible, and are inappropriate for any regulatory purpose.

Under a Cap-and-Trade Approach, New Sources Should Receive Mercury Allowances

Under a cap-and-trade approach, EPA has proposed NSPS emission limits equivalent to the NSPS proposed under the 112 (d) regulations. As discussed below, the limit is set at a level that cannot be achieved by the best performing units, and should be adjusted upward.

NMA is concerned that a cap-and-trade program would add another significant burden to new units if they are not allocated emission allowances. New units will be left to pursue allowances on the open market, with no guarantee of access. EPA should reconsider how it will ensure that new units operating in compliance with the NSPS will have legitimate access to allowances. This can be achieved, for example, by requiring a modest set-aside of allowances from existing units, similar to the approach taken in the Title IV acid rain program.

III. Technical Critique of the Proposed Mercury MACT Emission Floors

Both the text of Clean Air Act Section 112(d) and the legislative history of Section 112 grant EPA broad discretion to establish a MACT standard, or an alternative form of emission control, that takes into account differences among sources within a given group. The statute uses the broad terms, "class, type, and size" when identifying the bases on which EPA may distinguish among sources.[18]

EPA's proposed MACT standards provide for subcategorization by coal type, including proposed standards for bituminous, subbituminous and lignite. However, NMA is deeply concerned about the specific proposed MACT floors for existing units. For example, the proposed bituminous MACT limit of 2.0 lbs./TBTU is sufficiently stringent to preclude many eastern coals from future use in the electric generation sector.

NMA has similar concerns about the MACT floor proposed for lignite, and the potential impact on plants burning Gulf Coast lignite. We note that the Fort Union lignite coals in the ICR database had mercury contents as much as 90% lower than lignite coals from the Gulf Coast. As discussed below, these differences justify a reanalysis of the ICR plant samples to provide separate emission performance standards for Fort Union and Gulf Coast lignite coals.

NMA also notes that the top-performing plants that EPA used to set the emission limit for subbituminous coals do not include any plants that burn Wyoming Powder River Basin coal, the dominant coal produced west of the Mississippi River. Rather, subbituminous coals from Colorado, New Mexico and Montana were selected to set the subbituminous emission limit.

"Review and Critique of Data and Methodologies Used
In EPA Proposed Utility Mercury MACT Rulemaking"

In an effort to understand the technical underpinnings of EPA's proposed MACT floors for different coals, NMA engaged AEMS, LLC, a consulting firm that provided expert input to the EPA Mercury MACT Working Group. AEMS' Report to NMA, coauthored by RWCrawford Energy, is included as Attachment 2 and is hereby incorporated by reference.

The AEMS Report offers a constructive analysis of the approach that EPA developed to analyze variability factors, as these influence the determination of appropriate MACT floor values for various coals, as well as EPA's selection of top-performing units in each subcategory. In many instances, plants picked by EPA as top-performing units were incorrectly characterized in terms of their coal consumption.

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[18] UARG, "Legal Standards Applicable to MACT Floors and Subcategories-Industry Perspective," February 5, 2002.

Plants identified as "bituminous" or "subbituminous" in fact burned blends of bituminous and subbituminous coals during 1999. Other plants selected by EPA were disqualified by AEMS based on data quality concerns.

AEMS also estimated the impact of EPA's proposed MACT floor values on the ability of various U.S. coals to comply with proposed mercury emission floors. As discussed below, substantial percentages of U.S. coals would not be able to meet EPA's proposed MACT floors with acceptable levels of confidence.

AEMS' assessment of utility emissions, coal quality, and coal delivery data available to EPA has provided the basis for an alternative MACT analysis that is not limited to the biased 80-plant sample in EPA's emissions database. Estimation of these MACT floors entailed the following steps:

1) A correlation analysis to relate emission performance (by technology) to coal characteristics;
2) Identification of the top-performing units based on the entire population of units in each subcategory nationwide (top 12% if 30 or more, equivalent top 5 units otherwise);
3) Definition of the average coal in each subcategory, and ranking of technologies based on emission performance with "average" coal;
4) Definition of a realistic "worst case" coal in each subcategory;
5) Ranking of units and technologies by emissions on average coal, and identification of top-performing units in each subcategory;
6) Estimation of emissions for top-performing units for worst-case coal; and
7) Fully and appropriately accounting for the components of variability and uncertainty relevant to the form of the MACT standard.

Key findings of the AEMS analysis are excerpted below:

> "This report presents a review and critique of the data and methodologies used by the US Environmental Protection Agency (EPA) in support of its proposed rule to establish national standards under Section 112 of the Clean Air Act, known as Maximum Achievable Control Technology (MACT) limits, for mercury emissions from electric utility steam generating plants. ...
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> The scope of the review and critique included:
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> - The quality and adequacy of the data used in support of the proposed standards.
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> - A review and critique of the analytical methods used by EPA to develop the "floor" for the existing source MACT standards, and the development of alternative approaches to address the identified concerns.

- A new analysis of the mercury removal performance of existing emission controls on coal-fired power plants, with a specific emphasis on determining the uncertainty in the estimates of the emissions performance of these control technologies.

- The derivation of alternative MACT floors based on a new assessment of available data and a fuller consideration of the effects of uncertainty and variability

The conclusions of this assessment are:

1. Based on our review, the ICR Part III database are inadequate to characterize the mercury emissions and control performance of existing units for the purpose of setting meaningful MACT limitations, for the following principal reasons:

- The data over-represent units with more sophisticated controls or with combinations of controls, and under-represent units equipped with cold side ESPs and hot side ESPs; therefore the sample group does not represent a cross section of US coal-fired generating units.

- The data are affected by a bias in testing conditions, because the testing was done during high-load and steady-state operations. The data provide no evidence of the emissions during partial load, transient operations or during maintenance events, all of which are covered by the proposed standards.

- The data have a very high degree of variability and uncertainty, even for properly conducted tests, as a result of the complexity of the test methods and the measurement procedures employed. The high degree of variability and uncertainty is not adequately attenuated by the small number of tests performed on each unit. As a result, we do not know whether the units that appear to be top performers, based on the data, would again demonstrate low emissions if retested at a later date.

- The data consist of "snapshot" measurements of mercury emissions from short-term testing and do not provide information on the levels of emissions over a full year. As a result, relatively little is known about the long-term mercury emissions performance of the units that were tested, and the data cannot be used to identify specific units that would be top performers on the annual-average basis that EPA has adopted for its proposed standards.

- The data were gathered using a test method that is very different from what is proposed for compliance demonstration under the rule and no effort has been made to translate the proposed standards that were

developed from the data to the basis of the test methods proposed for compliance demonstration.

- In applying these data to the setting of standards for specific types of coals and boilers, EPA has not separated the FBC and stoker units, both of which are viewed as having very different combustion, emissions and control characteristics, from the analysis of conventional coal boilers.

  As a result of these inadequacies, the ICR Part III data cannot be used to identify and evaluate the emissions performance of specific units that would rank in the top 12 percent of their subcategory (or among the 5 best) on an annual basis.

2. A review of the reported rank of the coal burned during each test identified an error in the classification of test coals and many instances in which the test coal rank could not be conclusively determined. Units firing blends of coal during testing, or firing a fuel blend of unknown proportions, should be separated from the database that is used to establish standards applicable to specific coal ranks.

3. On the basis of missing data and the results of statistical tests that call into question the validity of certain results, test data for 10 units should be excluded entirely, and data for 7 individual test runs at 6 units should be excluded.

