II. EPA'S ILLEGAL MACT PROPOSAL CAN AND MUST BE REJECTED IN FAVOR OF A MORE STRINGENT MACT STANDARD FOR MERCURY AND OTHER HAPS EMITTED BY POWER PLANTS.

A. Our Proposed MACT Floors for Mercury Reflect the Clean Air Act's Requirements.

As discussed in detail in the sections that follow, faithfully implementing the Clean Air Act would result in a vastly different regulatory program than EPA proposes. First, instead of arbitrarily distinguishing between utility units based on the rank of coal they combust, EPA must consider all existing coal-fired utility units as a single source category subject to regulations. Second, in calculating the MACT "floor," EPA must have a rational methodology for identifying those utility units that it will use as the best performers in the industry; specifically, because EPA proposes to establish output-based emission standards based upon calculated emission rates derived from information EPA has gathered about the coal burned by, and pollution controls in place at, various utility units, EPA must use the same criteria (lowest emitting units, considering coal use data and unit efficiency) in identifying the top performers. Third, EPA may not, in establishing an annual emission standard, base that standard on virtually the worst predicted short-term emissions of the worst of the utility units that EPA identifies as the best performing in the industry. Fourth, EPA must establish MACT standards for all HAPs emitted by utility units. Fifth, the agency must consider control technologies that are capable of reducing emissions below the MACT "floor," and establish final MACT emission rates based on those superior technologies.

Although EPA has not provided sufficient information for us to apply all of these criteria (for instance, we do not have the baseline efficiency of each Utility Unit, nor do we have sufficient data to conclude which above-the-floor technologies should drive the existing source emission standard), we are able to calculate emission rates by correcting several of EPA's errors, and they reveal that a proper MACT standard would achieve dramatic pollution reductions. Specifically, merely by eliminating EPA's unlawful subcategories and variability analysis, we have calculated an existing source "floor" level mercury standard of 0.42 lb/TBtu, which – if variability is accounted by allowing sources to comply on an annual basis – will result in approximately 4 tons of mercury emissions per year, representing a 92 percent cut from present levels. Similarly, "floor" level control for other metal HAPs should result in a 99 percent removal rate.

Because the foregoing emission limits are far more consistent with the CAA than is EPA's proposal, we strongly urge the Agency to promulgate more defensible and protective MACT standards for mercury and also at least for the metal HAPs emitted by utility units.

B. EPA's MACT Proposal is Contrary to Law.

1. Section 112(n) Contains No Authority to Regulate Utility Units Less Stringently Than Other Listed Source Categories.

Several utility interests have argued that the study and regulatory determination requirements in section 112(n)(1) of the CAA provide EPA with the ability to vary otherwise applicable legal requirements for utility units. In particular, they contend that EPA may refuse to set stringent emission standards based on MACT. If EPA is considering relying on this legal theory for its final rule, it may not. Section 112(n) contains no explicit or implicit cross-reference to any alternative to the promulgation of a MACT standard or standards for electric utility steam generating units. Rather, section 112(n) reflects only Congress' intention to require EPA to make more explicit findings before utility units are regulated under section 112,[1] and Congress's desire to have the opportunity to review the evidence related to utility air toxics prior to an EPA regulatory determination.[2]

In the 1990 Clean Air Act Amendments (CAA), Congress listed the 188 HAPs emitted by certain stationary sources.[3] The Act contains provisions for amending the list to add or remove a HAP,[4] and directs EPA to publish a list of "all categories and subcategories of major sources and area sources" that emit the section 112(b) HAPs.[5] In so doing, Congress enacted a new framework for regulating HAPs, in which industrial categories, not hazardous pollutants, were listed. This framework replaced the previous risk-based approach to regulating pollutant by pollutant, under which only eight HAPs had been listed in 20 years.[6]

The plain language of CAA section 112(c)(2) states that the EPA Administrator "shall establish emissions standards under subsection [112](d)" for each of the listed source categories.[7] Section 112(d)(2) in turn states that the emissions standards to be promulgated must be MACT standards: EPA "*shall* require the *maximum degree of*

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[1] *See* Lisa Heinzerling & Rena I. Steinzor, A Perfect Storm: Mercury and the Bush Administration, 34 ELR 10297, 10398 (April 2004).
[2] *See* 42 U.S.C. § 7412(n)(1).
[3] 42 U.S.C. § 7412(b).
[4] 42 U.S.C. § 7412(b)(2).
[5] 42 U.S.C. § 7412(c).
[6] It is notable that mercury was among the 8 pollutants the Agency had listed between 1970 and the 1990 Amendments. Hon. Henry Waxman, "The Clean Air Act Amendments of 1990: Symposium, An Overview and Critique," 21 Envtl. L. 1721, 1774 & n.244 (1991).(citing 40 C.F.R. § 61.01 (1990).
[7] 42 U.S.C. § 7412(c)(2); *see also id.* § 7412(c)(5) (EPA Administrator "shall promulgate" emissions standards under section 112(d) for source categories added to the section 112(c) list after 1991).

reduction in emissions *of the hazardous air pollutants subject to this section* . . . . that the Administrator . . . determines is *achievable* . . . ."[8] Once a source category is listed, therefore, under the express terms of the Act it is the Administrator's mandatory duty to promulgate MACT standards for the hazardous air pollutants (HAPs) listed in section 112(b)(1), and emitted by that source category. The Agency is not faced with any additional "decision" about whether or not to issue MACT standards for the source category.

Utility interests, however, have argued in the record, and EPA seems willing to concur,[9] that section 112(n) provides an independent, and exclusive source of authority for EPA to regulate utility units.[10] This perspective is not supported by the language or structure of the Act, as discussed above. Nor is there any support for this idea in the legislative history underlying § 112.[11] Indeed, industry simply makes the bald, unsupported assertion that section "112(n) provides EPA with authority to promulgate emissions standards. . . ." [12]

EPA listed utility units under section 112(c), and there is nothing in the text or legislative history to suggest that Congress intended that utility units, once listed under section 112(c), would be regulated in any way other than under the provisions of section 112(d). Certainly Congress in 1990 knew how to describe alternative approaches to HAP

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[8] 42 U.S.C. § 7412(d)(2)(emphasis added).
[9] *See* 69 Fed. Reg. 4661-62.
[10] See R. Wyman & C. O'Brien, Latham & Watkins, "A Systemwide Compliance Alternative for Mercury Emissions from Electric Utility Steam Generating Units" ("L&W Systemwide Compliance Memo)(September 4, 2003) at 1-2(attached).
[11] S. 1630, as it passed the Senate, required additional study and report to Congress by the National Institute of Environmental Health Sciences, and required that EPA's standards for power plants be "consistent with" § 112(d). 3 Leg. Hist. at 4432. But S. 1630 as it passed the House replaced that language in favor of the the House bill language with some changes, requiring EPA to study control technologies for and the health effects of HAPs emissions, and requiring that EPA must regulate power plants "under this section" if it found such regulation is appropriate and necessary. 2 Leg. Hist. at 2148-2149.

regulation for specific industries; one need only read section 129 of the Act to see that. But Congress did not set alternative regulatory requirements for utility units – instead Congress directed EPA to complete and consider additional studies prior to making the regulatory determination. In December 2000, EPA made determination and the listing decision, and the legal consequence of that decision was the requirement to develop regulations in accordance with the statutory language and case law interpreting section 112(d).

EPA itself has recognized the plain implications of its decision to list utility units under section 112(c). After the agency's regulatory determination and listing decision, an association of industry interests challenged EPA's action in court, and argued that the court should hear the case at that point because the industry objected to several agency interpretations with "immediate consequences," including EPA's apparent conclusion that the determination "requires the EPA Administrator to regulate [HAP] emissions under § 112(d) of the Act. . . ."[13] In response, EPA confirmed that MACT regulation under section 112(d) was the natural consequence of its listing decision:

> That a decision that regulation of electric utility steam generating units *under section 112* is appropriate and necessary equates with a decision to list them for establishment of standards under section 112(d) is rather obvious from the language and structure of section 112 itself. Section 112(d) provides the core standard-setting authority of that section. It is difficult to see another reading that makes any sense of the phrase "under this section" in section 112(n)(1)(A), and petitioners offer none. *Surely Congress did not intend EPA to invent its own standard-setting program for these units out of whole cloth.*[14]

[12] L&W Global Compliance Memo at 7.
[13] Petitioners' Joint Response to Respondent's and Intervenors' Motion to Dismiss, *Utility Air Regulatory Group v. EPA*, No. 01-1074 & consolidated case, at 2 (D.C. Cir. May 7, 2001).
[14] EPA's Reply in Support of Motion to Dismiss, *Utility Air Regulatory Group v. EPA*, No. 01-1074 & consolidated case, at 4 (D.C. Cir. May 17, 2001) (emphasis added).

Thus, EPA's suggestion – and the industry's vigorous argument – that section 112(d) standards need not be promulgated, and that section 112(n) permits EPA to issue standards less stringent than MACT, are simply unlawful and must be rejected.

2. EPA's Proposed Subcategories are Contrary to Law.

EPA proposes five subcategories, for both existing and new units, within the industry subcategory "coal-fired utility units".[15] Of the five subcategories, one is based on a process type (integrated gasification combined cycle (IGCC)), and four are based on coal rank;[16] EPA distinguishes units burning bituminous, subbituminous, lignite, and coal refuse (which includes anthracite coal refuse, bituminous coal refuse, and sub-bituminous coal refuse).[17] EPA's proposed subcategorization scheme is an unlawful, arbitrary, and capricious departure from the most basic purposes of the CAA's MACT program.

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[15] In its proposed approach to the MACT standard for utility units, EPA initially distinguished between coal- and oil-fired units. That distinction is supported by the record: coal- and oil-fired units do have vastly different emissions characteristics due to the physical and operational differences between such units. A coal-fired utility unit produces higher emission levels of mercury, for example, than does a comparably-sized oil-fired unit, whereas the oil-fired unit produces higher levels of nickel compounds. Utility Air Toxics Study, Exec. Summ at ES-7, Table ES-1. Moreover, oil-fired units are generally used as "peaking" units (operated when extra electrical power supply is needed, whereas the industry uses coal-fired units as base-load facilities – designed to run continuously except for maintenance intervals.

[16] 69 Fed. Reg. at 4660.

[17] The American Society for Testing and Materials (ASTM) classifies coals by rank, a term which relates to the carbon content of the coal and other related parameters such as volatile-matter content, heating value, and agglomerating properties. Although there are distinctions among coal ranks, there is no precise line dividing the coals, and the various coal ranks have significantly overlapping characteristics. For example, both lignite and sub-bituminous coals have relatively high moisture content and high volatility; because bituminous coal is so similar to anthracite coal based on coal physical characteristics (ash content, sulfur content, HHV), EPA considers anthracite coal to be equivalent to bituminous coal for the purposes of the proposed rule. Coal refuse (i.e. anthracite coal refuse (culm), bituminous coal refuse (gob), and sub-bituminous coal refuse) is also combusted in utility units. Coal refuse refers to the waste products of coal mining, physical coal cleaning, and coal preparation operations (e.g. culm, gob, etc.) containing coal, matrix material, clay and other organic an inorganic material. Previously considered unusable by the industry because of the high ash content and relatively low heat content, it now is being utilized as a supplemental fuel.

EPA's subcategories are based on what are now significantly out-of-date ASTM designations for coal rank, namely D388-77, -90, -91, -95, or –98a. *See* 69 Fed. Reg. at 4727 (proposed 40 C.F.R. § 63.10042)(definitions of coal ranks). These ASTM designations are not available on line at this time, but can only be obtained via library archive or by purchase. EPA seemingly relies on these out-of-date designations because another section of the EPA rules, 40 C.F.R. 60.17, incorporates them by reference.

It is apparent, moreover, that in the process of selecting subcategories, EPA has succumbed to industry pressures to weaken standards applicable to power plants.[18] Not surprisingly, as the effect of this aspect of the rule is to produce much weaker emissions limits than would be the case for a subcategory covering, say, all conventional boilers burning coal, many (but not all) in the electric power industry support subcategorization by coal rank. In the context of this rulemaking, some industry stakeholders submitted a position paper expounding on its rationales supporting coal rank-based subcategorization. EPA appears to have directly imported the industry arguments into this proposal.

a. EPA's proposed subcategorization by coal rank is without rational basis, arbitrary and capricious.

EPA's proposal to subcategorize by coal rank is arbitrary because coal "rank" is not an easily discernible and unwaveringly clear characteristic of coals, and because the choice of combustion technology is not strongly driven by the coal rank burned. Indeed, technical and scientific evidence demonstrates that sources commonly burn a blend of coals, and that coal combustion technologies vary little due to coal rank of the fuel burned. Below, we describe several problems with the agency's proposed subcategorization scheme.

We do not see the logic or basis in relying on difficult to obtain and outdated standards for such a crucial element of the rule. Our comments therefore focus on the present version of the ASTM designations.

[18] *Compare* "Recommendations on the Utility Air Toxics MACT, Final Working Group Report" (October 2002) at slide 11 (Environmentalist and State position on subcategories) *wth* slides 12-13 (Utility Industry fuel-rank based positions). Available online at: http://www.epa.gov/ttn/atw/combust/utiltox/wgfnlprez1002.ppt (visited June 23, 2004).

See also letter to EPA Administrator Mike Leavitt from Senator Jeffords, dated March 16, 2004, attached; New York Times article by C. Drew and R. Oppel, Jr., March 6, 2004, *How Industry Won the Battle of Pollution Control at E.P.A*; "OMB Has Asked EPA to Limit MACT Rule's Scope to 40 Percent Fewer Sources", Risk Policy Report, August 20, 2002; "OMB Asks EPA to Scale Back Scope of Air Toxic Rules, InsideEPA.com (July 22, 2002); "EPA Eyes Air Toxics Exemptions for Host of Industry Sector," Clean Air Report (March 28, 2002).

First, EPA's subcategorization by coal rank is based in part on its assumption that boilers are generally designed to burn only one type of coal. In fact, utilities regularly practice substitution of coal and shift among fuel supplies and suppliers at will, often burning more than one type of coal simultaneously.[19] The purported differences among units that burn different ranks of coal are therefore of little real-world consequence, and EPA's coal-rank based subcategories find no actual support in the facts and therefore are arbitrary and capricious. There is no significant technical difference in the boilers receiving the various types of coal – in fact, the same boilers can and do burn many types of coal. Indeed, EPA itself recognizes that nearly a quarter of the coal-fired units in the nation currently fire different ranks of coal.[20]

Babcock and Wilcox, the manufacturer of various coal-fired power plant components, states that the majority of bituminous, sub-bituminous and lignite-fired conventional units are adaptable to most types of coal.[21] Plant designs have core commonalities such that any differences can be overcome when a company wants fuel options. Some industry representatives argue in the context of this rulemaking, that coal switching and coal blending can cause significant operating problems such as reduced steam capacity, increased slagging and fouling and poorer ignition stability.[22] EPA

[19] *See* certain utility industry representative comments, contained in a September 6, 2002 letter to US EPA written by utility representatives, including Clean Energy Group member companies: Conective, Consolidated Edison, Inc., Exelon Corporation; Keyspan, Northeast Utilities, PG&E National Energy Group, Public Service Enterprise Group Inc., and Sempra Energy. Available on line at http://www.epa.gov/ttn/atw/combust/utiltox/ceg2epa9-6-02.doc. (visited June 23, 2004).

[20] 69 Fed. Reg. at 4666. EPA proposes language that would, effectively let units that burn a blend of fuels out of the national emissions limits altogether. Proposed 40 C.F.R. § 60.45(a)(5) allows new and existing units burning a blend of fuels essentially to create unit-specific emissions limits based on the proportion of each coal they burn during the compliance period.

[21] S.C. Stultz and J.B. Kitto, *Steam: its generation and use*, 40th edition, (Babcock and Wilcox, 1992), Chapter 13 at 13-3.