4. The objective of EPA's MACT floor analysis is to determine the average emission limitation that the best performing units in a subcategory can achieve "under the most adverse conditions which can reasonably be expected to occur".[19] In addressing the MACT floors, EPA correctly recognized the importance of data variability and uncertainty in determining what level of emissions was achievable by the top performing units, and EPA made an effort to account for the variability in unit performance in deriving floors that could be met by the best performing units. Nevertheless, the EPA methodology has these key weaknesses and errors:

- Important sources of uncertainty and variability that affect the derivation of the MACT floors were not addressed fully. No consideration was given to the confidence bounds (uncertainties) of the correlations and average removal rates used to estimate the emissions performance of units under adverse circumstances.

[19] National Lime Association v. EPA, US Court of Appeals for the District of Columbia Circuit, 627 F.2d 416, Decided May 19, 1980.

- Further, the method used to account for unit performance variability is based on a narrow and incorrect consideration of the performance of top performing units (only) that is subject to a "self-selection" bias and that undercounts the actual variability of the emissions of top performing units.

- The definition of "most adverse conditions" for compliance of the top performing units is limited to variations in coal characteristics and did not address the effect of variations in unit operating conditions.

- EPA has not adjusted its MACT floors for the shift from Ontario Hydro stack tests to CEMs for demonstrating compliance.

5. Based on a new analysis of the performance of existing emission controls, we conclude:

- The best performing technologies for mercury removal are fabric filters (with or without scrubbing) and wet scrubbers with (cold- or hot-side) electrostatic precipitators (ESPs). The mercury removal capability of these technologies is found to be correlated -with coal chlorine content.

- No statistically significant differences can be detected in the mercury removal performance among the three configurations of fabric filter controls alone or combined with wet or dry scrubbers, at least within the modest power of the ICR Part III test data.

- Similarly, no statistically significant differences can be detected in the mercury removal performance among cold- and hot-side ESPs combined with wet scrubbers.

- The performance of other emission control technologies does not appear to be sensitive to chlorine content.

6. The performance of the best technologies is substantially reduced and highly variable when firing coals with low chlorine content. Thus, we cannot have a high level of confidence that the best performing technologies will reduce mercury emissions to a significant degree when units fire coals of relatively low chlorine content.

7. A revised methodology has been applied to the derivation of MACT floors for conventional units burning bituminous, subbituminous and lignite coals. The methodology gives consideration to the statistical uncertainties in the derivation of MACT floors and, specifically, the confidence limits of the resulting predictions. The alternative floors reflect the annual emissions performance of the top-performing units and technologies that would be achieved 97.5 percent of the time when firing an adverse annual coal supply that is at the 90^{th} percentile of emissions. The floors also

reflect a full and appropriate consideration of the effect of uncertainties and of variability on the emission levels that can be achieved on an annual basis.

8. The MACT floors developed in this study for existing units for an annual standard are:

- 6.9 lbs/TBtu for bituminous units
- 7.9 lbs/TBtu for subbituminous units
- 9.1 lbs/TBtu for Fort Union (northern) lignite units
- 34 lbs/TBtu for Gulf Coast lignite units

While these levels are higher than those derived by EPA, they do not reflect adjustments that should have been made, but could not be made, to address the uncertainty regarding: (1) emissions during load swings, low load and maintenance activities; and (2) the transformation from the short-term Ontario Hydro test method to a continuous emissions monitoring method.

9. The MACT limits developed in this study for new units for an annual standard are:

- 5.1 lbs/TBtu for bituminous units
- 7.4 lbs/TBtu for subbituminous units
- 8.5 lbs/TBtu for Fort Union (northern) lignite units
- 32 lbs/TBtu for Gulf Coast lignite units

10. The high levels of the MACT floors and limits derived here reflect the great degree of uncertainty about emissions performance that is present in the test data and the inadequacy of the data base for use in deriving a floor or a standard in which one can have an appropriate level of confidence of compliance.

11. The uncertainty in the analysis of mercury removal is sufficiently large that, at the present time and based on the ICR Part III data, one cannot say with acceptable statistical confidence that the best performing existing

units will consistently meet a floor-based standard that is below the mercury present in the coal, when the chlorine content of the coal is low.

12. Based on the analysis of emissions performance and variability prepared in this study, an assessment was made of the ability of US coals to be used in compliance with the MACT standards proposed by EPA, when fired in the best performing units. A large portion of the US coal supply – 49 percent of bituminous coals, 41 percent of subbituminous coals, and 62 percent of lignite coals on a Btu basis (71 percent for Gulf Coast lignite coals and 37 percent for Fort Union lignite coals) – will be unable to comply with the proposed standards with high statistical confidence (97.5 percent). Very large portions of the US coal supply will be unable to comply with high confidence with EPA's proposed standards for new units, including more than 80 percent of bituminous coals, more than 90 percent of subbituminous coals, and more than 75 percent of lignite coals. As a result, EPA's proposed mercury standards are likely to have substantial impacts on US coal supply and the coal-based electric industry.

13. The EPA paper, "Control of Mercury Emissions from Coal-Fired Electric Utility Boilers," presents a narrow and misleading view of the mercury capture performance of conventional SO2 and particulate control technologies. If the purpose of the paper was to communicate what is and is not known about mercury control, the paper should have discussed the limitations of the data from which conclusions were drawn, the variability and uncertainty of the results in that data, the performance that can be expected over a range of coal types, the confidence intervals for those estimates and what EPA is doing to improve the state of knowledge on the effectiveness of conventional as well as advanced control systems." (Attachment 2, emphasis added.)

These findings, including the analyses of alternative MACT floor values for different types of coal and the potential exclusion of U.S. coal reserves from commercial use given EPA's proposed MACT floors, are not offered for the purpose of suggesting specific new MACT floors. Rather, the analysis is put forward by NMA predominately to show:

1) that the current ICR data are inadequate for determining potential MACT floor values;
2) that EPA's statistical variability analyses of the ICR data are incomplete and inadequate for purposes of determining appropriate MACT floor values for any type of coal; and
3) that EPA's proposed MACT limits represent a significant compliance issue for the U.S. coal and electric power industries, and must be reassessed.

Ability of U.S. Coals to Comply with EPA's Proposed MACT Standards

At NMA's request, AEMS evaluated the impact of EPA's proposed MACT floors on the ability of various U.S. coals to comply with mercury emission limitations. This analysis relied in part on the ICR Part II database of coal mercury content in thousands of shipments to U.S. utility plants during 1999. The findings reveal that roughly one-half of U.S. coals would not be able to comply with EPA's proposed MACT limits with acceptable levels of confidence, even if burned in top-performing units.

AEMS findings are summarized below:

"A major implication of EPA's proposed rule is that a large portion of the US coal supply may face significant difficulty in achieving compliance with the proposed MACT standards, even when fired in units that have adopted the best control technologies identified in the ICR database. This is in spite of EPA's recognition that mercury MACT regulation should not cause disruption in US coal markets and EPA's effort to allow for adverse coal characteristics in setting the proposed standards.

Using the analysis of emissions performance by technology in Chapter 4 and the treatment of uncertainty and variability developed in Chapter 5, we have evaluated the ability of US coals to comply with the proposed MACT floors. The methodology is based on the ICR Part II data on coal shipments received at US generating plants during 1999. For each shipment, we identify the technology that will achieve the greatest reduction in mercury emission considering the characteristics of the coal. An emissions rate limitation is computed that can be met by the shipment with a given statistical confidence. Upper confidence limits ranging from 50 percent to 97.5 percent were examined, assuming an annual-average form for the standard. The 97.5 percent confidence limit is one that would be exceeded 2.5 percent of the time.

The assessment is based on the expected performance of the selected best technology in an average unit, without consideration of the variability in emissions performance among individual units. The probability of compliance will be less if the coals are fired in units that, although adopting the best technology, prove to have poorer emissions performance than the average unit. The probability of compliance will be greater if the coals are fired in units that prove to have better emissions performance than the average unit.