[22] Latham & Watkins, "Basis and Rationale for Subcategorization of Coal-fired Electric Utility Steam Generating Units," (March 8,2002) ("L&W Subcategorization Memo") Docket A-92-55II-E-34.

seemingly adopts their arguments without question.[23] However, blaming these issues on coal rank choice completely ignores the numerous factors and operating variables that contribute to slagging and fouling, including air distribution, fuel distribution, coal fineness and excess air which are routinely handled by plant operators.[24]

Industry would like to have it both ways, and EPA seems willing to accommodate them: EPA proposes *both* subcategories based on coal rank, based on the argument that combustion technologies are coal-rank specific, *and* a separate case-by-case alternative floor for units burning a blend of coals,[25] having acknowledged that about a quarter of the industry has managed to overcome this supposed technological constraint.[26] Second, EPA's reliance on relying on the ASTM method to determine coal rank is so technically problematic that it erodes EPA's rationale for subcategorizing by coal rank. EPA itself acknowledges that there is some overlap between the characteristics of different ranks.[27] As a result, it appears likely that it will be difficult to characterize rank of coal for any

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[23] Indeed, EPA found the industry arguments so much to its liking that it included several of them nearly verbatim in its proposal. *See, e.g.,* J. Michael Geers, Cinergy Corp., and Claudia M. O'Brien, Latham & Watkins, "Basis And Rationale For Potential Subcategorization Of Coal-Fired Electric Utility Steam Generating Units," at iv (Mar. 8, 2002) ("The type of coal to be burned has an enormous impact on overall plant design. The goal of the plant designer is to arrange boiler components (furnace, superheater, reheater, boiler bank, economizer, and air heater) to provide the rated steam flow, maximize thermal efficiency and minimize cost. Engineering calculations are used to determine the optimum positioning and sizing of these components, which cool the flue gas and generate the superheated steam. The accuracy of the parameters specified by the owner/operators is critical to designing and building an optimal plant." (footnotes omitted)), available online at http://www.epa.gov/ttn/atw/combust/utiltox/9brh04.pdf (visited June 14, 2004); *see also* 69 Fed. Reg. at 4,665 (virtually identical).

[24] *See Steam: its generation and use*, Chapter 20 at 20-16.

[25] *See* 69 FR 4652,4720 (proposed 40 C.F.R. § 63.99990(a)(5); *see also, e.g.,* 69 FR at 4692 (preamble discussion).

[26] EPA's approach to units that burn a blend of coals is unlawful. The CAA requires EPA to promulgate emission standards for each subcategory of sources that emit listed HAPs, *see* 42 U.S.C. § 7412(d)(1), and those standards are to be based on the best performing units within the subcategory, *see id.* § 7412(d)(3), but EPA does not propose a uniform standard for units burning a blend of coals and does not base the standard, such as it is, on the best-performing blended coal units. In other words, even though EPA effectively creates a subcategory of units burning coal blends, it makes no effort to establish MACT for that subcategory.

[27] 69 Fed. Reg. at 4665.

given shipment, and therefore it may be problematic to determine to which subcategory any given unit belongs, or what standard it must meet at any given time. For instance, the ASTM method classifies coals with the same gross calorific value into different ranks (bituminous and subbituminous) based on their "agglomerating character," which involves a subjective determination.[28] Utility plant operators, furthermore, lack the ability to independently determine the rank of the coal they receive, and will need to rely on the determinations of others; the method depends on assessments that clearly need to take place where the coal is mined.[29] This fact seems likely to complicate any future enforcement of this standard, either by EPA or by citizens, because information related to a key element of the legal requirements applicable to the source (what rank of coal the unit burns) will be in the possession of third parties, not the source itself.

Third, it also is evident from the ASTM method that individual mines can produce coal of different ranks.[30] EPA's justification for the decision to subcategorize based on coal rank[31] -- namely, that many utilities are dependent on particular mines and therefore particular ranks of coal -- is not supported.

Fourth, an industry publication – considered the seminal reference on steam generators –shows some of the overlapping characteristics of different coal ranks.[32]

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[28] *See* ASTM, Standard Classification of Coals by Rank, at § 6.2 (May 2002); *see also id.* at § 8.3 (agglomerating character can be determined by whether tested coal produces, among other things, "a button showing swelling or cell structure").

[29] *See, e.g., id.* at §§ 7.1 (take "preferably five or more" samples . . . either with the same mine or closely adjacent mines representing a continuous and compact area not greater than approximately four square miles in regions of geological uniformity"); 7.1.3 (seal samples "to preserve inherent moisture"); 7.1.4 (do not use "samples from outcrops or from weathered or oxidized coal").

[30] *Id.* at § 7.1 ("In regions in which conditions indicate that the coal probably varies rapidly in short distances, the spacing of sampling points and groupings of analyses to provide average values shall not be such that coals of obviously different rank will be used in calculating average values."

[31] *See* 69 Fed. Reg. at 4666.

[32] *See* S.C. Stultz and J.B. Kitto, *Steam: Its Generation and Use, 40th Edition*, at table 5, page 8-6, (Babcock and Wilcox, 1992) (summarizing variations among coal classifications).

Coals of varying ranks exhibit similar combustion and handling properties.[33] Indeed, as EPA acknowledges:

> because of the overlap in various characteristics in the ASTM definitions of coal rank, certain bituminous and subbituminous coals (for example) exhibit similar handling and combustion properties. Plant designers and operators have learned to accommodate these blends in certain circumstances without significant impact on plant operation or control.[34]

EPA, however, refuses to take account of utility units' inherent flexibility and their operators' ingenuity by establishing subcategories based on coal rank.

Fifth, EPA's treatment of utility units burning different ranks of coal as fundamentally different from one another is at odds with the agency's real world experience implementing the acid rain provisions in Title IV of the 1990 Amendments to the CAA. During the first phase of the sulfur dioxide cap, numerous operators switched to low-sulfur coal to satisfy these requirements,[35] demonstrating that these units are capable of burning a mix of coal ranks to comply with pollution limits, and thus undermining EPA's suggestion that utility units are essentially linked with one kind of coal rank.

Sixth, even if different ranks of coal may initially have different properties, available information indicates that coal treatment technology may allow one coal rank to act in ways that make it more like a coal of a different rank.[36] Research is demonstrating that coal ranks are somewhat fluid; as part of a clean coal technology demonstration

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[33] 69 *Fed. Reg*. 4665.
[34] 69 Fed. Reg. at 4665 & 4692.
[35] Byron Swift, *How Environmental Laws Work: An Analysis of the Utility Sector's Response to Regulation of Nitrogen Oxides and Sulfur Dioxide Under the Clean Air Act*, 14 Tulane Envt'l L.J. 309, 328 (Summer 2001) ("Fuel switching by firms that blended or switched to low-sulfur or medium-sulfur coal contributed 59% of reductions" under Phase I).
[36] *See* ADA-ES, Inc, "ADA-249M Fluxing Additive," available online at www.adaes.com/fluxadditive.html (visited June 14, 2004) ("We have found an inexpensive additive that makes PRB coal slag behave more like bituminous coal.").

program funded by the Department of Energy, at least two companies have developed processes aimed at "upgrading" low-rank coals so that they might be substituted for higher-rank coals.[37] According to a report discussing these technologies, low-rank coal can be treated to the point that it has the same heating value as bituminous coal.[38] Other similar treatment approaches appear to be viable.[39] If these claims are supportable, then there is no rational basis for asserting that the specific rank of coal will so drive technological choices at power plants as to demand subcategorization by rank in crafting a MACT standard for the industry.

Seventh, EPA acknowledges that one of the key considerations in evaluating whether subcategorization is appropriate is to examine whether different units have "differences in the feasibility of application of control technology. . . ."[40] However, the agency ignores this premise by establishing coal rank-based subcategories when available evidence indicates that units burning different ranks of coal are equally amenable to mercury pollution controls. A recent report noted that "[t]he most effective [conventional] pollutant technology for reduction of mercury and other hazardous air pollutants at facilities burning bituminous *as well as subbituminous coals* are fabric filters," with average mercury removal rates of 90 percent and 72 percent, respectively.[41] The report also concluded that "available carbon injection studies have demonstrated that 90% mercury control can be achieved at facilities burning bituminous coal *as well as*

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[37] Clean Coal Technology: Upgrading of Low-Grade Coals (Aug. 1997), available online at http://mfnl.xjtu.edu.cn/giv-doe-netl/publications/others/topicals/topical10.pdf (visited June 23, 2004).
[38] *Id.* at 14 (describing the SynCoal Advanced Coal Conversion Process as being able to change coal with heating value of 5,000-9,000 Btu/lb. to as high as 12,000 Btu/lb.).
[39] *See* ADA-ES, Inc, "ADA-249M Fluxing Additive," available online at www.adaes.com/fluxadditive.html (visited June 14, 2004) ("We have found an inexpensive additive that makes PRB coal slag behave more like bituminous coal.").
[40] 69 Fed. Reg. at 4,664.

facilities burning subbituminous coal when equipped with a fabric filter. . . ."[42] In other words, both high- and low- rank coals can be controlled by the same technology and to a very high degree, a fact which seriously undermines EPA's decision to treat them as fundamentally different.

Finally, while EPA's justification for subcategorizing existing units by coal rank is spurious at best, there is *absolutely* no rationale for doing so for *new* units.[43] New steam producing units can very easily be designed to provide optimum performance when firing all coal ranks. Similarly, EPA tells us that "the industry has some ability during the designing of new units to choose coal or oil that would minimize emissions of Hg or Ni and recognizes that the MACT standard for new units should, to the extent possible, encourage the industry in that direction."[44] While EPA seems to believe[45] that a unit combusting subbituminous coal and a unit combusting bituminous coal are not "similar units," for the purpose of deriving MACT floors for new sources, this conclusion is simply irrational because these units are not just *similar,* they frequently are *exactly the same* kinds of units, with the only difference being that their owners/operators choose different fuel suppliers as they strive to minimize the cost of coal. The same units can and do burn more than one type of coal.[46] Accordingly, EPA must, in establishing new

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[41] Shilpi Bannerjee & Vicki Stamper, "Mercury Air Pollution: The Case for Rigorous MACT Standards for Subbituminous Coal," at 7 (May 2003).

[42] *Id.*at 9.

[43] EPA specifically requests comment on whether to treat new and existing units diffferently with respect to subcategorization. 69 Fed. Reg. at 4667.

[44] *Id.*

[45] As described *infra* in these comments, EPA incorrectly basis its subcategorization scheme on the assumption that power plants burn only one type of coal. In fact, the practice of fuel switching is very common in the utility industry, a practice that allows utilities to seek the less expensive coal. See comments of the Clean Energy Group in a letter to EPA dated September 6, 2002. Available on line at http://www.epa.gov/ttn/atw/combust/utiltox/ceg2epa9-6-02.doc (visited June 23, 2004).

[46] *See id.*

source emission standards, reject subcategorization and establish a single limit for emissions from new coal units.

b. EPA's proposed subcategorization scheme for coal-fired utility units is an abuse of discretion.

Section 112(d)(1) gives the Administrator authority to "distinguish among classes, types and sizes of sources within a category or subcategory in establishing . . . [MACT] standards . . . ."[47] But this authority is not unfettered; the basis of subcategorization must bear a reasonable relationship to the congressional purpose underlying section 112 of the Act. This step in the MACT standard stetting process was not intended to be used in an arbitrary fashion so as to frustrate Congressional intent that HAPs emissions limits reflect the best performers in a listed industrial category.[48] Nor was this authority meant to allow EPA to separate well-controlled and poorly-controlled units into different subcategories; as the agency recently stated:

> Normally, it is legally impermissible to subcategorize based on the type of air pollution control device. See *Chemical Manufacturers Association* v. *EPA,* 870 F. 2d 177, 218–19 (5th Cir. 1989) modified on different grounds on rehearing 884 F. 2d 253 (5th Cir. 1989) (rejecting subcategorization based on type of control device for purposes of the technology-based standards under the Clean Water Act, which are analogous to the CAA section 112 standards). The problem with subcategorizing on the basis of pollution control device, quite simply, is that it leads to situations where floors are established based on performance of sources that are not the best performing. For example, suppose a source category consists of 100 sources using the same process and having the same emission characteristics, but that 50 sources use control device A to control HAP emissions, and 50 use control device B which is two orders of magnitude less efficient. If one subcategorized based on the type of pollution control device, the MACT floor for the 50 sources with control device B would reflect worst, rather than best performance. Although the disparity in levels of emission control

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[47] 42 U.S.C. §7412(d)(1).
[48] Hon. Henry Waxman, "The Clean Air Act Amendments of 1990: Symposium, An Overview and Critique," 21 Envtl. L. 1721, 1777 & n.257 (1991), citing CAAA 1990, Pub.L.No. 101-549, sec.301, codified at 42. U.S.C. § 7412(c)(1) , and stating that "[s]ection 112(c)(1) reflects a congressional determination that EPA should, to the extent possible, rely on the broad industrial categories used under the pre-1990 CAA, rather than on a new much longer list of narrow categories and subcategories."

> between the best-performing sources here, and the best-performing sources using wet scrubbers is not this dramatic, the difference is nonetheless evident.[49]

Notwithstanding these limitations, the effect of EPA's proposal to establish MACT floors using subcategories based on coal rank is to make the resulting standards significantly less stringent,[50] by slicing the categories into subcategories defined by a mercury control strategy – the choice of coal -- and calculating separate MACT floors on that basis. This effect runs directly contrary to Congressional purposes in enacting section 112.[51]

The Supreme Court has instructed that "the words of a statute must be read in their context and with a view to their place in the overall statutory scheme."[52] In this case, section 112's focal point is to accomplish MACT-level controls; as Senator Mitchell summarized:

> Title III of the bill moves forward our controls on air toxics by requiring Maximum Achievable Control Technology, or MACT. This is an important development. It is essential that EPA promulgate meaningful MACT standards on time. We have postponed the health test under section 112 of current law in the expectation that MACT will be effective. A weak MACT standard would cause more sources to trigger the [later] residual risk standard. This would postpone needed health protection and would increase costs of toxics controls. The best solution is an aggressive MACT program that protects public health and the environment."[53]

[49] 69 Fed. Reg. 393, at 403 (Jan. 5, 2004).

[50] In fact, for the subcategories combusting lignite and sub-bituminous coals, the MACT proposal is almost equivalent to an individual MACT exemption or an individual MACT standard for sources.

[51] *See* House Conf. Rep. No. 101-952 at 338, stating simply and unequivocally that "[f]or each category of sources EPA will promulgate a standard which requires the installation of maximum achievable control technology (MACT) but the sources in the category." *See also* Waxman, 21 Envtl. L. 1721, 1776-1777 (noting Congressional concern that EPA might not be able to withstand industry pressure in establishing MACT standards, and particularly noting that Congress did not intend for the authorization to EPA to subcategorize to be used to weaken the resulting MACT standard through the establishment of subcategories on the basis of limited differences).

[52] *See, e.g., Edelman v. Lynchburg College,* 535 U.S. 106, 120-21 (2002) *citing* *Davis v. Michigan Dep't of Treasury*, 489 U.S. 803, 809(1989).

[53] Comments of Senator Mitchell, 1990 CAA Leg. Hist. 731, at 739.

Likewise, Congressman Waxman, a central architect of the Clean Air Act, has noted that while industry interests are likely to advocate for a large number of narrow subcategories within an industrial category,

> "[t]his approach would lead to far less stringent standards for more heavily polluting facilities, and tougher standards for facilities that are already better controlled. Those sources that are already clean would be penalized . . . and requirements for the uncontrolled sources, where tight restrictions are most sorely needed, would be relaxed. This was not Congress's intent, as evidenced by section 112(c)(1), which specifically directs that categories and subcategories established in the [HAP] program are to be consistent with the list of source categories established pursuant to the regulation of new sources under section 111 . . . ."[54]

Thus, the structure and purpose of the CAA evince a Congressional intent to have EPA use its subcategorization authority sparingly.

In keeping with this Congressional purpose, EPA's most recent new source performance standards for the utility industry, the 1998 limits on nitrogen oxides emissions,[55] identified new electric generating units as a single category of stationary sources for regulation. The 1998 NOx NSPS standards therefore are "fuel neutral" – they apply to *all* fossil fuel fired units capable of combusting more than 73 megawatts (250 million Btu/hour) heat input of fossil fuel, regardless of fuel type or coal rank.[56] This was upheld against an industry challenge that fuel-specific subcategories were required.[57] The court noted that EPA's decision not to set fuel-specific standards was based on and justified by improvements in control technologies available on all utility boilers.[58] The same reasoning is fully available to the agency here, although the agency tries its hardest to avoid it by relying on the arbitrary and false distinctions described above. Section

[54] Waxman, 21 Envtl. L. 1721 at 1777.
[55] 40 C.F.R. §§ 60.40a-49.
[56] 63 Fed. Reg. 49,442, 49,443 (Sept. 16, 1998).
[57] *Lignite Energy Council v. EPA*, 198 F.3d 930 (D.C. Cir 1999).

112(c)(1) states that EPA should follow section 111 subcategories *as appropriate*. This express Congressional preference is "appropriate" in the current rulemaking.

Nor may EPA subcategorize by coal rank in order to reduce the costs of the compliance with the proposed rule, as it explicitly does here. EPA explicitly rejects a "no subcategorization by coal rank," option, stating that many coal-fired units do not have the infrastructure currently in place to import coal ranks other than what they currently combust.[59] EPA also states that some units would have to make a retooling to accommodate differing ranks of coal. EPA also states that Hg emissions from "some ranks of coal control are *easier* to control than other types."[60] Not one of these considerations is relevant to MACT standard setting, and in each case EPA is clearly driven by concern about the cost to the unit's owner/operator. EPA's goal is obviously less stringent, less expensive standards to accommodate units which combust lignite and subbituminous coals. This approach directly contravenes the express terms and purpose of this section of the Act, that EPA's main objective must be maximizing the degree of control of the HAPs emitted by a listed source category, and not allowing the subcategorization process to subvert this mandate. Indeed, the language of the statute permits the consideration of cost only after MACT floors are set – well after the decision is made about subcategories.[61] This reflects a Congressional desire to ensure that all facilities in the subcategory improve their emissions at least as well as the best

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[58] *Id*. at 933.
[59] 69 Fed. Reg. 4666.
[60] *Id.* (emphasis added).
[61] *Compare* 42 U.S.C. § 7412(d)(3) (floor setting, no reference to cost, only to performance of best performers in category) *with* 42 U.S.C. § 7412(d)(2) (referencing the cost of emission reduction in the beyond the floor analysis)

performing sources.[62] Industry representatives argue,[63] that the following factors enumerated in § 112(d)(2) apply to the subcategorization process:

> Emissions standards promulgated under this subsection and applicable to new or existing sources of hazardous air pollutants shall require the maximum degree of reduction in emissions of the hazardous air pollutants subject to this section….that the Administrator, *taking into consideration the cost of achieving such emission reductions*, and any non-air quality health and environmental impacts and energy requirements determines is achievable . . . .[64]

But both EPA and the D.C. Circuit Court of Appeals have concluded that importation of the "achievability" standard into the floor setting process is not lawful, because it is subsection (d)(3) that applies to floor-setting, not this section of the statute, (d)(2), which applies only to beyond-the-floor standard setting.

Furthermore, EPA has rejected consideration of cost in subcategorization determinations in previous MACT rulemaking actions. For example, in the preamble of the final plywood MACT rulemaking, EPA states that it did not consider cost in subcategorizing categories.[65] Similarly, EPA has argued in court, and the D.C. Circuit has agreed, that consideration of cost in determining MACT floors is impermissible. In the Kraft, Soda and Sulfate and Stand Alone Semichemical Pulp Mills rulemaking, an industry representative commented that that proposal would require substantial

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[62] *National Lime Assn. v. EPA,*, 233 F. 3d. 625, 626 (D.C. Cir. 2000); *see also* recitation of a similar section of the statute in *Northeast Maryland Waste Disposal Authority v. Environmental Protection Agency*, 358 F.3d 936; 2004 U.S. App. LEXIS 3391 (D.C. Cir, 2004).
[63] *See* L&W Subcategorization Memo.
[64] 42 U.S.C. § 7412(d)(2) (emphasis added).
[65] U.S. EPA, "National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products; Effluent Limitations Guidelines and Standards for the Timber Source Category; List of Hazardous Air Pollutants," at 214 (signed February 26, 2004), available online at http://www.epa.gov/ttn/atw/plypart/plywoodfinalrule.pdf (visited June 26, 2004).

expenditures.[66] EPA responded by saying that a primary legislative goal in creating MACT Floors was to disregard costs.[67] The D.C. Circuit court agreed: in its analysis of the statute, it concurred that costs are only relevant to the CAA's MACT emissions standard setting process in considering beyond-the-floor standards.[68] It is unlawful for EPA to attempt an end run now around this court decision and its own prior interpretation by considering costs in the subcategorization process.

3. EPA's Emission Floors for Existing and New Utility Units are Contrary to Law, Arbitrary, Capricious, and an Abuse of Discretion.

EPA's proposed method for calculating MACT floors for utility units, and therefore the proposed floors as well, are contrary to law. EPA's methodology violates the plain language of the CAA, and is inconsistent with the case law interpreting it.

Clean Air Act section 112(d)(3) stipulates that a MACT emissions limit for a new unit in a listed industrial category "shall not be less stringent than the emission control achieved in practice by the best controlled similar source." For existing units, this "floor" for the standard:

> may be less stringent than standards for new sources in the same category or subcategory, but shall not be less stringent, and may be more stringent than A) the average emission limitation achieved by the best performing 12 percent of the existing sources . . . or B) the average emission limitation achieved by the best performing 5 sources . . . in the category or subcategory for categories or subcategories with fewer than 30 sources"[69]

[66] U.S. EPA Summary of Public Comments and Responses on the Proposed NESHAP for Chemical Recovery Combustion Sources at Kraft, Soda and Sulfate and Stand Alone Semichemical Pulp Mills, Docket No. A-94-67 (item IV-B-16) at 22.
[67] *Id*.
[68] *National Lime Assn. v. EPA*,, 233 F. 3d. 625, 626 (D.C. Cir. 2000) .
[69] 42 U.S.C. §7412(d)(3).

This section of the statute defines and limits EPA's discretion to determine what is "achievable" with respect to the minimum allowable emissions standard for a listed industry.[70]

Specifically, under this statutory provision, the U.S. Court of Appeals for the D.C. Circuit has held that the crucial inquiry for MACT purposes is to examine whether EPA's standard-setting methodology reflects the performance that the best-achieving sources actually achieve.[71]

As discussed below, EPA's proposed coal-fired utility unit existing source floors do not reflect the performance of the top twelve percent of sources in the same subcategory, even assuming that EPA may properly account for the "worst foreseeable circumstances" in establishing existing source floors. Similarly, EPA's new unit floors do not reflect the performance of the best-controlled similar source under the worst foreseeable circumstances. This is true even if we analyze the existing source and new source floors based on EPA's coal-rank based subcategories, rather than considering all coal-fired utility units as a single subcategory or alternatively if we analyze subcategories based on process type.

The most significant reason why EPA's proposed existing source floors do not meet the statutory requirements is that EPA's methodology for accounting for variability in the performance of the units about which it has information is so overgenerous that it distorts the actual performance of the top 12 percent of the sources in the category. The resulting regulatory floors therefore are orders of magnitude less stringent than the

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[70] *See Cement Kiln*, 255 F.3d 855, 861 (D.C. Cir, 2001) (holding that "EPA may not deviate from section 7412(d)(3)'s requirement that floors reflect what the best performers actually achieve by claiming that floors must be achievable by all sources using MACT technology").
[71] *Id*.

average performance of the observed emissions at the best performers in each subcategory. This is an illegal and impermissible approach to existing source floor-setting.[72] In addition to directly contravening the language of the statute, EPA's approach also is arbitrary and capricious, as it results in floors having little or no relationship to the statutory requirement that existing source floors reflect the actual performance of the best performers. Indeed, as we will demonstrate below, there is here the same lack of record evidence supporting the claim that the proposed floors reflect the emission levels of the best-performing 12 percent of existing utility units on the one hand, and on the other, the same level of affirmative evidence that they do not, that has led the D.C. Circuit to strike down prior EPA actions establishing improperly lenient MACT floors for existing units.

Nor do the proposed new source floors reflect the performance of the best performing similar source, even considered under the worst foreseeable circumstances. This is because EPA incorporates the same overgenerous and flawed variability analysis into its new source floors proposal. The net result for both existing and new source floors, is that the EPA approach so distorts the actual performance data that it "bears no rational relationship to the reality it purports to represent."[73]

a. EPA's Variability Analysis Does Not Reflect the Actual Emissions of the Best Performing Units.

The primary reason why EPA's proposed floors do not reflect the actual performance of the lowest-emitting units is because the agency grossly inflates them, supposedly to account for variability in emissions performance at the best-performing

[72] *See id.* at 862 (noting that EPA's method must "allow a reasonable inference as to the [actual] performance of the top 12% of units" (internal quotation omitted)).

units. In brief summary, EPA's approach to adjusting the MACT floors for variability is as follows: (1) EPA calculated short-term emission rates from each facility based on data the agency had about the coal burned there and the pollution equipment in place; (2) EPA ranked these estimates from best to worst, and picked the emission level that was worse than 97.5 percent of the data set, resulting in an emission rate that represented virtually the worst performance the plant experienced; (3) the agency then took this figure for each of its top-performing sources and took the 97.5 upper confidence limit of the mean, supposedly to account for inter-source variability; and (4) EPA then took this calculation and used the result as the basis for an *annual* emission limit. This approach is utterly without legal, policy, or statistical merit. Put simplistically, this statistical manipulation sets the MACT floor by effectively assuming that the worst conditions, experienced briefly by the worst facility in the group, will exist throughout the year. EPA knows, or should know, that the probability of such a situation arising is virtually zero.

EPA's approach is almost identical to the method proposed to it by West Associates (West), a consortium of utility industry interests.[74] The only differences between the West and EPA methods are (1) EPA used a higher percentile (97.5 percent) to represent stack test results, (2) EPA used a higher percentage for the upper limit of the confidence interval for the mean (97.5 percent), and (3) EPA used a slightly different list of best-performing units (than West used) to represent the best performing 12 percent of units. This analysis is described in detail below.

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[73] *Columbia Falls Aluminum Co. v. EPA*, 139 F.3d 914, 923 (D.C. Cir. 1998).

[74] West Associates. Multivariate method to estimate the mercury emissions of the best-performing coal-fired utility units under the most adverse circumstances which can be expected to recur. Prepared by ENSR Corporation, March 4, 2003. A-92-55 Item II-E-118.

First, EPA conducted a significant information collection effort to attempt to understand the technology used by, and the emissions from, utility units. This information collection request (ICR) resulted in two databases. ICR II contains the results of fuel composition sampling at approximately 455 power plants over the course of a year (no stack tests). ICR III contains a collection of short term stack test reports on 80 units selected from the ICR database (three tests per unit).

Second, EPA subcategorized the 80 tested units by coal rank, waste coal-fired units and IGCC units. Within each subcategory, the units were ranked, from lowest to highest, by the average mercury emission rate measured during the stack test. From this ranking, EPA identified what it considered to be the top 12 percent of the best performing facilities. These units are shown in Table II-1.

Table II-1. EPA's Best Performing 12% of Sources by Subcategory

Top 4 Bituminous	Top 4 Subbituminous	Top 5 Lignite	Top Waste Units	Top IGCC
Mecklenburg Cogeneration GEN1	AES Hawaii A	R.M. Heskett Station B2	Kline Township Cogen Facility GEN1	Wabash River 1 and 1A
Dwayne Collier Battle Cogen 2B	Clay Boswell 2	Antelope Valley Station B1	Scrubgrass Generating GEN1	Polk Power 1
Valmont 5	Craig C3	Leland Olds Station 2		
Stockton 1	Cholla 3	Stanton Station 10		
		Stanton Station 1		

Third, EPA used the ICR III stack test database to determine relationships between coal composition and mercury emissions. For those control configurations for which the ICR III data yield robust correlation equations between mercury removal fraction and chlorine, EPA used a correlation equation that predicts mercury removal as a function of the coal's chlorine, mercury, and heat content. A less sophisticated approach (averaging the mercury removal fractions) was used for the other control configurations. These two methods (correlation equation and averaging) were applied to the ICR II coal composition data for the "best performing units" to estimate the controlled mercury emissions for each individual coal shipment.

Fourth, the estimated mercury emission levels for each unit were sorted to obtain a cumulative frequency distribution. EPA then identified the 97.5th percentile emission rate for each unit; that is, EPA selects the emission rate that is worse than all but 2.5 percent of the estimated emissions from each unit over the course of a year; -EPA assumes that this value is representative of the operation of the unit under the most adverse circumstances reasonably expected to recur. EPA offers no rationale for choosing the 97.5th percentile, as opposed to some other figure, to account for the variability seen in the emission estimates.

Fifth, EPA averaged the 97.5th percentile emission rates of the top-performing units and then calculated an additional 97.5 percent upper confidence limit of this average. The resulting emission rate was proposed as the MACT floor. EPA decided it was necessary to calculate the 97.5 percent upper confidence limit of the mean because the ICR III stack test units represent only a small portion of the full population of coal-fired utility units. EPA states that simply averaging the 97.5th percentile emission rates of the top 12 percent of the tested units would not account for the variability among all of the units in the top 12 percent of the full population of utility units. Again, EPA does not provide any evidence that this calculation is necessary to account for variability between the best performing units. Moreover, there is absolutely no statutory basis for the manipulation of that data from the facilities for which EPA has data in order to account for the possibility that the data is not representative of the larger group of all affected facilities. Indeed section 114 of the Act authorizes the Agency to collect additional information – and just because the agency has chosen not to do so does not remove its responsibility under section 112(d)(3)(A) to derive the average emission limitation achieved by the best performing 12 percent of existing sources from "the existing sources *for which the Administrator has emissions information*."[75] Nevertheless, EPA calculated a 97.5 percent upper confidence limit for the average of the 97.5th percentile figure, and proposes that emission rate as the MACT floor.

EPA takes the rate it calculates based on these statistical approaches and proposes to make it an annual emission limit for regulated sources.

Together, EPA's statistical gimmicks result in MACT floors that represent virtually the worst short-term emissions from the worst performing of the best units, and assumes that these pollution levels will persist throughout the year. This "worst of the worst of the best" calculation does not satisfy the express requirements of the Act.

EPA then asserts that this analysis can be applied to determine the best performer for use in new source floor setting. But EPA's analysis is so overgenerous that the resulting new unit floor bears no relationship to the actual performance of the best unit under the worst foreseeable circumstances.

Our critique of EPA's floor setting process addresses three fundamental flaws in EPA's approach : (1) EPA's method for initial selection of the best-performing units, (2) EPA's statistical method for addressing variability in emissions and (3) EPA's

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[75] 42 U.S.C. § 7412(d)(3)(A) (emphasis added).

overgenerous additive approach to variability, in which it combines the statistical approach to variability with an annual averaging time approach.

<u>(1) EPA did not select the best-performing units for the MACT floor calculation.</u>

EPA asserts that it has, as a first step in the existing source floor calculation, selected the top-performing units. EPA averaged three emission tests for each unit and then arrayed them, within each subcategory, from lowest-emitting to highest. EPA identifies the top 12 percent of the units in each subcategory from the resulting lists, but the Agency does not stop there. Instead, EPA adds a second step, using the methodology described above ostensibly to develop -- just for these units -- the estimated mercury emissions *for each coal shipment* over the course of a year. EPA then used those data to estimate the 97.5^{th} percentile emission rate for each of these "best" units.
This methodology does not identify the best performing unit or units, nor does it identify the emission rate that is characteristic of the best performing unit or units. EPA is really using the predicted mercury emission rates *for each coal shipment* to determine the MACT floor, not the actual emission rates measured during the stack test. It is inconsistent – arbitrary and irrational -- to use stack test results to select the best performing units, but then create an entirely new data set of predicted emission rates and use those data to set the MACT floor.

For the sake of argument and comparison only, we use an alternative approach to identify best performers based on EPA's coal shipment data. This requires analyzing the coal shipments to each of the tested plants and applying the mercury/chlorine regression equation (or control device efficiency as appropriate) to estimate the mercury emissions from each coal shipment. For each tested unit, the predicted mercury emissions for each coal shipment would then be averaged to develop an annual average emission rate. The resulting mean annual emission rate predicted for each tested unit would then be arrayed from lowest to highest and the top 12 percent of the units in each subcategory could be identified.