As shown in Table 8.1, a large portion of the US coal supply will be unable to achieve compliance, with high statistical confidence, with the proposed standards for existing units, even when fired in units having the best performing technologies. Nearly one-half of the US bituminous coal

supply (49 percent) will be unable to achieve compliance with 97.5 percent confidence. A somewhat lower proportion of the subbituminous coal supply (41 percent) will be unable to comply with the stated confidence, as will 62 percent of the lignite coal supply (71percent for Gulf Coast units and 37percent for Fort Union units).

Table 8.1 Ability of Coal to Achieve Compliance with EPA Proposed MACT Limits with 97.5% Confidence When Fired in Units with Top Performing Control Technology (Percent of Btus)

	EPA Proposed Standards	Percent Achieving Compliance	Percent Not Achieving Compliance
Bituminous	2.0 lbs	51%	49%
Subbituminous	5.8 lbs	59%	41%
Lignite			
All Lignite	9.2 lbs	38%	62%
Fort Union Lignite	9.2 lbs	63%	37%
Gulf Coast Lignite	9.2 lbs	29%	71%

Table 8.2 demonstrates that many coals will face low probabilities of compliance with EPA's standards, even when fired in top-performing units. Approximately 30 percent of the US bituminous and subbituminous coal supply, and 55 percent of the lignite supply (68 percent for Gulf Coast units and 18 percent for Fort Union units), will be unable to comply with at least 80 percent probability in top-performing units. A smaller proportion (6 to 15 percent for most coals) will be unable to comply with at least 50 percent probability. Lignite coal has an overall low probability of compliance at all confidence levels due to the difficulty faced by Gulf Coast lignite. The compliance difficulty is caused by the high mercury content of Gulf Coast lignite and the absence of evidence in the ICR Part III data that existing controls can achieve greater than 21 percent removal in lignite units. As a result, EPA's proposed mercury standards are likely to have significant impacts on US coal supply and the coal industry."

Table 8.2 Coal Not Achieving Compliance with EPA Proposed MACT Limits with Stated Confidence When Fired in Units with Top Performing Control Technology (Percent of Btus)

Probability of Compliance with EPA MACT Floors	Bituminous	Subbituminous	Lignite		
			All Lignite	Fort Union Lignite	Gulf Coast Lignite
97.5	49%	41%	62%	37%	71%
95	43%	40%	60%	37%	68%
90	36%	38%	59%	33%	68%
80	29%	31%	55%	18%	68%
70	24%	18%	52%	13%	66%
60	20%	10%	52%	12%	66%
50	15%	6%	52%	12%	66%

Source: Attachment 2.

Principles Guiding MACT Variability Analyses

In the event that EPA elects to promulgate MACT-based mercury emission standards, NMA supports the Industry Stakeholder Group position that "the MACT floor must consider both the fuel variability and variability from other causes such as sampling and monitoring, operational and plant to plant variability." In this case, EPA should establish subcategories that recognize differences among various mercury emission sources based upon:

- Coal rank as defined by ASTM;
- Coal mercury variability within a seam and between seams;
- Variability of other coal and flue gas constituents (e.g., chlorine, sulfur, and unburned carbon), since they can impact mercury control;
- Compliance test methodology compared to ICR test methodology;
- Plant size and currently installed environmental control equipment e.g., SCR, FGD and particulate control device (ESP or fabric filter);
- Effectiveness and variability of retrofit mercury emission control processes; and
- Plant firing system, particularly between fluidized bed and pulverized coal fired units.

These factors include plant operating configuration as well as consideration of emission control technologies currently in use at affected units, consistent with one of the two principal alternatives for MACT subcategorization put forth by the Industry

Stakeholder Group. This approach would provide, *inter alia*, for determination of alternative MACT floors for units reflecting their flue gas characteristics, including units with

- Hot stack;
- Wet stack, or
- Saturated stack configurations.

Fluidized bed and stoker units should be treated in separate subcategories, as recommended by the Industry Stakeholder Group, reflecting their fundamentally different combustion and emission control characteristics.

This approach to subcategorization recognizes that many hot-stack eastern units fired with bituminous coals are not cost-effective candidates for capital-intensive control technology retrofits. If confronted with stringent mercury MACT limits, many older and smaller eastern bituminous units may be retired prematurely, with adverse consequences for power supply and reliability in many areas. As recommended in Section VI below, EPA should provide emission-based exemptions for relatively small mercury-emitting units to mitigate the substantial risks of plant closures among older and smaller units.

Similarly, subbituminous plants burning western PRB coal, equipped with dry scrubbers and fabric filters (a typical configuration for PRB plants built after 1978), obtain virtually no mercury reduction. It is not reasonable to assume that operators would strip out a dry scrubber and replace it with a wet scrubber. Wet scrubbers also create significant problems with the high particulate associated with PRB coal. A stringent mercury MACT limit for subbituminous coals could cause many western plants with dry scrubbers and fabric filters to be retired prematurely, with similar adverse consequences for power supply and reliability.

Implications for Coal Variability Testing and Analysis

EPA also needs to consider the ability of coal producers to provide utilities with accurate coal mercury content data. Coal burning units will require reliable data on coal mercury contents in all coal shipments to comply with mercury emissions limits. The primary source of this information will be coal suppliers and analytical laboratories that have the capability to accurately measure coal mercury content.

Significant challenges for mercury analysis will arise due to the natural variability of mercury in coal and the accuracy and precision of mercury in coal measurements. As evidenced by the ICR Part II and III coal data, mercury contents within a coal seam and even within a coal mine can vary significantly. For example, Obermiller[20] studied the long-term variability of trace elements, including mercury, for washed coal produced from a single Pittsburgh seam mine and from adjacent mines operating within the same

[20] E.L. Obermiller, EPRI Conference: Managing Hazardous Air Pollutants, Washington, DC, November 4-6, 1991.

seam shipping raw coal. He reported that mercury varied by a factor of 2 to 3 more than other commercially important coal quality parameters such as ash, sulfur and heating value.

Clearly, the precision and accuracy of mercury in coal measurements impacts the assessment of its natural variability. In a five laboratory round robin conducted as part of the U.S. Department of Energy's Air Toxics Assessment Program, Rosendale[21] reported an average inter-laboratory variability, expressed as Percent Relative Standard Deviation (PRSD), on mercury measurements of 20%. The eight coals used in the study represented the coal feeds to the eight sites included in the air toxics assessment, a geologically diverse sample ranging from lignite to bituminous. The inter-laboratory variability of the mercury measurements for the eight coals ranged from 10 to 40%.

In a larger eleven lab round robin study, Lengyel[22] reported inter-laboratory variability of mercury measurements, expressed as PRSD, of between 20% and 95%. A certified reference coal (CRM) was included in the study. Only fifty-six percent of the results reported by the eleven participating labs fell within the stated uncertainty limits of the CRM, and the group average was 12% lower than the certified value. The sample splits distributed to the participating laboratory in both round robin studies were carefully prepared from minus sixty-mesh coal using a spinning riffle designed to produce homogeneous increments.