To see how our posited alternative methodology is a better predictor of top performing units (as measured by the lowest average annual emission rate derived from coal data) one can examine the data from the Texas-New Mexico Power TNP-1 unit. An analysis of the coal data for this unit revealed that during the stack test for the purposes of reporting to the ICR II dataset, this unit was burning lignite with a mercury concentration that was 700 percent higher than the mercury concentration of the coal typically burned in this unit. The average mercury concentration of 99 coal shipments to this unit in 1999 was 0.035 ppm. During the ICR stack test, the unit burned lignite with a mercury concentration of 0.25 ppm. As a result, the amount of mercury in the coal was measured at 26.6 lbs./TBtu during the ICR test, compared to an average coal mercury content of 3.6 lbs./TBtu for the entire year. The controlled mercury emission rate for this unit as reported in the ICR is 10.86 lbs./TBtu – the *8th highest emission rate for a lignite unit*.

By contrast, if one estimates mercury emissions from this unit for every coal shipment, and these estimates are averaged, the average annual emission rate is 1.29 lbs./TBtu – *which would be the best performance of any lignite-fired unit*. To reiterate, the same unit, over the same time period, is either the 8th highest emitter (under EPA's approach), or the very best performer (under our alternative approach), simply by changing the methodology for identifying superior performance. This example illustrates how using EPA's proposed regression analysis to calculate the annual emission rate of a larger universe of tested units radically changes the resulting list of best-performing units. Furthermore it demonstrates the arbitrary nature of the method EPA has proposed for this purpose.

(2) EPA's Statistical Method for Accounting for Emissions Variability is Arbitrary and Capricious, Contrary to Long-standing Agency Policy, and Yields Results that Bear No Resemblance to the Best Sources' Actual Performance.

EPA's method of addressing variability results in proposed emission rates that do not reflect the actual performance of the top 12 percent of the best performing units. EPA's methodology wildly inflates the emission rates of the tested units such that the final calculated rates bear no resemblance to the actual performance of the units. The EPA's variability analysis results in emission rates for three coal subcategories that are roughly two to 16 times higher than either the mean or median actual emission rates of the top 12% of the best performing units in each subcategory. For waste coal-fired units and integrated gasification combined cycle (IGCC) units, the proposed MACT emission limits are roughly *five times higher* than the average observed emission rate of the *worst* performer in each of these subcategories.

By taking the 97.5th percentile of the emission rates for each unit and then the 97.5th upper confidence limit of the average of these rates, the Agency has in effect selected the worst of the worst emission rates of its identified "best" units.[76] The fact that this method yields results utterly unrelated to the peformance of the best performing units dooms it legally. This was explicitly pointed out to the Agency during interagency review. One commenter wrote:

[76] And this is only true if it can be assumed that EPA has actually identified the "best" performers, which we assert it has not.

> *"Pages 96-100: The variability argument seems like a stretch. 112(3)(d)* [sic] *makes no mention of using worst-case scenarios. Why not mean value instead of high-end value? Weak claim of "representative" value. The phrase, "…with only the upper confidence interval having meaning" is either wrong or makes no sense. Also, (on page 115), there is a multiplicative effect of using two 97.5% confidence interval assumptions that puts the final value well above 97.5% confidence interval of true value."*[77]

In addition, in arriving at its proposed MACT floor, EPA calculates the 97.5th percentile upper confidence limit of the four 97.5th percentile observations for each of the selected plants. In other words, EPA first arrays the individual "observations" based on coal samples throughout the year and selects the 97.5th percentile value from each plant. EPA then calculates the standard error *as if there were just one observation for each plant* – the 97.5th percentile value from each plant. This could only be justifiable if EPA were promulgating an emission standard that must be met continuously, as a high-end emission standard would guard against short-term exceedances of a continuous standard. But that is not what EPA has proposed.

EPA furthermore did not follow its own well-established practice and the advice of its own Office of General Counsel when it proposed to adopt this approach. The use of the 97.5th percentile instead of the mean value is contrary to longstanding agency policy as outlined in the 1993 Regulatory Policy Notebook of the Emissions Standards Division of U.S. EPA's Office of Air Quality Planning and Standards. In that document, EPA's Office of General Counsel (OGC) indicated that the arithmetic mean should be used to average the actual emissions performance of the best 12% of existing units in a

[77] Facsimile of comments from the interagency review of the proposed rule. Unknown commenter. Page 11 of 717. Docket item AOR-2002-0056-0107.

category.[78] There is no mention of using a statistical approach involving the 97.5th percentile to account for variability in emissions.

(3) <u>EPA's use of an annual averaging time in combination with the variability methodology is unsupportable.</u>

One way to account for variability in emissions performance is by selecting longer time periods over which compliance is determined. EPA has recognized that annual averaging time by itself "smooths" out variability in emissions. In a memorandum to this docket describing the variability approach, EPA states:

> *Addressing variability in the compliance method would involve allowing an averaging time for compliance that would accommodate variations in pollutant emissions over time. For example, averaging over a month or a year of data will provide an opportunity for variations in the amount of a constituent in the fuel to be accommodated without exceeding the emission limitation. This method of addressing variability is not covered in this memorandum.*[79]

In other words, having made clear that the Agency is fully aware that one method for dealing with variability is through the length of the compliance period, EPA expressly chose not to assess that option. Indeed, EPA does not analyze the concept of accounting for variability in emissions using averaging time alone *anywhere* in either the proposal or docket, despite the fact that stakeholders in the Utility Working Group suggested such an approach.[80] Instead, EPA simply *adds* an annual averaging time on top of its already too-generous-by-half variability approach, and attempts to justify this double counting by

[78] EPA, Regulatory Policy Notebook Document #13(a) SP (September 17, 1993).
[79] Memorandum from William H. Maxwell to Utility Project Files, November 26, 2003. Docket A-92-55, Entry II-B-8.
[80] "Recommendations on the Utility Air Toxics MACT, Final Working Group Report" (October 2002) at slide 11 (Environmentalist and State position on subcategories) and slides 12-13 (Utility Industry fuel-rank based positions). Available online at: http://www.epa.gov/ttn/atw/combust/utiltox/wgfnlprez1002.ppt (visited June 23, 2004).

saying that mercury poses a chronic, not an acute health effect.[81] Setting aside the question whether this justification is based in fact and whether it justifies an annual standard, the agency neglects the effect of using a long-term standard on the stringency of that standard. In doing so, EPA acts outside the requirements of the statute, which clearly defines the stringency of the resulting floor, by double counting for variability.

It is not that the Agency does not understand what it is doing here. In a recent rulemaking, in fact, the Agency specifically noted the effect that the averaging time has on the stringency of the standard. Agreeing with public comments that a proposed MACT rule for mercury cell chlor-alkali plants should not require short-term compliance when the emission standard reflected annual emission rates, EPA stated:

> *The commenters are correct in that the normalized mercury emissions used to establish the standards were based on annual average emissions and annual actual chlorine production. Therefore, the commenters' concerns about the variability of the control systems over a year and the ability to comply on a daily basis with this limit have merit. We considered the two options offered by the commenters (a 365-day compliance period and adjustments to account for daily variations).*
>
> *We do not feel that it would be appropriate to apply a generic multiplier to the limit for mercury cell chlor-alkali plants to account for short-term variation. In addition, mercury cell emissions data were not available to assess the variability in emissions from these emission points. Therefore, we concluded that the emission limitation should reflect an annual average. This would be consistent with the data used to create the emission limitation and would allow for short-term variations in operations and control device performance.*[82]

In other words, even the Agency recognizes that a longer averaging time for compliance is an *alternative* approach to a method involving manipulation of actual input or emissions data. But in the face of this, EPA instead proposes to use *both* methods – thereby effectively double counting for variability, and producing an end result that has

[81] 69 Fed. Reg. at 4668.

no rational relationship to the actual performance of the top performing units. And because EPA proposes to determine compliance using a long-term average, the compliance status of a unit will be unaffected by short-term fluctuations in the coal characteristics of coal shipments and control equipment.[83]

Finally, EPA's own actions in this rulemaking demonstrate that its existing source standards arbitrarily and capriciously account for variability. EPA proposes to establish new source MACT floors that are significantly more stringent than the agency's proposed existing source standards and, by doing so, implicitly concedes that such emission rates are achievable on a regular basis by all utility units. To take an example, EPA's proposed new source emission standard for bituminous-fired units is, on an output basis, 6.0×10^{-6} lb/MWh, whereas its proposed existing source standard is 21×10^{-6} lb/MWh. EPA does not suggest that there is anything unique to new sources that makes them capable of meeting a more stringent limit when existing units cannot. To the contrary, "EPA believes that the character and levels of Hg and Ni emitted by new coal- and oil-fired units will be similar to those emitted by existing coal- and oil-fired units because the source of Hg and Ni is primarily related to the fuel," and "EPA anticipates the use of primarily the same fossil fuel sources for new units as are being used for existing units."[84] EPA's decision to inflate its standards for existing sources supposedly to account for unavoidable variability at such sources, therefore, is completely irrational.

(4) The Department of Energy's Suggested Treatment of Variability Also Must be Rejected.

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[82] 68 Fed. Reg. 70, 903, 70,920 (Dec. 19, 2003).
[83] This, in fact, further subverts EPA's already spurious rationale for the need to subcategorize by coal rank..
[84] 69 Fed. Reg. at 4677.

EPA also solicits comment on a proposed methodology developed by the Department of Energy (DOE), and submitted to the docket by DOE as a suggested alternative method to account for variability in unit or source performance. EPA describes DOE's approach as follows:

> "The essence of the DOE analysis was to average at a plant level the Hg and Cl contents of all coals, by rank, in the ICR data base. Then, DOE adjusted the performance test results at the lowest emitting units in the ICR data base by assuming that they burn a coal similar to the 97.5th percent worst plant annual average coal."[85]

As we understand this method, DOE used ICR stack test data to identify the "best performing" units. Considering the control technology used at those units, DOE then attempted to estimate what these units would emit if they were burning the worst-case coal of the same rank, which DOE identified by examining the 97.5th percentile of the most-polluting coals *from all plants*.

EPA's request for comment on this issue is a telltale sign of the issue's unlawfulness; the agency specifically asks whether a leading court decision, *Cement Kiln Recycling Coalition v. EPA*,[86] is applicable to the DOE approach. It is.

In *Cement Kiln*, the U.S Court of Appeals for the D.C. Circuit held that EPA had violated the MACT requirements of the Act by establishing emission standards that were based upon the emissions of the most polluting sources among those using what EPA had identified as the best technology. The court held that EPA's fundamental obligation in establishing MACT is to reflect the emissions performance achieved by the best performing sources.[87] As a consequence, the court found that simply looking at the

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[85] 69 Fed. Reg. at 4674.
[86] 255 F.3d 855 (D.C. Cir. 2001).
[87] *Id.* at 861-62.

emissions from the worst of the sources that used the same technology as the top performers was an inappropriate way of approximating the emissions performance of those top performers, because factors other than technology – such as the use of other control devices, operator training, and source design– could contribute to the top units' superior emissions performance.[88] The court stated: "the relevant question here is not whether control technologies experience variability at all, but whether the variability experienced by the best-performing sources can be estimated by relying on emissions data from the worst-performing sources using the MACT control."[89] Thus, the essence of *Cement Kiln* is that MACT floors must reflect the actual emissions achieved by the best performers and cannot use worst-case data where it cannot be demonstrated that such data are a reasonable estimate of the best sources' variability.

DOE's proposed variability analysis utterly fails to meet the standards prescribed by the court in *Cement Kiln*. Under DOE's approach, floors would not reflect the actual emissions of the best-performing sources, but instead would be an approximation of what those sources would emit if they were burning virtually the dirtiest coal in the industry. Neither DOE nor EPA explains why this calculation should be accepted as a reasonable approximation of what occurs at the best units. Moreover, because EPA asserts that "the variability of Hg emissions from coal fired units is significantly influenced by the variability over time in the composition of the coal burned as fuel,"[90] the use of the worst instances from the entire database of coal shipments – not just those to the top-performing sources – seems designed to reflect the most egregious variability of

[88] *Id.* at 864-65 ("whether variability in the MACT control accurately estimates variability associated with the best-performing sources depends on whether factors other than MACT technology contribute to emissions").
[89] *Id.* at 865.

emissions in the industry as a whole, but not the variability amongst the best sources. Put differently, it is entirely possible that the best performers achieve their superior emissions at least in part by burning cleaner coal. Using a calculation that simply assumes they burn dirty coal therefore is an unreasonable way to estimate their emissions, even accounting for variability between these top performers.

b. EPA'S Method for Converting the MACT Floors to an Output-Based Standard is Unlawful.

EPA asserts that an output-based form for the MACT standard can "provide a regulatory incentive to enhance unit operating efficiency and reduce emissions."[91] While we agree with this assertion in principle, EPA's conversion of its MACT floors to a set of output-based floors is based on an approach which renders the standards unlawful. For instance, EPA establishes output-based floors by first deriving input-based floors, then applying an assumed efficiency factor, thereby treating each unit as though it is equally efficient. This results in an additional weakening of the standard, because the efficiencies EPA relies on do not reflect the efficiencies of the best performing similar new or existing units.

Specifically, EPA uses 32 percent as its baseline efficiency for existing units and 35 percent as its baseline efficiency for new units. EPA's justification for these choices is limited to unsupported assertions in the preamble that "most existing electric utility steam generating plants fall in the range of 24-35 percent efficiency . . . . new units operate around 35 percent efficiency."[92] By contrast, in developing its Annual Energy

[90] 69 Fed. Reg. at 4672.
[91] 69 Fed. Reg. 4667 c/2.
[92] *Id.* at 4668 c/1. But this is contrary to facts in the record, which contains a memorandum from William Maxwell to the Utility MACT Project Files, covering a table prepared by DOE in which average fleet efficiencies for 1996 are documented at approximately 38 percent. Docket No. A-92-55, Item II-B-12.

Outlook, the Energy Information Administration (EIA) assumes that a new scrubbed coal plant with selective catalytic reduction will have an efficiency of 38 to 40 percent.[93] For new integrated gasification combined cycle units, the EIA assumes an efficiency of 42.5 percent.

EPA must revise its methodology to incorporate the best performers – the top of the range of these more accurate efficiency factors.

Left as it is, moreover, EPA's consideration of efficiency is contrary to law, because it does not occur within the framework of the MACT requirements. If the emission standard is based upon efficiency, then the MACT standard must reflect the lowest-emitting units, when considering both efficiency and pollution control. This means that EPA must account for efficiency in selecting the best performing 12 percent of sources for the purpose of setting an efficiency-based standard, since the units that have the lowest output-based emissions may be different than those that have the lowest input-based emissions. In addition, even if considering efficiency does not change the identity of the facilities used to derive the MACT floor, the ability of sources to improve their efficiency must be considered when examining techniques that achieve above-the-floor control.

Furthermore, EPA entirely defeats the purpose of promulgating an efficiency-based standard by making it optional for existing facilities; the agency should not finalize this portion of its proposal. As EPA notes, "owners/operators of existing units would have the option of complying with either the input- or the output-based limit;

[93] U.S. Energy Information Administration, "Assumptions for the Annual Energy Outlook 2002," DOE/EIA-0554 (2003).

owners/operators of new units would be subject to the output-based limit."[94] Under this approach, rational owners and operators of affected facilities will simply choose the emission standard that requires the least of them; sources that achieve less than the average efficiency used to convert EPA's input-based standard to an output-based one will have an easier time complying with the input-based limit (and will likely choose that compliance option), while sources that are more efficient than the average will be more able to meet the output-based limit (and will likely choose that approach).

Finally, the Agency also requests comments on how often the baseline efficiency should be reviewed and revised in order to account for future improvements in electric generation technology. Given the technology-forcing nature of the this section of the statute, and the statute's clear directive for the most protective emissions limits for HAP, as well as the inaccuracies in EPA's current assumptions, we recommend that the baseline efficiency should be reviewed annually and revised, as necessary.

c. Our Calculation of Alternative Emission Rates Using EPA's Own Basic Methodology Demonstrates How Badly EPA Has Distorted the MACT Floor Results.

In this section we demonstrate how eliminating only the most egregious of EPA's failures in its proposed MACT floor approach results in much more stringent alternative emission rates. We do not offer this analysis to justify EPA's approach; indeed there are many flaws in it, as set forth above, that render the resulting standards illegal. Rather, this approach illustrates that far more stringent emission limits will result if EPA's methods are properly applied: this is true even if one uses EPA's spurious coal-rank based subcategorization scheme,, much of its methodology for identifying the "best"

[94] 69 Fed. Reg. at 4662.

performing sources, a (single) 97.5 percent upper confidence bound, and EPA's method for accounting for variability in coal.