Need for Additional Coal Subcategories

Considering the findings of the AEMS Report (Attachment 2), NMA urges EPA to consider development of separate MACT floors, in addition to those proposed for bituminous and subbituminous coals, for:

1) Fort Union (northern) lignite; and
2) Gulf Coast (southern) lignite

These floors should be based upon a selection of top-performing plants that is representative of plants burning such coals. EPA's proposed MACT floor value for lignite (9.2 lbs./TBTU) is based entirely upon a group of plants burning Fort Union lignite from the same seam in North Dakota. As demonstrated by the AEMS Report, the coal chemistry and emission control technology effectiveness for Gulf Coast lignite are fundamentally different than Fort Union lignite. Moreover, unlike other types of coal, lignite is not economically transportable from one region of the country to another, and "switching" from one type of lignite to another is not feasible. These differences should

[21] L.W. Rosendale, "Interlaboratory Variability and Accuracy of Coal Analysis in the U.S. Department of Energy Air Toxics Assessment Program," Air& Waste Management Association Annual Meeting, June 19-24, 1994, Cincinnati, OH

[22] J. Lengyel, Interlaboratory and Intralaboratory Variability in the Analysis of Mercury in Coal, University of Kentucky, Center for Applied Energy Research, Vol.6, No.5, 1995

be recognized by separate MACT floor values for these two fundamentally different fuels.

NMA also notes that the Fort Union lignite coals in the ICR database had mercury contents as much as 90% lower than lignite coals from the Gulf Coast. In the 1999 ICR data, the average mercury emissions from Fort Union lignite units was 5.03 lb/TBtu while the average for Gulf Coast lignite units was 25.76 lb/TBtu. Both of these averages include a fluidized bed unit with fundamentally different operational processes than conventional lignite boilers. These differences alone justify a reanalysis of the ICR plant samples to provide separate emission performance standards for Fort Union and Gulf Coast Lignite.

IV. Proposed Emission Limits for New Units

EPA's proposed limits for new sources, under either a MACT or cap-and-trade (NSPS) approach, are unduly stringent and would preclude the use of many U.S. coals. Unrealistic new source controls could present an insurmountable barrier to the construction of new, low-cost coal powered generation, conflicting with the Administration's energy policies favoring the development of all forms of domestic energy.

The proposed emission limits for new plants need to reflect the emission performance that can be expected from different coal types at plants equipped with state-of-the-art emission controls, and must ensure that all U.S. coals may be utilized at such new plants. The United States can ill afford to create artificial barriers to the development and use of its largest domestic energy resource.

The U.S. Department of Energy, Energy Information Administration, projects a significant increase in construction of new coal-based powerplants. EIA's forecast to 2025 indicates that coal will become the predominant choice for new generation as the U.S. continues to deplete its reserves of natural gas, and alternative energy sources remain costly:

Projected New U.S. Electric Generating Capacity Additions, 2002-2025
(In gigawatts)

	Natural Gas	Coal	Renewables
2002-2005	57.7	0.6	2.4
2006-2010	17.6	6.2	3.3
2011-2015	60.2	11.8	3.8
2016-2020	48.5	33.3	4.9
2021-2025	40.6	59.9	4.7

Source: DOE/EIA, Annual Energy Outlook 2004 with Projections to 2025 (Washington, DC, 2004).

EPA has proposed the same numerical limits for new source MACT under Section 112 and the alternative NSPS under Section 111. Under Section 112, the new source MACT limit should "not be less stringent than the emission control that is achieved in practice by the best controlled similar source." Under Section 111, NSPS should "reflect the degree of emission limitation and the percentage reduction achievable through application of the best technological system of continuous emission reduction ... (taking into consideration the cost of achieving such emission reduction, any nonair quality health and environmental impact and energy requirements)." Limits under both sections of the Act begin with an assessment of what limit is achievable in practice with the best available controls, but the NSPS goes on to consider cost, energy use and non-air impacts. Therefore, it is logical to conclude that an NSPS limit can be no more stringent than the comparable new source limit determined under Section 112.

EPA's proposed new source standards are not based on the "best controlled similar source" using a worst-case operating scenario. New coal-fired units are not uniform in design; coal properties and other factors can significantly affect plant designs. Current bituminous pulverized coal (PC) plant designs typically incorporate a wet scrubber for SO2 control, an electrostatic precipitator or baghouse for particulate control, and an SCR for NOx reduction. New plants designed for Powder River Basin coal will likely be dry scrubbed, have a fabric filter, and some advanced form of NOx control such as SCR. As noted previously, dry scrubbed plants with fabric filters obtain virtually no mercury reduction. An SCR or other form of NOx control may aid in the reduction of mercury, but there is no data in EPA's ICR database on which to base a sound decision on the effectiveness of NOx controls in reducing mercury emissions from either eastern or western coals.

As discussed in the AEMS Report, EPA's variability analysis used to set the MACT floors for new sources does not account for all sources of variability. The proposed emission limits for new sources should be rejected for this reason alone. Moreover, evidence from ongoing new source construction projects indicates that pollution control vendors are not willing to warrant the levels of mercury reduction called for by EPA's proposed MACT floors.

EPA's proposed standards for new sources must be revised to fully account for variability in the performance of the "best performing" unit, regardless of whether it imposes a MACT limit or a "cap-and-trade" program. The Agency should add a "percent reduction" alternative for new units, based on the mercury in the coal supplied to the boiler and the mercury in the stack. Finally, if EPA chooses a "cap-and-trade" program, it must ensure that new facilities have reasonable access to mercury emission allowances.

Proposed New Source Limits Conflict with
Field Tests of Emerging Technologies

Even some of the most promising technologies for cost-effective mercury removal have not demonstrated commercial viability, much less mercury removal performance consistent with the stringent MACT limits EPA is proposing for new sources. Field tests using enhanced wet scrubber technologies have reported disappointing results, with mercury removals at Cinergy's 1300 MW Zimmer plant burning eastern bituminous coal showing "negative" percent reduction of elemental mercury due to the conversion of oxidized mercury to elemental form in the scrubbing process.[23] Subsequent testing at this plant and a smaller unit confirmed the potential for mercury capture through Flue Gas Desulfurization (FGD) additives, but not at levels consistent with EPA's proposed new source limits:

> "It has been known for some time that wet FGD systems are capable of generally high removal of oxidized mercury from flue gas, with little if any capture of elemental mercury due the metallic form being virtually completely insoluble. Whatever reduction in elemental mercury concentration may occur is generally ascribed to its "last minute" oxidation and removal. At Endicott, the data presented in the figure equate to a consistently high oxidized mercury removal efficiency of 95 percent, which, when coupled with the elemental mercury that passes through, equates to an overall removal of 77 percent for the combined Verification and Long-term Testing phases of the project. (Overall removal includes whatever particulate mercury values were determined in the work-up of

[23] S. Nolan, et al., MERCURY EMISSIONS CONTROL IN WET FGD SYSTEMS (Babcock & Wilcox, 2003); http://www.netl.doe.gov/coalpower/environment/mercury/Control-tech/pubs/Nolan%20AQIIIm95_eb3.pdf

the (Ontario Hydro) analyses. None of the particulate mercury values measured at the FGD system inlet accounted for more than 1 percent of the total mercury measured at that point.) The results of the Verification Testing at Zimmer are in sharp contrast to those obtained at Endicott. Although the expectation had been that the additive would be about equally effective in the lime-based FGD system there, such was obviously not the case. Overall the mercury capture across the FGD system averaged 52 percent, with removal of the oxidized fraction averaging 87 percent. The negative removal efficiencies calculated for each test are thought to reflect the conversion of oxidized mercury back to its elemental form in the Zimmer scrubber system."[24]

EPA's Proposed Limits for New Sources Must Be Revised

Given uncertainty and variability in coal quality and unit operation for existing units, in addition to the variable performance of pollution control devices, EPA should exercise great caution in the design of proposed new source emission standards. The proposed mercury emission standards for new coal-fired units are unduly stringent, will severely hinder the financing and construction of new coal fired power plants, will preclude many coals from the national generation market, and are inconsistent with the requirements of the Clean Air Act.