The first step in our analysis was to identify the top-performing plants. As noted above, EPA assumes that variations in the mercury content of the coal account for variability in emissions over time. Thus, to credibly identify the best-performing sources using these data, the coal sampling data for *all* tested plants should be analyzed, *not* just the data from units with the lowest emission rates during the stack test.[95]

We analyzed the coal sampling data from 17 additional plants employing fabric filter ("baghouse") technology for particulate matte control.[96] We chose these plants for further analysis because we found by observing the test results that plants using post-combustion fabric filter technology tended to have better emissions test results. Furthermore, EPA itself recognizes in the preamble to the proposed rule that "[f]abric filters or the combination of spray dryer adsorbers (SDA) and fabric filters were . . . found to be the most effective control technology for mercury removal generally."[97] Adding the additional 17 baghouse plants to EPA's data gave us an enhanced data set containing information on 30 of the 80 total tested plants. The enhanced data set included seven additional lignite-fired units, so that the enhanced data set includes all of

[95] We did not have the resources to apply this methodology to every tested plant, or we would have done so.

[96] Our decision to test plants employing a specific technology does not reflect a preference for a particular technology "as MACT" – rather we were attempting to determine which sources were in fact the best performers. The "best" performance might also result from coal washing or some other precombustion technique – we simply found in observing the test results that plants employing this combination of post-combustion controls tended to have better emissions test results. Whether those results were due to the controls employed or some other factor in play at these plants is unclear, and indeed irrelevant to MACT floor setting.

[97] 69 Fed. Reg. at 4670.

the tested lignite plants. The enhanced data set includes 6 additional bituminous-fired plants and 4 subbituminous plants.

We then used EPA's criteria to estimate the controlled mercury emissions (in lbs./TBtu) for each individual coal shipment to the additional 17 plants, and calculated descriptive emissions rate statistics (annual mean, 97.5th percentile, maximum, standard error of mean, 97.5 percent upper confidence limit of mean) for each unit. These statistics, combined with those for the units EPA evaluated, are shown in Table II-2. To obtain the alternative MACT emission rates, we then arrayed the units from lowest to highest based on the 97.5th upper confidence limit of each unit's mean emission rate. The top 12 percent of the units were identified (shown in italics in the table). Lastly, the 97.5th percent upper confidence limit of the means of the best performing units were averaged to obtain the MACT floor. The final results of our analysis are shown in Table II-3.

Our alternative floor analysis differs from EPA's in several important ways. First, as noted above, EPA arrays the individual "observations" based on coal samples throughout the year and selects the 97.5th percentile value from each plant – that is, the emissions rate representing the emissions rate at each plant which is only expected to be exceeded 2.5 percent of the time – the worst 2.5 percent, in effect. EPA then calculates the standard error of that statistic, as if there were just one observation for each plant – the 97.5th percentile value from each plant. Our approach, by contrast treats each coal shipment as an individual observation, which accounts for the variability between coal shipments. We calculated a mean value (and an upper 97.5th percent confidence limit for the mean) based on the values for all coal shipments for each unit. We reflect EPA's approach by using the less stringent, upper 97.5 percent upper confidence limit of the mean for each unit, in order to demonstrate that a more lenient approach at this stage of the process (i.e., using the 97.5 percent upper confidence limit of the mean instead of the arithmetic average) *still* results in a significantly more stringent MACT floor than EPA has proposed. Lastly, we calculate the average of the upper 97.5 percent confidence limits of the best performing units, and obtain MACT floors that are considerably lower (more stringent) than the MACT floors calculated by EPA.

We did not adopt EPA's approach of "adjusting" the MACT floors a second time by a multiplicative application of a second 97.5th percentile upper confidence limit to reflect "the fact that the top performing sources in the data base do not represent the full population of the best performing 12 percent of coal-fired utility units." This step is arbitrary and unnecessary, and only serves to artificially inflate the floor emission rates. There is absolutely no statistical basis for assuming that the 97.5th percentile upper confidence limit, rather than the mean, is representative of the full population of the best performing 12 percent of units. Indeed, the Agency has stated in the record that "EPA is confident that the data available are representative of the industry."[98]

Table II-2. Summary Statistics for Selected Tested Units (Top performing units shown in italics.)

Plant	Coal Type	# Coal Samples	Annual Mean (lbs./TBtu)	97.5th percentile	Maxi-mum	SE of Mean	97.5 UCL of Mean lbs./TBtu
Stockton	*Bitum.*	*39*	*0.14*	*0.61*	*0.63*	*0.028*	*0.204*
Dwayne	*Bitum.*	*59*	*0.34*	*1.24*	*1.57*	*0.044*	*0.423*
Valmont	*Bitum.*	*19*	*0.42*	*0.69*	*0.706*	*0.040*	*0.500*
Intermountain	*Bitum.*	*67*	*0.5*	*0.99*	*1.03*	*0.027*	*0.558*
W.H. Sammis	B*itum.*	330	0.59	0.96	1.42	0.010	0.610

98 Memorandum of William H. Maxwell to Utility Project Files, November 26, 2003. Docket A-92-55, Entry II-B-8; *see also* 69 Fed. Reg. at 4670 (same).

Logan	B*itum.*	33	0.51	1	1.57	0.058	0.645
Mecklenburg	B*itum.*	39	0.47	1.81	3.71	0.116	0.718
Shawnee	B*itum.*	104	1.18	4.04	5.56	0.100	1.406
SEI	B*itum.*	46	1.05	5.69	6.03	0.158	1.415
Clover	B*itum.*	283	1.71	3.56	4.91	0.046	1.817
TNP-One	*Lignite*	*99*	*1.57*	*3.4*	*4.84*	*0.083*	*1.756*
Antelope	*Lignite*	*87*	*4.1*	*7.1*	*7.12*	*0.201*	*4.494*
Stanton 1	*Lignite*	*40*	*4.65*	*6.31*	*6.51*	*0.206*	*5.058*
Heskett	*Lignite*	*36*	*4.87*	*7.8*	*8.8*	*0.261*	*5.279*
Stanton 10	Lignite	40	5.47	8.03	8.32	0.265	6.014
Lewis and Clark	Lignite	28	5.73	7.69	10.3	0.259	6.341
Leland	Lignite	103	6.3	9.5	9.9	0.168	6.724
Coyote	Lignite	27	6.6	11.2	12.8	0.385	7.519
Limestone	Lignite	27	6.66	9.76	16.7	0.575	8.030
Monticello3	Lignite	53	9.18	24.2	24.5	1.008	11.508
Big Brown	Lignite	32	12.3	27.4	40.2	1.413	15.620
Monticello1	Lignite	53	12.5	32.9	33.3	1.370	15.653
Clay Boswell	*Sub-Bit.*	*49*	*1*	*1.99*	*2.06*	*0.063*	*1.131*
AES Hawaii	*Sub-Bit.*	*42*	*1.07*	*2.13*	*2.14*	*0.056*	*1.186*
Craig	*Sub-Bit.*	*82*	*1.38*	*2.65*	*2.64*	*0.061*	*1.482*
Cholla	*Sub-Bit.*	*79*	*2*	*5.58*	*6.23*	*0.141*	*2.287*
Comanche	*Sub-Bit.*	*42*	*2.47*	*4.8*	*4.8*	*0.120*	*2.745*
Rawhide	Sub-Bit.	69	2.42	6.41	6.41	0.161	2.784
Valley	Sub-Bit.	43	3.02	7.39	7.48	0.284	3.683
Sherbourne	Sub-Bit.	118	3.66	7.36	8.08	0.157	4.012
Kline	Waste coal	53	0.09	0.12	0.12	0.002	0.09
Scrubgrass	Waste coal	51	0.1	0.16	0.16	0.004	0.1
Polk	IGCC	24	4.34	7.3	9.2	0.34	5.2
Wabash	IGCC	77	4.14	5.4	13.6	0.22	4.6

Table II-3. Alternative MACT Emission Rates for Existing Sources Compared with EPA Proposal

	EPA's Proposed MACT Emission Floors		Alternative MACT Emission Floors		Percent By Which EPA's Proposed Floors Exceed Alternative Floors
	lbs./TBtu	10^{-6} lbs./MWh*	lbs./TBtu	10^{-6} lbs./MWh **	
Top 4 Bituminous	2.0	21	0.42	4.4	376 %

Units					
Top 4 Subbituminous Units	5.8	61	1.5	16	287 %
Top 5 Lignite Units	9.2	98	4.5	48	104 %
3Top Waste Units	0.38	4.1	0.1	1	280 %
Top IGCC Units	19	200	4.9	39	288 %

* Based on plant efficiency assumption of 32 percent.
** Based on plant efficiency assumptions of 39 percent for conventional units and 42.5 percent for IGCC units.

Again, the alternative emission rates presented in Table II-3. above are presented *only* to illustrate that EPA's approach to calculating the proposed MACT floors is irrational and furthermore results in limits weaker than the statute permits. Table II-3 demonstrates that even using EPA's legally suspect coal-rank-based subcategories, and the Agency's over-generous methodology for accounting for variability in emissions performance, a set of floor emission rates can be developed that are far more health-protective than EPA proposes.

We also have calculated our preferred and recommended MACT floors. Our calculation of recommended floors eliminates two of the other illegal steps in its preferred process, by abandoning EPA's arbitrary reliance on coal rank as the basis for defining subcategories, and by using the mean calculated emissions from annual coal data,[99] rather than the 97.5 percent upper confidence limit of the mean.

We are entirely justified in using the arithmetic mean of each unit, alone, without the 97.5th percent confidence limit, to represent the unit in calculating the MACT floor. The arithmetic mean is (1) consistent with the averaging time proposed for determining compliance (rolling 12-month average) and (2) consistent with the approach endorsed in

[99] EPA should use annual coal shipment data to reflect the fact that it seeks to promulgate an annual emission standard. If compliance is on a 12 month rolling basis as proposed, then the emissions limit should be based on the average emissions expected over the compliance period.

EPA's own Regulatory Policy Manual; moreover it provides the best, unbiased estimate of the average performance of the unit.

Table II-4 summarizes the results of calculating floors without fuel rank based subcategorization and using the arithmetic mean emissions rate of the top performers. The top 12 percent of the top performing units (without regard to coal rank) are identified in the left-hand column of Table II-4. The annual mean emission rate for the top 12 percent of the best performing units is 0.42 lbs./TBtu.

Table II-4. Average of Top 12% Considering Coal Variability (Without Coal Type Subcategories)

Plant Name	Coal Type	# Coal Samples	Annual Mean Emission Rate (lbs./TBtu)
Kline	Waste	53	0.09
Scrubgrass	Waste	51	0.1
Stockton	B	39	0.14
Dwayne	B	59	0.34
Valmont	B	19	0.42
Intermountain	B	67	0.50
W.H. Sammis	B	330	0.59
Logan	B	33	0.51
Mecklenburg	B	39	0.47
Clay Boswell	SB	49	1.01
Average of top 12%			**0.42**

Should EPA decide to subcategorize existing units by process type, distinguishing between conventional combustion units and IGCC units, available information likewise supports a very stringent emissions limit for such units. We agree with EPA that activated carbon technology is available for IGCC units, but strongly disagree with EPA's assertion that this technology should only be the basis for new IGCC unit MACT and not for existing IGCC unit MACT. Specifically, EPA claims that "because of costs involved and because existing IGCC units utilize older technology," EPA has decided not to pursue an above-the-floor option for existing units.[100] But the agency's approach is at odds with the DOE's findings on mercury controls for IGCC units. In a September 2002 report, DOE concluded that even at that time, mercury controls representing 90 percent removal were available and applicable to then-existing and planned IGCC units.[101]

DOE further stated that the technology for removal of mercury in an IGCC plant was in 2002 already commercially demonstrated to remove greater than 90 percent of the mercury. Furthermore, the DOE analysis was specifically applicable to gasification systems using high-temperature slagging gasifiers and bituminous coal, which includes both of the utility IGCC plants currently operating in the U.S. Consequently, EPA must require MACT mercury emission rates for existing IGCC plants that reflect at least a 90 percent reduction in mercury emissions. Based on our analysis, the mercuryemission rate for existing IGCC units should be 0.49 lbs./TBtu or 3.9×10^{-6} lbs./MWh.[102]

d. EPA Also Has Unlawfully Distorted The New Source MACT Floor Results.

[100] 69 Fed. Reg. at 4677.

[101] Parsons Infrastructure and Technology Group, Inc., The cost of mercury removal in an IGCC plant. Prepared for Department of Energy, National Energy Technology Laboratory (September 2002). Specifically, the study consisted of an engineering analysis of the installation of a fixed activated carbon bed at the (existing) Polk Power Station IGCC plant. DOE not only found that 90 percent reductions were achievable, but also cost effective: the capital costs of 90 percent mercury removal at Polk were $3.34 per kW, representing less than 0.3 percent of the capital for the total IGCC plant. Electricity costs were estimated to increase only $0.254 per MWh, or less than 1 percent.

[102] Output-based standard based on 42.5% efficiency for IGCC plants. Conversion factor for mass/10^{12} Btu to mass/MWh at 42.5% efficiency is 8×10^{-6} TBtu/MWh.

For new sources, the statute requires that the resulting floor emission rates must reflect the emission rate of the best performing similar source. As with its proposal for existing source floors, EPA has inflated the emission rate achieved by the best performer by unlawfully applying multiple variability factors. As shown in Table II-5, we have calculated different, more stringent new source emission rates based on the performance of the best performing source, without using EPA's inappropriate variability adjustment or subcategorizing by coal type. Our recommended emission rate for new sources does not reflect subcategorization by coal type, consistent with our position for existing sources.[103] Table II-5 also reflects the conversion to an output-based standard. For that purpose, we used a 39 percent efficiency for a new coal-fired unit and an efficiency of 42.5 percent for a new IGCC unit.[104]

We also calculated alternative new source emission rates that are consistent with EPA's subcategories and methodology of addressing variability in coal. Again, our only purpose in maintaining the subcategories and coal variability analysis is to illustrate that even EPA's methodology, when applied correctly, results in more stringent limits than the limits EPA has proposed.

Table II-5. New Source Emission Floors: EPA's Proposal Compared with Recommended and Alternative New Source Floors.

	EPA's Proposed New Source MACT Emission Floors (10^{-6} lbs./MWh)*	Recommended New Source Emission Floors (no subcategories by coal type)	Percent by which EPA's Proposed Limits Exceed Recommended Limits	Alternative New Source MACT Emission Limits (10^{-6} lbs./MWh)**	Percent by which EPA's Proposed Limits Exceed Alternative Limits

[103] Moreover, the recommended new source IGCC rate reflects emissions rates achieved with the application of activated carbon technology. EPA also assumes that IGCC units will reduce emissions 90 percent. 69 Fed. Reg. at 4663 (Table 3).
[104] U.S. Energy Information Administration, "Assumptions for the Annual Energy Outlook 2002," DOE/EIA-0554 (2003).

		(10^{-6} lbs./MWh)**			
New Source Bituminous Units	6.0	1.0	500 %	1.7	253 %
New Source Subbituminous Units	20	1.0	1900 %	9.8	104 %
New Source Lignite Unit	62	1.0	6100 %	15	313 %
New Source Coal Waste-Fired Unit	1.1	1.0	10 %	1.0	10 %
New Source IGCC Unit	20	0.39	5028%	0.39	5028%

* Based on assumed new source efficiency of 35 percent for both conventional boilers and IGCC units. 69 Fed. Reg. at 4668.
** Based on assumed new source efficiency of 39 percent for a conventional boiler and 42.5 percent for an IGCC unit.. U.S. Energy Information Administration, "Assumptions for the Annual Energy Outlook 2002," DOE/EIA-0554 (2003).

Table II-5 demonstrates that EPA's chosen route yields emissions floors far higher than faithful implementation of the requirements of the Clean Air Act. If the floors are taken as the standard, that is assuming for argument's sake that there is no achievable beyond the floor level (a position we do not endorse), EPA's proposed MACT rate cannot even be justified as good economic policy. As we demonstrate in Chapter V, far more stringent emission limits are in fact cost-effective.