In the proposed rule, EPA states that 90% control of mercury emissions is not currently achievable.[25] In its discussion of developing and existing mercury removal technologies in the Supplemental Notice, EPA explains that 50% to70% is a more realistic removal efficiency. [26]

With respect to new units burning bituminous coals, NMA is concerned that if the mercury emission limit for new bituminous coal sources were set at $6x10^{-6}$ lb Hg/MWh (equivalent to an input basis of 0.6 lb/TBtu),[27] as EPA proposes, many coals with relatively high mercury content would be precluded from use in the electric generation market.

The highest guaranteed removal rate that Peabody Energy has obtained from control equipment vendors, as evidenced by the letters included as attachments to Peabody's comments, is a qualified 80% based on the specific conditions of the coal quality at the proposed Prairie State Energy Campus in Illinois. If one assumes that an 80% control level could be achieved on new bituminous coal units, no coal above 3.0

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[24] *Id.*, at 7.
[25] *See* 69 FR 4667.
[26] *Available at* http://www.epa.gov/air/mercury/pdfs/hgsnprfinal022404.pdf. (last visited March 10, 2004). *Supplemental Notice to the Proposed Rule*, at 32.
[27] EPA's proposed NSPS limit of 6x10^-6 lb/MWh on an output basis is roughly equivalent to a 0.6 lb/TBtu input limit

lb/Tbtu could be burned and still achieve the proposed new source MACT/NSPS limit for bituminous coal.[28]

Thus, the proposed new source bituminous limit of 0.6 lb/TBtu would indirectly mandate that all coals with mercury contents above 3.0 lb/Tbtu can no longer be burned in new units. Given that the nationwide mean mercury content of bituminous coal is approximately 8 lbs/TBtu, the proposed MACT limit would exclude the use of an unacceptably large percentage of available bituminous coals.[29]

With regard to subbituminous coals, EPA has proposed a subbituminous emission limit of 20x10-6 lb/MWh (output-based limit), which translates into roughly a 2.1 lb/TBtu input-based emission limit. The basis for NMA's concern is that the likely configuration for new PRB-based coal-fired power plants will include a dry scrubber and fabric filter. This is the common configuration for PRB plants built after 1978, and is the same configuration that the ICR plant testing has shown to achieve virtually no mercury reduction due to the high elemental fraction content of PRB subbituminous coal.

Wet scrubbers are impractical for western coals, as the higher level of particulates creates a host of problems, primarily the formation of a concrete-like substance. Also, for the arid West, wet scrubbers are more difficult to utilize due to the lack of water. While new plants are likely to require an SCR, none of the PRB plants tested under the ICR has an SCR, so the effectiveness of adding an SCR is completely uncertain. Activated Carbon Injection (ACI) is an emerging technology that appears promising. However, there is currently little data on the performance of ACI in sub-bituminous plants. There is some data from the Pleasant Prairie in Wisconsin. However this data does not adequately demonstrate the long-term performance of the technology and does not address performance across the full range of plant configurations and operating conditions that will be encountered in practice.

Even if a 50% to 60% mercury reduction can be achieved for PRB coal using Activated Carbon Injection (and this has not been demonstrated for any significant number of plant configuration or operating conditions), a significant proportion of subbituminous coals will be unable to meet the standard. EPA's proposed new source emission rate of 2.1 lb Hg/TBtu (assuming a heat rate of 9500 BTU/KWh) means that a plant could not use a PRB coal in excess of 4.2 to 5.25 lb Hg/TBtu on average; and variability effects will reduce these numbers even further. EPA's ICR and SEC's test data showed that most of the plants consumed a coal far in excess of these limits for new sources. Most of the subbituminous coals tested in the ICR and SEC tests are in the 7 to 10 lb Hg/TBtu range. This means that new sources would need to get between 70% and 79% reduction – much higher than even short term ACI tests have shown to be achievable at this point in time.

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[28] The MACT limit for new plants is the same as the NSPS limit if a trading rule is adopted; references to MACT throughout this section also pertain to the NSPS limit.
[29] ICR Data.

With respect to lignite coals, EPA has proposed an output-based emission limit of $62x10^{-6}$ lbs/MWh. As discussed below, the AEMS analysis of EPA's new source emission limits shows that only 23 percent of the nation's lignite reserves could achieve compliance with EPA's proposed standard with reasonable assurance of compliance. For lignite coal, this has devastating implications. Lignite is a coal that is not transported; the mines are located near the power plants that utilize the fuel. Consequently, the new source mercury standard could preclude three-quarters of the lignite-fired power plants from any future expansion and severely limit potential new facilities.

EPA's 1999 ICR Part III data show that the highest mercury removal rate of any lignite-fired unit is 21 percent. Lignite coals have relatively high mercury contents and are largely unaffected by any existing control technology. Consequently, the agency's proposed limit for new lignite-fired units is likely to have a significant adverse impact on the ability of lignite to contribute to meeting future needs for new electrical generating capacity in this country.

EPA notes that no full-scale, lignite-fired SCR-equipped unit has been tested for mercury removal, observing, "...it is entirely possible that greater mercury removal would result when applied to a lignite-fired unit." Recent field tests evaluating SCR technology for NO_x reduction with attendant co-benefit mercury oxidation indicate SCRs are not likely technically viable applications for lignite-fired EGUs. In August of 2003, a pilot-scale SCR reactor was installed at Coyote Station, a nominal 420-megawatt lignite-fired generating facility that is located near Beulah, North Dakota. The installation was in conjunction with a study of the "Impact of SCR Catalyst on Mercury Oxidation in Lignite-Fired Combustion Systems" being conducted by the Energy and Environmental Research Center, University of North Dakota. The researchers have found that SCR technology is ineffective in oxidizing mercury and that the sulfation of calcium and sodium ash deposits foul the catalyst rendering the SCR technology ineffective for NO_x control. A paper describing the research and findings has been accepted for publication in *Fuel Processing Technology*. SCR therefore should not be considered as a viable mercury removal technology for lignite-fired EGUs.

EPA has not proposed standards for new lignite-fired units on a level of performance that is "achievable" by a unit that is "similar" to most new lignite-fired units. The highest mercury removal rate of any lignite-fired plant in the ICR data was 21 percent. The plant that achieved this removal rate was Stanton Station, a relatively small, older plant that is not "similar" to a new lignite-fired unit. The agency did not base its new unit standard on performance, but rather on the lowest mercury coal. The result of this decision is to eliminate the vast majority of lignite reserves from any new units.

These potential effects on new units using all varieties of U.S. coals are clearly contrary to EPA's stated goals. According to the proposed rule, "EPA feels that the intent of the CAA is to develop standards that, to the greatest extent reasonably possible, are consistent across the industry and avoid actions that create regional disparities." 69 FR 4669. "EPA further feels that requiring all plants to combust coal from a specific seam [with low mercury content] is not a viable long-term solution because that seam

would be rapidly depleted ... Mandated fuel type is not an appropriate criterion for identifying the MACT level of control for new coal fired units." *Id.*

NMA agrees with EPA's statements supporting flexible fuel choices. However, the Agency's proposed new source MACT limits do not achieve that goal. Instead, EPA's limits would force units to use coal from low-mercury content seams, much of which is located in specific regions of the country.

EPA's New Source Analysis Is Flawed

An emission limit developed pursuant to §112(d) of the CAA must reflect the maximum degree of reductions in emissions of HAP that is achievable taking into consideration the cost of achieving the emissions reductions, and energy requirements. For new sources, "the maximum degree of reduction in emissions that is deemed achievable for new sources in a category ... shall not be less stringent than the *emission control that is achieved in practice by the best controlled similar source*...."[30] 42 U.S.C. § 7412(d)(3) (emphasis supplied).

Thus, the standard must be achievable by the best-controlled similar source. The D.C. Circuit has articulated a test for deciding what is "achievable." The court said that a plant must achieve a given level of performance "under the most adverse circumstance which can reasonably be expected to occur." National Lime Association v. EPA, 627 F.2d 416, 431 n. 46 (1980). Stated differently, EPA must identify the level of performance that the best performing unit can achieve virtually all the time. Therefore, the predicted emission rate from the "best controlled" source must take into account how the source would react under all reasonable circumstances, such as using different fuels.

EPA has not based its proposed MACT standards for new coal-fired units on the level of performance that is "achievable" by a unit that is "similar" to most new coal-fired units. Instead, EPA has based its proposed limit for units burning bituminous coals on a very small unit that employs a combustion process quite different than conventional boilers. EPA has simply lumped all units together as "similar" based on the type of fuel they use, without taking into account differences in process types, unit size, differences in coal constituents within a given fuel rank, and other variables. 69 FR 4667.[31]

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[30] While the limit established for new units must be based on "similar" units, the limit for existing units is to be based on "the average emission limitation achieved by the best performing 12 percent of the existing sources..." CAA § 112(d)(3)(A). Congress' inclusion of the word "similar" in relation to new units is significant. EPA must consider differences among units when establishing an emission limit for new units. EPA should not have used the same approach for setting MACT limits for new and existing sources.

[31] *See* Docket A-92-55, Entry II-B-8. Memorandum from William Maxwell to the Utility MACT Project File, "Analysis of variability in determining MACT floor for coal-fired electric utility steam generating units."

While the sources considered by the EPA as the "Top 4 Bituminous Units" for mercury emissions each burn bituminous coal, a closer examination of those units reveals significant differences from most new conventional coal fired units. In fact, the "best controlled similar sources" that EPA relies upon are not similar to current new PC bituminous coal plant designs:

- The Stockton unit is a FBC unit that is not representative of new bituminous coal-fired power plants.[32]

- The Valmont unit burns a blend of western bituminous and subbituminous coal that does not have the same combustion characteristics as eastern bituminous coal and does not represent the worst-case operating scenario for eastern coal-burners.

- The Collier unit burns stoker coal. This unit is a "traveling grate stoker unit" with a capacity of just 37.5 MW.

- Mecklenburg Cogeneration Unit 1 is a small 69.9MW conventional boiler.

AEMS Analysis of New Source Emission Limits

NMA requested AEMS and RWCrawford Energy to analyze the ICR data and other coal supply data available to the agency to determine potential MACT standards for new plants. Their approach and findings, incorporated in Attachment 2, are summarized below:

> "The emissions analysis and methodology for determining MACT floors developed in the prior chapters are used here to estimate MACT limits for new units. The MACT limits for new units are based upon the performance achieved by the single best unit in the population in each subcategory, rather than an average performance of the top 12 percent of units. Given the limitations of the ICR Part III data, however, it is not possible to identify the specific unit in the population that would have the lowest emissions rate on an annual basis. Instead, this analysis is based on the performance of the best performing control technology in the database – fabric filters (with or without scrubbing) – under the adverse conditions previously defined.
>
> Because the new source limit under Section 112(d) is based on the performance of the best unit alone, it is not appropriate to make allowances for unit performance variability as was done in deriving the MACT floors for existing units. Therefore, all of the unit performance variability identified in the analysis in Chapter 4 has been eliminated in

[32] Based on the Phase I data obtained by the EPA, available on the EPA's website at http://www.epa.gov/ttn/atw/combust/utiltox/utoxpg.html.

the determination, and the allowances made in assessing the Section 112(d) limit for new units are restricted to:

- The uncertainty in the correlation analysis
- The repeat test variability that pertains to the form of the standard.

Other factors used in the MACT determination remain unchanged from those used for deriving the MACT floor for existing units. The adverse coals are based on the annual coal supply actually fired in 1999 by the unit that would be at the 90th percentile of emissions. MACT limits are estimated for the 97.5 percent confidence level for two forms of the standard: the average of 3 tests and an annual-average standard.

Table 7.1 gives the MACT limits we estimate for new units. For a standard based on the average of three tests, the new unit MACT limits are estimated to be 7.1 lbs/TBtu for bituminous units, 10 lbs/TBtu for subbituminous units, and 9.7 lbs/TBtu and 31 lbs/TBtu for Fort Union and Gulf Coast lignite units, respectively. The corresponding floors for existing units, which account for the variability in performance among the top performing units, are 2 to 3 three times higher than for new units. The combination of uncertainty in the emissions analysis and repeat test variability means that the MACT floors for new units must admit the possibility of measured emission levels in excess of the mercury content of the coals (negative removals).

Table 7.1 Assessment of New Unit MACT

	New Units		Existing Units
	Hg Removal (Percent)	**MACT (lbs/TBtu)**	**MACT Floor (lbs/TBtu)**
Average of 3 Tests			
Bituminous	-9%	7.1	16
Subbituminous	-38%	10	30
All Lignite	0%	31	109
Fort Union Lignite	-75%	15	33
Gulf Coast Lignite	-75%	55	109
Annual Average			
Bituminous	22%	5.1	6.9
Subbituminous	-1%	7.4	7.8
All Lignite	-1%	32	34
Fort Union Lignite	-1%	8.5	9.1
Gulf Coast Lignite	-1%	32	34

> For the annual form of the standard, the new unit levels are reduced below the floors for existing units. The annual limits for new units are 5.1 lbs/TBtu for bituminous units, 7.4 lbs/TBtu for subbituminous units, and 8.5 lbs/TBtu and 32 lbs/TBtu for Fort Union and Gulf Coast lignite units, respectively." Attachment 2 (emphasis added.)

These estimates of appropriate emission limits for new units are an order of magnitude higher than those estimated by EPA, reflecting AEMS' more comprehensive approach to variability analyses, as well as the use of available data on mercury content of U.S. coals. While NMA is not specifically urging the agency to adopt the values resulting from this more refined analysis, the substantial differences between EPA and AEMS' results indicate the need for a thorough reassessment of EPA's approach to the determination of new source emission limits.

Impact of New Source Limits on
U.S. Coal Reserves

In addition to the estimation of alternative new source emission limits, AEMS assessed the ability of U.S. coals to comply with EPA's proposed new source standards. AEMS findings are summarized below:

> "For new units, EPA has proposed output-based standards that are expressed as pounds of mercury emitted per megawatt hour. For purposes of converting the limits to an input basis, we have assumed a heat rate of 9,500 Btus/KWh hour for new units, which is 5 percent lower than the heat rate (10,000 Btus/KWh) that the proposed rule adopts for existing units. This rate is based on an assessment of a prototypical new coal-fired US power plant firing western coal[33]; by adopting an improved heat rate, the analysis will avoid overstating the input-based limits that are equivalent to the output-based standards. The resulting equivalent input-based limits are given in Table 8.3. New bituminous units would be required to meet a standard equivalent to 0.63 lbs/TBtu, subbituminous units a standard equivalent to 2.1 lbs/TBtu, and lignite units a standard equivalent to 6.5 lbs/TBtu. Using the methods described for existing units, we have estimated the probability that US coals can comply with EPA's proposed new unit standards, in units that have adopted the best control technologies identified in the ICR database.

[33] "Feasibility of New Coal Fueled Power Plants," presentation by Black & Veatch Energy Services Group at the 9th Clean Fossil Energy Technical Seminar, APEC Energy Working Group, March 2002.

Table 8.4 shows that only a very small portion of the US coal supply can comply with the proposed limits for new units with high statistical confidence. Only 18 percent of the bituminous coal supply, 8 percent of the subbituminous coal supply, and 22-24 percent of the lignite coal supply are found to achieve compliance with 97.5 percent confidence. More than three-fourths of the lignite supply, more than 80 percent of the bituminous supply, and more than 90 percent of the subbituminous supply cannot achieve compliance with high statistical confidence.