4. EPA Has Failed to Consider or Improperly Rejected Numerous Tehcnologies that Could Serve as the Basis for Above-the-Floor MACT for Mercury.

EPA's proposal is also legally flawed in its cursory dismissal of the statute's mandate to require a "beyond the floor" analysis of the maximum achievable degree of reductions of HAPs emitted by listed industries.[105] EPA has failed to consider a number of alternatives – of which the Agency is fully aware -- for beyond-the-floor MACT, despite the fact that these alternatives are available and affordable, and despite EPA's clear authority to act so as to spur broader use of existing technology which has not yet been deployed in widespread fashion. More specifically, the statute requires EPA to consider "measures, processes, methods, systems or techniques, including but not limited to , measures which – (A) reduce the volume of, or eliminate emissions of, [HAPs] through process changes, substitution of materials of other modifications, (B) enclose systems or processes to eliminate emissions, . . . or (D) are design, equipment, work practice, or operational standards . . ." in setting MACT standards.[106] As EPA has elsewhere previously documented repeatedly, there are several approaches to controlling mercury emissions. They include:[107]

- Coal cleaning and fuel switching as a pre-combustion alternatives,
- Installing conventional controls,
- Optimizing the mercury capture of existing control devices,
- Adding mercury-specific controls, and
- Multipollutant approaches (e.g., strategies to simultaneously reduce mercury, NOx, SOx and particulate matter (PM)).

In this instance, however, EPA fails to acknowledge the technology forcing purpose and nature of the MACT provisions, and so fails to adequately consider in this proposal many of the precombustion methods and technological options that currently can be implemented to lower coal-fired utility units' mercury emissions. EPA fails to consider them both in considering the factors driving "best performance" and considering beyond the floor standards. Specifically, the fact that mercury control options and techniques exist and are capable of achieving greater reductions than EPA proposes to require must be evaluated as: (1) the basis for above-the-floor MACT; or alternatively, (2) best demonstrated technology, if EPA persists in its unlawful path of setting standards under § 111.

[105] *See National Lime Ass'n v. EPA*, 233 F.3d 625, 629 (D.C. Cir. 2000).
[106] 42 U.S.C. § 7412(d)(2).

a. Techniques and Technologies Are Available Now to Further Reduce Utility Unit Mercury Emissions "Beyond the Floor."

As EPA is or should be aware, there are also numerous techniques and technologies currently in use that must be considered in evaluating beyond the floor standards.

(1) Coal Cleaning and Fuel Switching Can Enable Sources to Minimize Their Mercury Emissions Without Add-On Controls.

Coal cleaning – currently used as a method of reducing the sulfur content of some coals – removes about 23 percent of the mercury in the coal and is currently used for about 77 percent of eastern coals.[108] Coal cleaning can thus offer additional mercury reduction for units not already burning cleaned coal. Notwithstanding this benefit, EPA fails to consider even conventional coal cleaning as a potential above-the-floor control option, either for the minority of eastern coal shipments that are not cleaned, or for the majority of other shipments that are not. Given that EPA knows that this process has some mercury pollution benefits, and given that its widespread use today suggests that it is not cost-prohibitive, the agency must evaluate this technique as a potential basis for above-the-floor MACT.

Likewise, in the preamble to the proposed MACT rule, EPA attempts to avoid above-the-floor analysis for mercury-specific coal treatments, arguing that effective pre-combustion Hg removal is not widely feasible at this time, "though some innovative techniques are under development."[109] This characterization of pre-combustion mercury removal should come as an unpleasant surprise to KFx Corporation, which transmitted

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[107] U.S. EPA, Control of mercury emissions from coal-fired electric utility boilers: Interim report including errata dated 3-21-02. Office of Research and Development. EPA-600/R-01-109 (April 2002).
[108] *Id*.
[109] 69 Fed. Reg. at 4674.

information to EPA in August 2003 on its K-Fuel Plus™ process for producing an enhanced subbituminous coal.[110] The KFx pre-combustion process removes 70 percent of the mercury on average, and has other multipollutant benefits.[111] KFx is currently constructing a facility, located at the Wyodak mine, which will be operational by the end of 2004 and will be capable of processing 200 million tons of K-Fuel® per year by 2010. One hundred percent of the capacity of this plant has been pre-sold.[112] According to a Wyodak Mine website,[113] coal mined from this area is used at more than 130 power plants in 27 states. Given that the KFx facility could be capable of processing almost 70 percent of the coal from this area, EPA should clearly consider K-Fuel™ as a commercially available and demonstrated technology for reducing mercury emissions from subbituminous coals.

(2) Conventional Controls can be Added to Existing Units for Mercury Capture.

Conventional NOx and SO_2 controls on existing boilers already capture on average about 36% of the mercury – with some configurations capturing well in excess of this amount. Table II-17 summarizes how well conventional pollution controls can reduce mercury pollution, even without being optimized for mercury capture.[114]

Table II-17. Mercury Capture by Conventional Pollution Controls

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[110] Email from Gail Harrison, Powell Tate to Steve Page, EPA, Subject: KFx State specific mercury and cost data (August 13, 2003).
[111] See http://www.kfx.com (visited June 24, 2004).

[112] www.kfx.com/products/facilities.htm.

[113] http://smtc.uwyo.edu/coal/WyomingCoal/customers.asp.

[114] U.S. EPA, Performance and cost of mercury and multipollutant emission control technology applications on electric utility boilers. Prepared for Office of Research and Development. EPA-600/R-03-110 (October 2003).

Post-Combustion Control Strategy	Control Device Configuration	Average Mercury Capture by Control Configuration (Percent)		
		Bituminous Coal	Subbituminous Coal	Lignite
PM Control Only	ESP(c)	36	9	1
	ESP(h)	14	7	Not applicable
	Fabric filter	90	72	Not applicable
	Particle Scrubber	Not applicable	9	Not applicable
PM Control and Spray Dryer Absorber	SDA + ESP	Not applicable	43	
	SDA + FF	98	25	2
	SDA + FF + SCR	98	Not applicable	Not applicable
PM Control and Wet FGD System	PS + FGD	12	10	Not applicable
	ESP(c) + FGD	81	29	48
	ESP(h) + FGD	46	20	Not applicable
	FF +FGD	98	Not applicable	Not applicable

ESP(c) = cold-side electrostatic precipitator, ESP(h) = hot-side electrostatic precipitator, FGD = flue gas desulfurization, FF = fabric filter, SD = spray dryer, PS = particle scrubber

Thus, even though available information makes it apparent that fabric filters are effective at removing mercury at least from bituminous-fired units, EPA utterly fails to analyze emission rates based on wide deployment of such controls as above-the floor MACT. Likewise, EPA does not consider, as a potential basis for above-the-floor MACT standards, the fact that optimizing the performance of existing control devices for mercury removal (e.g., adding a bag to an existing fabric filter) has the potential to substantially increase mercury capture by these controls. The proposed rule completely ignores these retrofit options, despite a 2001 report by EPA's Office of Research and Development describing a number of retrofit options and stating:

> "Retrofitting or adapting control technologies to the facility's existing air pollution control systems is a potential way to increase the amount of mercury captured by these systems rather than installing new, separate mercury control devices. This strategy offers the advantage of reducing the cost of mercury control

by enhancing the mercury capture efficiency of the air pollution control equipment already in place."[115]

We list these options in Table II-18 for convenience, but refer EPA to its own document for a detailed discussion of these options.

Table II-18. Retrofit Options for Conventional Pollution Control Devices.

➢ Cold-Side ESP Retrofit Options
• Add flue gas cooling. • Add sorbent injection. • Add downstream fabric filter with sorbent injection. • ESP modifications: include converting the last field of the ESP to a wet ESP or a compact pulse-jet fabric filter.
➢ Hot-Side ESP Retrofit Options
• Convert to cold-side ESP with sorbent injection. • Add downstream fabric filter with sorbent injection.
➢ Fabric Filter Retrofit Options
• Add flue gas cooling. • Add sorbent injection. • Fabric filter modifications: potential fabric filter retrofit options include replacing fabric bags with catalytic bags or add electrostatic augmentation to increase the bag cleaning cycle interval time and hence increase sorbent/gas contact time.
➢ Spray Dryer Absorber Retrofit Options
• Use oxidation additives. • Replace existing ESP with fabric filter control device.
➢ Wet FGD Scrubber Retrofit Options
• Use oxidation additives. • Add fixed oxidizing catalysts upstream of scrubber. • Wet FGD scrubber modifications: Modify the scrubber operation and design (as well as the control and design of upstream ESPs). These modifications include the liquid-to-gas ratio, tower design and oxidation air.

(3) Activated Carbon Technology Is Available Now.

[115] Kilgroe, J., et al., Control of Mercury Emissions from Coal-Fired Electric Utility Boilers: Interim Report. U.S. EPA, Office of Research and Development, EPA-600/R-01-109(December 2001).

To achieve significant mercury reductions, activated carbon injection (ACI) will have the widest potential application. In January 2002, Dr. Michael Durham of ADA Environmental Solutions (ADA-ES) testified before the U.S. Senate Committee on Environment and Public Works on results of short-term testing of ACI mercury control technology on full-scale coal-fired power plants.[116] Results showed that more than 90 percent mercury capture was achieved at a power plant burning bituminous coal with a fabric filter for particulate control. Up to 70 percent capture was realized at a subbituminous-fired plant with only an ESP.

Since January 2002, the Department of Energy has sponsored several full-scale demonstrations of ACI technology at the following facilities:[117]

- Alabama Power, Gaston Plant – pulse-jet baghouse (COHPAC); bituminous coal
- WEPCO, Pleasant Prairie – electrostatic precipitator; subbituminous coal
- PGE NEG, Salem Harbor Station – electrostatic precipitator; bituminous coal
- PGE NEG, Brayton Point Station – two electrostatic precipitators in series; bituminous coal.

On March 4, 2003, Dr. Durham presented a summary of these results to the EPA's Utility MACT Work Group.[118]

- Results show that 90+% reduction can be achieved by ACI in combination with a COHPAC fabric filter for both bituminous and subbituminous coal. These results are compared to 65+% removal efficiencies for ACI in combination with ESPs.

[116] Dr. Michael Durham, ADA Environmental Solutions, Testimony before the U.S. Senate Committee on Environment and Public Works on Status of Sorbent Injection Mercury Control Technology (January 29, 2002).
[117] Durham, M., *et al.*, "Full-Scale Evaluation of Sorbent Injection for Mercury Control on Power Plants Burning Bituminous and Subbituminous Coals", Powergen International 2002, Orlando, FL.

[118] Michael D. Durham, ADA Environmental Solutions, "Results from Four Full-Scale Field Tests of ACI for Control of Mercury Emissions. Presentation to Utility MACT Working Group," March 4, 2003. Available online at: http://www.epa.gov/ttn/atw/combust/utiltox.index.htm

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➢ ADA-ES concluded that:
- 90% Hg removal can be achieved for bituminous coals with ACI and fabric filter.
- 90% Hg removal can be achieved for subbituminous coals with ACI and a fabric filter.
- 90% Hg removal can be achieved for lignite coals with flue gas cooling, ACI and a fabric filter.

EPA must also, as soon as possible, make public the results of the full-scale, year-long test of ACI at Southern Company's Gaston plant. The test was completed in March 2004. Initial results of 18 consecutive weeks of testing demonstrate an average mercury removal of 85.6%.[119]

It is important to note that the above results are for activated carbon that has not been optimized for mercury removal. Meeting notes in the docket demonstrate that EPA is also fully aware that halogenated activated carbons, which achieve mercury capture in excess of 90% without the use of a fabric filter, will be commercially available in June 2004.[120]

b. EPA's Arguments for Ignoring Mercury-Specific Controls Are Not Supported by the Facts or by the Agency's Prior Practice.

EPA states that mercury-specific control technologies (in particular activated carbon injection) will not be adequately demonstrated until after 2010 and will not be able to be applied to all facilities until 2018. As a result, the agency refuses to evaluate their use as a basis for establishing above-the-floor MACT standards:

> Although AC, chemically impregnated AC, and other sorbents show potential for improving Hg removal by conventional PM and SO2 controls, this

[119] Bustard, J. Full-scale evaluation of mercury control by injecting activated carbon upstream of ESPs and fabric filters. Presented at EUEC '04, Tuscon, Arizona. January 24, 2004.
[120] Memorandum from Bill Maxwell to the Utility MACT Project Files. Subject: meeting with Sid Nelson, Jr., March 10, 2004.

> technology is not currently available on a commercial basis and has not been installed, except on a demonstration basis, on any electric utility unit in the U.S. to date. Further, no long-term (*e.g.,* longer than a few days) data are available to indicate the performance of this technology on all representative coal ranks or on a significant number of different power plant configurations. Therefore, we do not believe these technologies provide a viable basis for going beyond-the-floor.[121]

As discussed below, EPA's rationale is flawed.

First, EPA's position does not agree with the facts. The agency's argument is at odds with information that has been presented by air pollution control equipment vendors and is out of sync with EPA's own analysis of technology availability.[122]There are currently precombustion control options and mercury-specific control technologies that EPA knows or should know are demonstrated and well on the way to commercial availability, if not already in commercial use.

To fully appreciate how much EPA is ignoring the degree to which mercury controls have been demonstrated in practice, and thus must appropriately be considered as the basis for above-the-floor MACT, we have compiled Table II-19. It attempts to summarize, based on publicly-available reports of completed and ongoing mercury demonstration projects (primarily from the Department of Energy's National Energy Technology Laboratory), the results of testing performed to date. A more complete summary of these demonstrations, which for the most part uses verbatim descriptions of the results from reports by the sponsors of the projects, is attached to these comments as Appendix 5.

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[121] 69 Fed. Reg. at 4676.

[122] U.S. EPA, 2004. Control of mercury emissions from coal-fired electric utility boilers. Air Pollution Prevention and Control Division, National Risk Management Research Laboratory, Office of Research and Development.

Table II-19. Summary of the Results of Completed and On-Going Mercury Demonstration Projects (primarily from the Department of Energy's National Energy Technology Laboratory.