Table 8.3 EPA's Proposed MACT Limits for New Units (Assuming Heat Rate of 9,500 Btu/KWh)

	Proposed Output Limit 10^{-6} lbs/MWh	Equivalent Input Limit Lbs/TBtu
Bituminous	6	0.63
Subbituminous	20	2.1
Lignite	62	6.5

Table 8.4 Ability of Coal to Achieve Compliance with EPA Proposed MACT Limits with 97.5% Confidence When Fired in New Units with Top Performing Control Technology (Percent of Btus)

	EPA Proposed Standards	**Percent Achieving Compliance**	**Percent Not Achieving Compliance**
Bituminous	0.63 lbs	18%	82%
Subbituminous	2.11 lbs	8%	92%
Lignite			
All Lignite	6.5 lbs	23%	77%
Fort Union Lignite	6.5 lbs	24%	76%
Gulf Coast Lignite	6.5 lbs	22%	78%

US coals in all ranks will face low probabilities of compliance, even when fired in new units that use the best performing technologies. As Table 8.5 shows, 57 percent of the US bituminous supply will be unable to comply with at least 80 percent confidence, as will 89 percent of the subbituminous supply and 72 percent of the lignite supply (64 percent for Fort Union lignite and 74 percent for Gulf Coast lignite). Forty two

percent of the bituminous supply will have no better than a 50 percent probability of compliance, as will 62 percent of the subbituminous supply and 70 percent of lignite supply (59 percent for Fort Union lignite and 74 percent for Gulf Coast lignite). That the difficulty in complying that is faced by Gulf Coast lignite coals is largely unaffected by the confidence level is a direct result of the high mercury content typical of these coals and the absence of evidence in the ICR Part III data that any control configuration can achieve more that about 21 percent removal in lignite units. As a result, EPA's proposed limits for new units are likely to have very significant impacts on the ability of US coals to contribute to meeting future needs for new electric generating capacity and on the efforts of the US electric industry to provide for these needs.

Table 8.5 Coal Not Achieving Compliance with EPA Proposed MACT Limits with Stated Confidence When Fired in New Units with Top Performing Control Technology (Percent of Btus)

Probability of Compliance with EPA MACT Floors	Bituminous	Subbituminous	Lignite		
			All Lignite	Fort Union Lignite	Gulf Coast Lignite
97.5	82%	92%	77%	76%	78%
95	77%	91%	75%	76%	75%
90	68%	90%	75%	75%	75%
80	57%	89%	72%	64%	74%
70	51%	83%	70%	59%	74%
60	46%	73%	70%	59%	74%
50	42%	62%	70%	59%	74%

Source: Attachment 2 (emphasis added.)

EPA Should Provide a "Percent Reduction" Alternative for New and Existing Units

Given the great variability between and among units and the dramatic differences in coal characteristics among coal within a given rank, EPA should add a percent reduction alternative for both new and existing units.

As noted above, EPA states in the supplemental rule that the agency anticipates a mercury removal rate of 50-70% to be commercially achievable by 2010. Rather than requiring all new units to meet a single output-based limit, EPA should add an alternative regulatory approach that would allow new coal units to achieve either the proposed

output-based limit or a mercury removal of 50-70% based on coal as-fired.

Such an alternative would allow units to burn higher mercury content coals by removing mercury to the greatest extent possible. A given unit would have the option of complying with either a stack limit or a percent-reduction level. In addition to providing a realistic option for units that would result in significant mercury reductions, this approach would ensure that existing coal reserves remain a viable fuel source. A percent reduction alternative for existing units would address many of the same concerns about the efficiency of available control technologies, variability in coal chemistry and plant operating characteristics that are developed in the attached AEMS Report.

V. Comments Submitted by the Utility Air Regulatory Group

NMA is a member of the Utility Air Regulatory Group and generally supports UARG's comments submitted in this rulemaking. Because NMA's comments were developed independent of UARG's comments, specific NMA positions and recommendations articulated in these comments should be regarded as controlling in the event of any inconsistency with the positions and recommendations advanced by UARG.

VI. Responses to Specific EPA Requests for Comment

In this section, we address several issues on which EPA has invited comment, and other issues raised by the rulemaking proposals.

Non-Mercury HAPs Should Not Be Regulated

EPA's authority under the MACT provisions of §§ 112(c) and (d) is limited to regulating mercury emissions from coal-fired plants. This limitation results from the unique way that Congress chose to treat electric utility steam generating units under §112 of the Clean Air Act.

Section 112(n)(1)(A) requires EPA to study the hazards to public health "reasonably anticipated" to occur as a result of hazardous air pollutant (HAP) emissions from electric utility steam generating units. EPA is then to regulate as is "appropriate and necessary" to protect public health.

EPA's December 2000 decision to list coal- and oil-fired electric utility steam generating units under §112(c) was based on the agency's conclusion that mercury emissions from coal- and oil-fired power plants presented public health concerns. EPA did *not* identify public health concerns associated with the emissions of any other HAP.

In this light, EPA's December 2000 listing decision can be viewed only as involving mercury emissions from coal-fired plants. EPA can regulate non-mercury HAPs *only* if it concludes that emissions of those HAPs pose an unacceptable risk to

human health, and further concludes that controlling those emissions will reduce human health risks to acceptable levels. EPA has not made such findings, and it is therefore inappropriate to consider the regulation on non-mercury HAPS at this time.

EPA based its decision as to which HAP emissions to regulate on its initial findings submitted to Congress in 1998.[34] According to its report, the Agency performed a "screening level analysis" of 67 HAPs identified as present in emissions from utilities to determine which HAPs should be investigated more closely for health risks.[35] The "screening level analysis" used extremely conservative assumptions and models to assess possible risks to human health.

"Based on the screening assessment, a total of 14 HAPs were identified as a priority" for further analysis.[36] Of the 14 HAPs studied more closely, EPA stated it "believes mercury from coal-fired utilities is the HAP of greatest potential concern and merits additional research and study."[37] EPA further stated, "for a few other HAPs, there also are still some remaining potential concerns and uncertainties that may need further study," stating a need to further understand the effect of dioxins and nickel emissions.[38] However, EPA did not find that there were any established health concerns associated with the other HAPs.

In its December 2000 decision, EPA stated that arsenic and other metals remained of *potential concern* for carcinogenic effects. 65 FR 79827 (December 20, 2000) (emphasis supplied). In the December 15, 2003 proposal, EPA stated that "after the December 2000 [Federal Register Notice], [it] conducted additional modeling that confirmed that the Utility Report to Congress's conclusion that acid gas HAP, such as HCl, HF, and Cl, pose no hazards to public health that warrant regulation." 69 FR 4688, n. 10. Moreover, "since December 2000, EPA has not obtained any new information that would cause it to modify its conclusion concerning the lack of health effects that warrant regulation associated with HAP other than [for mercury] and [nickel]." *Id.* EPA concluded that "we believe that the nature of the uncertainties associated with the [health effect data for] non-[mercury], non-[nickel] metallic HAPs are so great that regulation of such pollutants is not appropriate at this time since those pollutants *do not pose a hazard to public health*...." 69 FR 4688 (emphasis supplied).

Section 112(n)(1)(a) allows EPA to regulate only if such regulation is "appropriate and necessary" to protect human health. If emissions of a particular HAP from electric utility steam generating units do not pose risks to human health, then EPA

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[34] *See* Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units - Final Report to Congress. February, 1998. EPA-453/R-98-004a. ("Utility Study").
[35] *Id.* at 5-1.
[36] *Id.* at ES-6.
[37] *Id.* at ES-27.
[38] *Id.*

has no authority to regulate.

As explained in the proposed rule, "[t]he EPA interprets section 112(n)(1)(a) as only authorizing regulation of utility units under section 112 with respect to HAP emissions from such units that EPA has determined are 'appropriate and necessary' to regulate under section 112 because they are reasonably anticipated to result in a hazard to public health even after imposition of the other requirements of the CAA." 69 FR 4660.

Because EPA has only made such a finding as to, at most, "mercury emissions from coal-fired units and nickel emissions from oil-fired units" EPA only has authority to regulate mercury and nickel emissions from those units. *Id.*

EPA's Proposed Methods for Measuring Mercury Emissions from Coal-Fired Power Plants Must Address the Detection Limits of Those Methods

Regardless of the monitoring alternatives specified by EPA, the final rule must address the detection limits of that testing method(s). As the allowable mercury emission levels grow smaller, it becomes scientifically more difficult to assess whether the emission limits are being met. There must be an explanation in the final rule as to how those limits will impact a new unit's compliance demonstrations with the MACT limits.

EPA must take into account the ability of existing technology to detect mercury emissions at such minute levels, and must also discuss the range of test results that may be allowable over time. Without such clarification, units will be unable to reliably determine if their test results are within an acceptable range of compliance, or if they violate the limits.

Exemptions for Small Units

EPA has requested comment on the basis for excluding certain small coal-fired units from emission controls in the context of an emission trading program:

> "The EPA has concern about Utility Units with low Hg emissions rates (*e.g.*, emitting less than 25 pounds per year) because the new, Hg-specific control technologies that we expect to be developed prior to the Phase II cap deadline may not practicably apply to such units. Our data indicate that the 396 smallest emitting coal-fired Utility Units currently account for less than 5 percent of total Hg emissions. There is reason to believe that the 15 ton Phase II cap can be achieved in a cost effective manner, even if the lowest emitting 396 units are excluded from coverage under this cap. Thus, the EPA is soliciting comment on the possibility of excluding from the Phase II cap units with low Hg emissions rates (*e.g.*, emitting less than 25 pounds per year)." 69 FR 4699.

NMA encourages EPA to exclude at least these 396 small units emitting less than 25 pounds of mercury annually due to the lack of cost-effective mercury controls available for retrofit installations, and the likelihood that emissions from these units are not contributing measurably to any domestic public health problems.

Indeed, a higher cutoff limit for a small unit exclusion could be justified for the reasons that EPA has identified regarding the prospective retrofit of mercury control technologies in a Phase II trading program:

> "The EPA does not anticipate significant local health-based concerns under a national Hg trading program. The Agency has considered this possibility and believes that the cap-and-trade system, coupled with related Federal and State programs, will effectively address local risks. This has been EPA's experience with the title IV program limiting SO2 emissions.
> First, modeling runs suggest that large coal-fired Utility Units—those that tend to have relatively high Hg emissions— are likely to have larger local deposition footprints than medium-sized and smaller coal-fired Utility Units. However, the trading of allowances is likely to involve large Utility Units controlling their emissions more than required and selling allowances to smaller Utility Units rather than the reverse scenario. This prediction arises from the basic economics of capital investment in the utility industry. ...
> Any economies of scale of pollution control investment will favor investment at the larger plants. Insofar as large coal-fired Utility Units tend to be newer and/or better maintained than medium-sized and small facilities, it can be expected that companies will favor investments in plants with a longer expected lifetime." 69 FR 4703.

For these reasons, NMA urges EPA to establish a minimum emission threshold for exclusion that will avoid the need to control emissions at small electric generating units whose emissions do not measurably impact global mercury budgets. If confronted with plant- or unit-specific emission limits, such units likely would be retired rather than retrofitted with costly control technologies.

Beyond-the-Floor Regulation

For the reasons addressed *supra*, there is no basis in the record for establishing regulation of mercury emissions beyond the MACT floor. Beyond-the-floor analyses require EPA to look at the cost of achieving more stringent emission reductions, any non-air quality health and environmental impact of further reductions, and energy requirements. Any residual mercury emissions from coal-fired power plants would be small and would constitute a very small percentage of the global mercury pool. Hence,

further controls would have little, if any, incremental effect on public health while the costs of achieving additional control would be very high.

EPA is correct in its determination that sorbent injection for mercury control is not a commercially available technology. While it is possible to buy dedicated mercury controls from a number of vendors, the data available on their performance is completely inadequate for regulatory purposes. None of these technologies has long-term performance data available for any significant number of power plant configurations, coal types or operating conditions. Any performance guarantees that may be available are limited to a very narrow range of operating conditions and coal types. It would be irresponsible for EPA to set arbitrary limits based on the performance claims of vendors, without having adequate data on the long term performance of these technologies under "worst case" operating conditions.

Compliance Unit

There is a precedent in other MACTs to require compliance on a facility basis. NMA favors compliance with MACT limits on a facility basis rather than on a boiler-by-boiler basis because unit-specific controls may be uneconomic or technically infeasible. A facility or unit-by-unit standard should result in the same amount of mercury being emitted by the facility. A facility-based limit would allow flexibility in unit operation without any adverse impact on total emissions or generation supply. In determining compliance, only emissions from coal-fired units should be counted for determining compliance with applicable facility-wide limits.

Compliance Timetable

If EPA elects to proceed with MACT-based regulation, NMA recommends that the agency provide all legally available time extensions applicable under the Clean Air Act. December 2007 is not a feasible timeframe for retrofitting all or most of the U.S. coal-fired electric generating industry with mercury control equipment.

Data Quality Act

Congress enacted new data quality legislation as part of the FY 2001 Consolidated Appropriations Act (P.L. 106-554, §515). This provision expanded previous data quality report language in the FY 1999 Omnibus Appropriations Act (P.L. 105-277). In response to these Congressional directives, the Office of Management and Budget (OMB) has developed government-wide standards for the quality of information used and disseminated by Federal agencies, including EPA.

OMB's "Information Quality Guidelines" (October 1, 2002) set forth the government-wide guidelines for "Ensuring and Maximizing the Quality, Objectivity, Utility and Integrity of Information Disseminated by Federal Agencies" published in final form in 67 FR 8452 on February 22, 2002. "Objectivity," as defined by these guidelines,

"is a measure of whether disseminated information is accurate, reliable and unbiased, and whether that information is presented in an accurate, clear, complete and unbiased manner."

NMA notes, but at this point elects not to press, its concerns about the objectivity of EPA's mercury MACT determination process, including but not limited to the selection of the plants included in EPA's ICR data base and the mischaracterization of coal supplies to the top-performing units selected for MACT floor evaluations. As discussed above and in the attached AEMS Report, EPA's sample of 80 plants appeared to be deliberately skewed toward certain plant configurations employing advanced control technologies, and thus is not representative of the entire population of coal-fired boilers in the United States. Concerns on this point were raised in the EPA Mercury MACT Working Group process, without apparent response by EPA. Other issues concerning the integrity of the ICR data and related EPA analyses of these data also were raised and documented in the course of the Working Group process.

Based on the weight of the analyses presented in these comments regarding EPA's proposed MACT emission floors and new source limits, and similar issues raised by other comments in this rulemaking, NMA is hopeful that the agency will not proceed further with a MACT-based form of mercury regulation for coal-fired electric generating units. In the event that EPA determines to rely on MACT-based standards, NMA and its members reserve all potential objections to such standards arising under the Data Quality Act and other applicable provisions of Federal law.

NMA appreciates the opportunity to provide comments in this proceeding of vital interest to its members, and trusts that these comments will be of assistance to EPA's subsequent regulatory decisions.

Sincerely,

A. Todd Johnston
Director, Air Quality

Harold P. Quinn, Jr.
Sr. Vice President and General Counsel

Constance D. Holmes
Senior Economist and Director,
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Attachments (2)