Control Equipment	Coal Rank	Mercury Removal Results
Sorbent/FF	Bituminous	*Gaston* – Short-term: 87-90% at 1.5 lb/Mmacf; long-term average: 78% *PSCO Cherokee*: 98% (summer) & 99% (winter) removal with fly ash reinjection (LOI 7.6%) *Gaston*: Average mercury removal varied from 70 to 95% at 0.3 lbs/MMacf PAC injection rate during optimization testing. *NETL pilot-scale combustor* (also has SD): Using less reactive sorbent produced in-situ, pilot-scale testing indicates that mercury removal efficiencies of up to 70% are achievable.
Sorbent /ESP	Bituminous	*Abbott*: 73% at 13.8 lb Mmacf *Lausche*: 70% at 3-5 lb/MMacf for B-PAC; 18% at 18 lb/Mmacf for Norit Darco *Brayton Point:* Baseline: 30-90% across 2 ESPs; with Norit Darco activated carbon, mercury capture averaged approx. 25%, 40%, 70%, 75%, and 90% across the second ESP at feed rates of 3, 7, 10, 15, and 20 lb./MMacf. Total average across both ESPs at 10 lb/Mmacf = 94.5% *Salem Harbor:* Baseline approx. 90% (high LOI of 25-30%); with 10 lb/Mmacf injection, average capture efficiency = 94% *Yates*: MerCAP technology; seems to have been some testing in March 2003, which indicates 85-95% total mercury removal.
Sorbent /FF	Sub-bituminous	*Powerton*: Approx. 80% removal achieved in initial screening tests with several sorbents at 1.5 lb/Mmacf (and 72% for iodine-impregnated sorbent at 0.6 lb/Mmacf). In long-term tests, at 2 lb/Mmacf, the 3 better-performing sorbents achieved approx. 90% removal using Teflon bag, and 70-80% using Torcon bag. *PSCO Comanche*: 61% removal with fly ash reinjection (LOI 14.4%) *PSCO Arapahoe*: 62 % (summer) & 82% (winter) removal with fly ash reinjection (LOI 0.4%)
Sorbent /ESP	Sub-bituminous	*Pleasant Prairie* – up to 73% at 11.3 lb/Mmacf *Cliffside*: 30-40% at 5 lb/Mmacf; up to 80% at 6 lb/Mmacf *Powerton*: Using same sorbents as tested above with FF configuration, achieved maximim of 60% removal at 2.5 lb/Mmacf (iodine-impregnated sorbent). *PSCO Arapahoe*: 28% removal with fly ash reinjection (LOI <1 %)
Sorbent/ESP/FF	Lignite	*EERC Combustor*: Achieved 70% removal with 17.1 lb/Mmacf for ESP alone; 7.8 lb/Mmacf for FF alone; and 2.92 lb/Mmacf for ESP+FF
Sorbent/SD/FF	Lignite	*Great RiverStanton*: Untreated activated carbon achieved 40-45% removal at 3 lb/Mmacf, but iodine impregnated carbon achieved greater than 90% at same rate. Iodine impregnated carbon achieved 96% removal in short test at 0.7 lb/Mmacf. With untreated carbon at 6.1 lb/Mmacf, average removal of 81% achieved.
Sorbent/ particulate scrubber	Sub-bituminous	*Laskin Energy Center*: Using untreated activated carbon yielded poor results; carbon treated with iodine had 54% removal at highest concentration tested, 11 lb/Mmacf. With chlorine salt injection, mixed results.
FF	High-chlorine Polish coal	*ALSTOM Power*: In 3 tests, had removal efficiencies of 89.1, 83.1, and 49.2%.
SCR/FGD	Bituminous	*Various Plants:* For three plants with SCR and wet FGD, mercury removal was 84 - 92% (average 89%) with SCR operation and 43 - 51% (average 48%) without SCR operation.
SCR/FF	Bituminous	*DOE/CONSOL et al Site #1*: Average coal-to-stack Hg removal = 87.3% *DOE/CONSOL et al Site #2*: Average coal-to-stack Hg removal = 94.5%
FF with active media	Lignite	*EPA Pilot-Scale Combustor*: ranged between 70-96% removal over a week based on PSA data; measured 97% using O-H data on a single day.
FF with active media	Sub-bituminous	*EPA Pilot-Scale Combustor*: over 90% removal based on PSA data; higher using O-H data
Advanced	Sub-	*Gaston 4*: ElectroCore process captures approximately 90% of the total mercury at

particulate collectors	bituminous	a PAC injection rate of 7 lb/MMacf.. *Big Stone*: Advanced Hybrid Particulate Collector removed 50% to 71% at a carbon-to-mercury mass ratio of 3000:1 and from 65% to 87% at a mass ratio of 6000:1 in small pilot-scale test. Pilot plant test in 11/01 found 91 to 97% total mercury collection efficiency with a sorbent feed rate of 1.5 lb/million acf compared to a baseline (no sorbent) mercury collection efficiency of 49%; believed that co-firing of tire-derived fuel may have increased Cl content and thus removal. In a second pilot plant test, mercury removal was 63% during activated carbon injection at 1.5 lb/MMacf and without any TDF co-firing. A third pilot plant test at lower flue temperatures achieved removal ranging from 65% to over 90% during activated carbon injection at 1.5 lb/MMacf and without any TDF cofiring. Small, pilot-scale testing with high-sulfur fuel & Norit Darco sorbent in 2002 ineffective.
Hg oxidation by catalysts	Bituminous	*First Energy R.E. Burger*: Preliminary O-H method test measurements found average mercury removal of 88% across the pilot plant.
Enhanced FGD	Bituminous	*Endicott*: Total mercury removal averaged 77% (including 95% removal of the inlet oxidized mercury) compared to a baseline removal of approximately 60%. *Zimmer*: no significant effect on total mercury removal which averaged 52% (including 87% removal of the inlet oxidized mercury) compared to a baseline removal of approximately 45%.

As the mercury removal rates presented above indicate, the demonstrations have shown that various technologies are capable of high rates of pollution control for all coal ranks. In particular, it is evident that the use of fabric filters significantly enhances mercury removal in almost all cases. A powerful example of that fact is the testing that has been done at Midwest Generation's Powerton facility, where several sorbents were tested for their ability to reduce mercury emissions in combination with particulate control devices; the testing indicates that the same sorbents, when used together with a fabric filter, reduce mercury levels to a far greater degree than when they are used with electrostatic precipitators. Similarly, the testing summarized above indicates that certain sorbents are more effective than others. EPA must evaluate such evidence in considering what is the "maximum degree of reduction in emissions," achievable from coal-fired units. EPA must evaluate – in view of the costs, the non-air quality impacts, and energy requirements – how much these technologies (alone or in combination) feasibly can reduce emissions, and establish a MACT emission rate accordingly.

Moreover, in response to a request for information posed by Senator Jeffords, five pollution control equipment vendors reported the following regarding availability of mercury control technologies.[123]

- Two companies are confident their technologies can reduce mercury emissions from power plants by at least 80-90% from all ranks of coal burned.
- One of these two technologies can achieve even greater than 90% capture of mercury from the harder-to-control western sub-bituminous and lignite coals.
- Three out of the five companies responding indicate that their technologies are currently available commercially.
- The remaining two plan to enter the market in 2004 and 2005.

EPA is fully aware of this information, and furthermore, according to materials in the docket, EPA has been made fully aware of advancements in technology that will be entering the market in 2004 and 2005. In particular, in a June 4, 2003 meeting with Sorbent Technologies Corporation, EPA was briefed on the development and testing of new sorbent materials.[124] This briefing argued that:

- Sorbent injection has been shown to be very easy and inexpensive to retrofit.
- 70% to 90% reduction in mercury is achievable depending on injection rate.
- New halogenated powdered activated carbons are highly effective and capture both elemental and oxidized mercury.
- Brominated activated carbon (B-PAC®) also performs the best on hot-side ESP units and on low rank coals.[125]

[123] "The Real Status of Mercury Control Technology." Statement of James M. Jeffords, Ranking Member, Senate Environment and Public Works Committee (December 3, 2003).
Pending EPA Proposal to Deregulate Mercury. December 3, 2003.
[124] Email from Bill Maxwell to Ellen Brown, EPA and Mary Jo Krolewski, EPA. June 16, 2003. Subject: Meeting Wednesday June 4th @ 3:30 in RTP with Sorbent Technologies.
[125] Nelson, S., Jr., R. Landreth, Q. Zhou and J. Miller, 2003. Mercury sorbent injection test results at the Lausche plant. Presented at the DOE-EPA-EPRI-AWMA Power Plant Air Pollution Control "mega" Symposium. May 19-22, 2003. Washington, DC.

- The cost of activated carbon will decline significantly – costs should be near $5,000 per pound removed, not $50,000 as projected by DOE.

- B-PAC® will be commercially available in June 2004 – first commercial production facility is under construction.

- Sorbent Technologies recommends that there be no subcategorization by coal rank.

In addition, activated carbon injection systems are currently being advertised for sale for use at power plants. One company (ADA-ES) states the following on their website about ACI systems:[126]

- Proven technology
- Works for all coals and plant configurations
- Simple, reliable technology
- Cost effective
- Available now

Indeed, ADA-ES currently does have three systems working at power plants, one of which has been in operation for more than a year (Gaston). According to a company official, "the equipment is relatively simple and can be manufactured, delivered and installed in less than 6 months."[127]

EPA's statements concerning the availability of mercury controls simply do not pass the "straight face" test. In summary, numerous types of mercury controls are immediately available. Some of the controls that utility units are likely to employ in order to meet stringent mercury control requirements are summarized in Table II-20 below. EPA's statements otherwise are contrary to the facts. Table II-20 summarizes the state of development of some mercury controls. There are numerous other variations of

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[126] *See* http://www.adaes.com.

[127] Durham. M., Performance and costs of mercury control technology for bituminous coals. Presented at Workshop: North Carolina Mercury and CO2 Requirements of the Clean Smokestacks Act, Raleigh, North Carolina, April 19-21, 2004.

these technologies under development (e.g., different activated carbon-based sorbents) that are too numerous to list here.

Table II-20. **Table II-18. Mercury-Specific or Multipollutant Control Technologies**[128,129,130]

Mercury Control Approach	**Percent Mercury Capture**	**Comments**
Conventional coal cleaning	23%	Average removal for eastern bituminous coals
Optimization of existing controls	Variable	Incremental increase in performance.
Installation of conventional controls	29%	National reduction achievable through implementation of $PM_{2.5}$ proposed rules.
Activated carbon injection with ESP for PM control.	60%	Addition of a small fabric filter would increase the capture efficiency to 90%. Saving in sorbent costs would payback the cost of the fabric filter in 3 to 4 years.
Activated carbon injection with existing fabric filter for PM control.	90%	For subbituminous and lignite coals, an activated carbon that is treated with iodide or sulfur would probably be needed to achieve this high level of reduction.
COHPAC-TOXECON	90%	This configuration is a small fabric filter in combination with activated carbon injection. High capture efficiency for all coal ranks.
Enhanced wet scrubbing	50 – 80%	Control efficiencies varies with scrubber chemistry. Avoids excess carbon in the fly ash.
K-Fuel™	70%	Advanced coal cleaning techniques for subbituminous and lignite coals.
Powerspan – ECO®	80 – 90%	Multipollutant control. Also removes 98% of SO_2, 90% of NOx, and 99.5% of $PM_{2.5}$.

128 NESCAUM,. Mercury emissions from coal-fired power plants: the case for regulatory action.
129 U.S. EPA, 2003. Performance and cost of mercury and multipollutant emission control technology applications on electric utility boilers. Prepared for Office of Research and Development. EPA-600/R-03-110(October 2003).
130 Environmental Energy Insights. M.J. Bradley and Associates. Volume VII, Issue 1, January/February 2004.

Advanced Hybrid Filter™	>90%	Used in conjunction with activated carbon injection.
Airborne Process	Up to 75%	Multipollutant control. Also removes >95% of SO_2, 60 to 79% of NOx.
LoTox™ Process	> 90%	Multipollutant control. Also removes >90% NOx.
MerCAP™	> 80%	

In view of these developments, EPA's suggestion that mercury removal technology is too speculative to require today is contrary to the facts. Table II-21 summarizes the state of development of some mercury controls. There are numerous other variations of these technologies under development (e.g., different activated carbon-based sorbents) that are too numerous to name here.

Table II-21. Status of Development of Mercury Controls[131,132,133]

Mercury Control Approach	Commercial Status	Projected Availability Date	Comments
Conventional coal cleaning	Available	Currently available	An option for ~ 23% of eastern coals. See K-Fuel® for western coals.
Optimization of existing controls	Available	Currently available	Additional mercury control achievable on existing units.
Installation of conventional controls	Available	Currently available	30% reduction projected to meet other emission limits for $PM_{2.5}$.
Activated carbon injection	Available	Currently available	Systems for power plants now being offered by ADA-ES.[134]
COHPAC-	Available	Currently available	Both components now

[131] NESCAUM, "Mercury emissions from coal-fired power plants: the case for regulatory action," (2003).
[132] U.S. EPA, Performance and cost of mercury and multipollutant emission control technology applications on electric utility boilers. Prepared for Office of Research and Development. EPA-600/R-03-110 (October 2003).
[133] Environmental Energy Insights. M.J. Bradley and Associates. Volume VII, Issue 1, January/February 2004.
[134] See http://www.adaes.com

TOXECON			commercially available. Full-scale tests complete on integrated system. 5-year full-scale test will finish in 2007.
B-PAC®	Near commercial	June 2004	
Enhanced wet scrubbing	Near commercial	2005	
K-Fuel™	Near commercial	Early 2005	
Powerspan – ECO®	Near commercial	3rd qtr 2004	
Advanced Hybrid Filter™	Emerging		Pilot-scale tests
Airborne Process	Emerging		Pilot-scale tests
LoTox™ Process	Under Development		Bench-scale tests
MerCAP™	Under Development		Bench-scale tests
MB Felt Filter	Under Development		Bench-scale tests

c. Mercury Controls are Cost-Effective

Considerations of cost can be considered in above-the floor standard setting.[135] Fortunately, available cost estimates for stringent mercury emission limits demonstrate that significant mercury reductions can be achieved cost-effectively.[136] This fact should come as no surprise to EPA; in 2000, EPA "found that there are cost-effective ways of controlling mercury emissions from power plants. Technologies available today and technologies expected to be available in the near future can eliminate most of the mercury

[135] 42 U.S.C. § 7412(d)(2).
[136] U.S. EPA, Performance and cost of mercury and multipollutant emission control technology applications on electric utility boilers. Prepared for Office of Research and Development. EPA-600/R-03-110 (October 2003).

from utilities at a cost far lower than 1 percent of utility industry revenues."[137] Below are some basic facts about the affordability of mercury control:

- Costs for activated carbon range from 0.003 mill/kWh to 3 mills/kWh.
- Currently 60 percent of bituminous-fired units are currently controlled with an ESP. Activated carbon costs for these units will range from 1.171 – 1.751 mills/kWh for 90 percent control.
- Currently, 70 percent of subbituminous units are currently controlled with an ESP. Activated carbon costs for these units will range from 1.236 –1.903 mills/kWh for 90 percent control.
- EPA expects the cost of activated carbon injection will decrease by at least 40 percent with the development of lower cost sorbents.
- Costs are not available for lignite units. However, emission tests indicate that subbituminous and lignite coals are similar with respect to mercury speciation and control. Therefore, the controls costs for all the low-rank coals are expected to be similar.[138]

As noted above, however, not all plants will need to use activated carbon injection because of advances in other types of technology. Table II-22 summarizes the most recent estimates of mercury control costs. For comparison, NOx and SO_2 control costs are also shown.

Table II-22. Mercury Control Costs[139, 140, 141]

Control	Capital Costs $/kW	Fixed O & M $/kW/year	Variable O & M Mills/kWh

[137] U.S. EPA: "Fact Sheet: EPA to Regulate Mercury and Other Air Toxics Emissions from Coal- and Oil-Fired Power Plants" (December 14, 2000), available online at http://www.epa.gov.ttn/atw/combust/utiltox/hgfs1212.html (visited June 26, 2004).

[138] NESCAUM, Mercury emissions from coal-fired power plants: the case for regulatory action (2003).

[139] *Id.*

[140] U.S. EPA, Performance and cost of mercury and multipollutant emission control technology applications on electric utility boilers. Prepared for Office of Research and Development. EPA-600/R-03-110. (October 2003).

[141] Environmental Energy Insights. M.J. Bradley and Associates. Volume VII, Issue 1, January/February 2004.

SO_2 Control			
Wet scrubber	150 - 200	8.00	1.0
NOx Control			
SCR	50 - 80	0.53	1.37
I. Mercury Controls			
Fabric Filter	40 – 55		0.5
Activated Carbon Injection	< 3	1.00	0.4 (for ACI plus fabric filter); 1.7 (for ACI plus ESP)
COHPAC-TOXECON	55	N/a	2.15 –2.36
Advanced hybrid Filter	35 – 75	N/a	N/a
II. Multipollutant Controls			
Powerspan-ECO™	200	N/a	1.36 – 1.79
Airborne Process	170	N/a	N/a
LoTox™	90 –120	N/a	1.7 – 2.37
K-Fuel®			1.26

N/a means not available.
(1 mill = 1/1000th of a dollar or 0.1 cents. An equivalent measure is $/MWh)

d. EPA's Refusal to Consider Certain Technologies Which Are Not in Widespread Commercial Use Ignores the Agency's Past Interpretation of the Clean Air Act.

EPA argues that some of these techniques are not "commercially available" and dismisses them from consideration -- without analysis -- on this basis alone. But section 112(d)(2) is undeniably technology-forcing in nature: as Senator Durenberger noted on the Senate floor, "[I]ndeed, the Administrator is authorized and *expected* to set the standard beyond the level achieved by any source in the past if he determines that such a standard will be achievable by the deadline for compliance."[142] Moreover, the argument that EPA advances, namely that commercial availability can be considered in such

[142] 136 Cong. Rec. S 16895, 16929 (1990)(emphasis added).

settings, previously has been rejected both by the courts and by EPA in prior rulemakings.

EPA must take a long-term, future-looking view, setting stringent MACT standards based on the performance of the best performers, not on specific technologies already routinely in use on existing sources. By doing so, EPA would force the development of new technologies, respecting the technology forcing nature of section 112 of the Act.[143] . An "achievable standard," furthermore " 'need not necessarily be routinely achieved within the industry prior to its adoption.' "[144] In fact, section 112 was crafted with nearly identical language to section 111, which "looks toward what may fairly be projected for the regulated future, rather than the state of the art at present."[145]

Further, it is not enough for EPA to base its rejection of beyond-the-floor reduction technologies based on a generalized discussion of the technologies' limitations. In *Bluewater Network v. EPA*,[146] the D.C. Circuit found that in determining what is "achievable" by a future compliance deadline under section 213(a)(3) – another "technology-forcing" provision of the Act, with comparable language to section 112(d)(2) – the agency must do more than provide a generalized defense of such a determination, but must provide a "reasonable explanation of the specific anaysis and evidence upon which the Agency relied . . . ."[147]

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[143] *C.f Sierra Club v. Costle*, 657 F.2d 298, 325-26 (D.C. Cir. 1981); *National Asphalt Pavement Ass'n v. Train*, 539 F.2d 775, 785-86 (D.C. Cir. 1976) (discussing technology forcing in the context of section 111 standard setting).
[144] *Id.* at 786 (quoting *Essex Chem. Corp. v. Ruckelshaus*, 486 F.2d 427, 433-34 (D.C. Cir. 1973), *cert. denied sub nom. Appalachian Power Co. v. EPA*, 416 U.S. 969 (1974)).
[145] *Lignite Energy Council v. EPA*, 198 F.3d 930, 934 (D.C. Cir. 1999)(quoting *Portland Cement Ass'n v. Ruckelshaus*, 486 U.S. 427, 433-34 (D.C. Cir. 1973), *cert. denied sub nom. Appalachian Power Co. v. EPA*, 416 U.S. 969 (1974)).
[146] 2004 U.S. App. LEXIS 10632 (D.C. Cir. 2004).
[147] *Id.* at *50.

In setting the "greatest degree of emission reduction achievable" standards for snowmobiles at issue in *Bluewater Network,* EPA determined that there were no purely technological obstacles to a standard tha required advanced technologies,[148] but that "standards reflecting across-the-fleet implementation are not 'achievable' by 2012 . . . ."[149] the court found that this conclusion was arbitrary and capricious because EPA had set the standard only as stringently as could be met by 70 percent of existing models on the basis of cost, without an examination of the prohibitive costs to the 30 percent of medels for which the advanced technologies were inapplicable.[150] More importantly, the agency could not simply base its standards upon general limiting factors that would inhibit greater reductions by 2012.[151] The court found that because the agency had made its determination "not on technological obstacles *per se*, but rather on the cost and time required to 'optimize' advanced technology for each showmobile model on the market[,]" EPA was required to estimate the time and cost needed to implement a stronger standard and the scope of implementation that is actually feasible by compliance time.[152] "We can defer to the Agency's prediction of the feasible pace of implementation only if it has adequately explained the basis of that prediction."[153]

Likewise, in the current rulemaking, EPA has failed to provide a reasonable explanation for its rejection of beyond-the-floor technologies. EPA's rejection of advanced technologies seems mostly grounded upon the Agency's belief that they are not currently available on a commercial basis, and doubts about the technologies'

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148 *Id*.
149 *Id*. at *46.
150 *Id*.
151 *Id*.
152 *Id*. at *50.
153 *Id*.

performance on all representative coal ranks, or on a significant number of different power plant configurations. As in *Bluewater Network,* EPA's rejection of a standard requiring greater emission reductions seems primarily based on determination that a standard could not be met across the industry. This conclusion, based on cost and time considerations, is unsupported by the record. For example, EPA completely fails to explain what it means when it says a control technology is not "commercially available." Further, EPA fails in this rulemaking to provide any analysis that shows that the barriers to implementation of advanced technologies today will still exist after the three year period between the final rule and the statutory compliance date.[154] It is not enough for the Agency to simply provide the generalized discussion of control technologies' limitations, and simply to say that greater emission reductions are not achievable. As in *Bluewater Network,* EPA must provide an analysis of what would be required of industry to meet a more stringent standard and an analysis of the scope of implementation of such a standard within compliance time. EPA's failure to provide the analyses makes its MACT proposal unreasonable and arbitrary and capricious.

The agency also has rejected considerations of the commercial availability of specific technologies in MACT floor determination in previous final rules. For example, in 1995, when EPA issued final federal emission guidelines for large existing waste municipal incinerators (MWCs) and NSPS for new MWCs under Section 111 and under

[154] In a similar vein, the Agency also fails to explain why municipal waste combustors were expected to achieve significant mercury emission reductions using activated carbon injection when the Agency set MACT and NSPS standards for that industry in the 1990s, but why the electric utility industry is ow not expected to utilize the same control technology as easily. A lack of data from electric utilities is no excuse, either. As the D.C. Circuit has long recognized, "[w]here data are unavailable for EPA to determine that a standard is "achievable," EPA may compensate through the use of other qualitative methods, including the reasonable extrapolation of a technology's performance in other industries." *Lignite Energy Council*, 198 F.3d at 934 (quoting *Portland Cement Ass'n v Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973) (internal citation omitted).

Section 129 of the Clean Air Act,[155] EPA rejected a number of commenters' complaints that the control technology necessary to MWCs to meet the proposed MACT standard was neither commercially nor technologically available. Several commenters had asserted that the lack of demonstrated data on carbon injection (interestingly, the same technology EPA now says is commercially unavailable for electric utilities) was "based on a small number of short-term tests using temporary control equipment at only two facilities" and was not indicative of what was achievable for long-term, permanent installations.[156] Another commenter argued that the two tests used by the EPA as the basis of the mercury standard lacked "sufficient repetitions of both control and test runs to provide good statistical reliability to the numerical conclusions."[157] Commenters argued that "commercial application of technology often isolates problems not observed during short-term test runs."[158]

EPA rejected these arguments on legal grounds, stating that while no MWCs had in place the control technology configuration that would be required to meet the final MACT standards, EPA was fully justified in setting the floor at the more stringent levels it did because of the technology-forcing purposes of sections 111 and 129 of the Clean Air Act.[159] Moreover, EPA disagreed with commenters' arguments that the statute

[155] 60 Fed Reg. 65,387 (Dec. 19. 1995); 62 Fed Reg. 45,116 (Aug. 25, 1997).
[156] EPA, Municipal Waste Combustion: Background Information for Promulgated Standards and Guidelines - Summary of Public Comments and Responses (Subparts Eb and Cb) (EPA-453/R-95-0136), at 3-43, located at http://www.epa.gov/ttn/atw/129/mwc/mwcbid95.pdf.
[157] *Id*.
[158] *Id*.
[159] *Id*. at 3-29. Section 129 of the Act requires a MACT approach to floor setting – the language of section 129 tracks that of section 112(d) very closely.

requires a demonstration that MACT levels would be achieved continuously, or by all units industry-wide:[160]

> . . . the [current] standards [are] permissible, because an achievable standard does not have to be one that already is routinely achieved in industry; the standard only must be "within the realm of the adequately demonstrated system's efficiency . . .." Essex Chemical Corp. v. Ruckelshaus, 480 F.2d 427, 433-34 (D.C.C. 1973). See also Chemical Manufacturers Ass'n v. EPA, 885 F.2d 253, 264 (5th Cir. 1989) (while upholding technology-based water standards determined on a pollutant-by-pollutant basis, the court stated that "the fact that no plant has been shown to be able to meet all of the limitations does not demonstrate that all the limitations are not achievable").[161]

EPA furthermore noted the advancement of the technology even during in the time period between the rulemaking proposal and the issuance of the final rule. During that period, 12 MWC units located at 5 MWC plants had initiated operation of control configurations that included the use of carbon injection systems, and all of the units at all of the plants were in compliance with the proposed MACT levels.[162]

e. EPA Has Utterly Failed to Adequately Consider Sources' Ability to Achieve Above-the-Floor Levels of Pollution Reductions.

To recap, section 112(d)(2) states explicitly that emissions standards promulgated by the Agency "shall require the maximum degree of reduction in emissions of the hazardous air pollutants subject to this section (including a prohibition on such emissions where achievable). . . ." EPA cannot plausibly read this language to allow it to ignore the options noted above for optimizing the performance of currently installed control devices, the addition of conventional control devices – not just selective catalytic reduction, but fabric filters and scrubbers. Clearly, the EPA must consider ACI as a

[160] *Id*. at 7-71.
[161] *Id*. at 3-113..

viable option, particularly with long-term tests from the Gaston plant now available. Also, EPA must at the very least respond to information submitted to the record by KFx Corporation andSorbent Technologies Corporation that clearly indicates the availability of new and effective technologies and control techniques that can yield significant emissions reductions. Similarly, EPA must consider the fact that ACI is currently being advertised and marketed for application on utility units, and it must give greater credence to the results of the numerous demonstration projects conducted to date, which on the whole reveal that EPA can demand significant cuts from current mercury emissions and companies can meet stringent limits using various technologies.

5. State Regulatory Efforts Demonstrate that Stringent MACT Standards for Mercury are Achievable.

Several states recently have taken steps to clean up power plant air emissions, including mercury in their own jurisdictions. Two states, Connecticut and Massachusetts have finalized legislation including stringent mercury control requirements; Massachusetts also recently promulgated implementing state regulations which are significantly more stringent than EPA's proposal. Wisconsin and New Jersey has proposed regulations, which are undergoing final review; the Wisconsin Natural Resources Board approved a set of mercury regulations on June 23, 2004, which are now awaiting final approval by the state legislature. The contrast between the stringency of the proposed and final state standards and other specific requirements of the regulatory efforts in these states and the elements of EPA's proposal is striking. As summarized in

[162] *Id.* at 3-45.

Table II-23 below, the states are requiring (or proposing to require) deeper reductions in mercury emissions over a shorter period of time than EPA.

Table II-23. Final and Proposed State Mercury Regulation for Power Plants

	MASSACHUSETTS[163] (final)	**CONNECTICUT**[164] (final)	**WISCONSIN** (preliminary approval)	**NEW JERSEY**[165] (proposed)
Stringency of Standard	Cap emissions at 1997-1999 levels Phase I – 85% control efficiency or 0.0075 lbs/GWH. Phase II – 95% control efficiency or 0.0025 lb/GWH. [equivalent to ~ 0.2 lbs./TBtu]	No caps. 0.6 lbs./TBtu or 90% control efficiency.	Cap on emissions: current control efficiency multiplied by baseline (3 yr. mercury coal aver.) Phase I – 40% reduction from coal. Phase II – 75% reduction from coal. (note: the rules include a "goal" of 80 %t reduction by 2018)	No caps. 3.00 mg/MW-hr or 90% control efficiency. [equivalent to CT level: 0.6 lbs./TBtu]
Format of Standard	Either output-based emissions rate or percent reduction from inlet levels.	Either heat input-based emission rate or percent reduction from inlet levels.	Percent reduction from coal.	Either output-based emissions rate or percent reduction from inlet levels.
Compliance Deadline	Phase I –January 1, 2008 Phase II – October 1, 2012 [To coincide with SO2 requirements]	July 2008.	Phase I – 2010 Phase II – 2015	December 2007 [see below for alternate compliance date]
Other	Facilities that will terminate operation by January 1, 2010 can stack test instead of	Alternative limit can be developed if technology proven infeasible. Stricter	Phase 1 waived if multi-pollutant approach taken. Variances for	5 year extension granted <u>IF</u> the following are

[163] 310 C.M.R. 7.29 (June 4, 2004).
[164] Connecticut Pub. Act 03-72 (June 3, 2003).
[165] 36 N.J.R. 123(a) (Jan. 5, 2004).

	CEM and offset (in same DEP region) 1:1 air emissions and 10:1 other Hg reductions. Facilities emitting less than 5 lbs./year can meet cap by offsetting air emissions 1:1 (in same DEP region) and 10:1 other emissions (within same DEP region) until 9/30/2012.	standard may also be issued.	reliability, technical or economic infeasibility included. Trading among 4 utilities allowed.	met by 2007: 50% of MW capacity meets standard; enforceable agreement signed to install control equip; stringent SO2, NOx, and PM limits are met. Rule does not apply to plants that have entered into enforceable agreement to shut down plant by Dec. 2012.

New Hampshire and North Carolina also have passed multi-pollutant legislation that also addresses mercury. Each of these states will assess the mercury co-benefits of reducing SO_2 and NOx emissions and then recommend mercury emission limits to their state legislatures. In New Hampshire, a mercury cap will be recommended to the legislature in 2004, while a September 2005 deadline is in place for North Carolina. Delaware, Maryland, Illinois and Michigan are also actively pursuing state legislative solutions to control mercury from the coal-fired power plants in their states. EPA's foot-dragging on meaningful mercury regulations for power plants has resulted, and will continue to result in development of state-specific rules.

These states have determined for themselves, based on currently available science and technical evidence, that far more stringent mercury regulations are justified and feasible in the near term. This demonstrates that, by contrast, EPA's go-slow and do-little approach is hardly representative of the "maximum degree of emissions reductions" achievable from this industrial sector. For example, EPA's preferred regulatory alternative establishes a cap *aimed at* reducing mercury emissions by nearly 70 percent in 2018(and is predicted only to achieve a 48 percent cut by that time), whereas Massachusetts's coal fired power plants will have been reducing their mercury emissions by more than 85 percent for 10 years by then!

In addition to legislation, states are also addressing mercury emissions from coal-fired power plants through the case-by-case MACT permit process for new plants. The states are concluding that significant mercury controls are technically feasible and available in the very near term, and therefore are requiring emission rates far lower than EPA has proposed. EPA, however has completely ignored these regulatory and permitting efforts, despite the fact that D.C. Circuit has stated that relevant permit levels can be used in floor setting if it can be shown that they reasonably estimate the performance of the top units. *Sierra Club v. EPA*, 167 F.3d 658, 663 (D.C. Cir. 1999).

Two recent permits are very noteworthy. In Council Bluffs, Iowa, the new 790 MW MidAmerica Energy Center facility is scheduled to commence operation in 2007.[166] The permit for this plant, which will burn subbituminous coal, requires the plant to reduce mercury emissions by 83 percent (measured against the input mercury level in the combusted coal), which will be met by using activated carbon injection. This is equivalent to an emission rate of 1.7 lbs./TBtu – an emission rate about 70 percent more stringent than EPA's proposed emission rate of 5.8 lbs./TBtu for units burning subbituminous coal. Second, a permit has been issued in Wisconsin for the Elm Road Generating Station, which will fire washed Pennsylvania bituminous coal.[167] The permitted emission rate for this plant is 1.12 lbs./TBtu, based on 90 percent removal of mercury from the coal being burned. This is far lower – indeed, about twice as stringent as – EPA's proposed rate of 2.0 lbs./TBtu for units burning bituminous coal.

C. EPA's Failure Even to Consider Regulating HAPs Other than Mercury in its MACT-Setting Process is Contrary to Law.

EPA cannot – as it argues it must – pick and choose those HAPs for which it will establish MACT standards, and the agency's invocation of section 112(n) as authorizing this approach[168] does not legally justify its action. The agency's December 2000 regulatory determination and decision to list *the source category* utility units under section 112(c) triggered the duty to regulate major sources in that category under section 112(d), which the D.C. Circuit Court of Appeals has declared includes a "clear statutory obligation to set emissions standards for each . . . HAP [listed in CAA §112(b)]." *National Lime Ass'n v. EPA*, 233 F.3d 625, 634 (D.C. Cir. 2000). Once EPA decides to list a source category, therefore, the Agency is not faced with any additional "decision" about whether to issue MACT standards, nor is it given a choice about which pollutants it

[166] Iowa Department of Natural Resources, Air Quality PSD Construction Permit for CBEC 4 boiler, three Carbon Silos and Fugitive Emissions Notice of MACT Approval, MidAmerican Energy Company, Permit No. 03-A-425-P (June 17, 2003).
[167] Air Pollution Control Construction Permit, Elm Road Generating Station, Oak Creek, Wisconsin, Permit No. 03-RV-166 (January 14, 2004). Available online at http://dnr.wi.gov/org/aw/air/permits/APM_toc.htm.

[168] *See* 69 Fed. Reg. at 4660.

must regulate.[169] EPA, however, claims that its regulatory determination was "over-broad" insofar as it applied to HAPs other than mercury and nickel, and proposes not to establish emission standards for those other pollutants. Specifically, EPA says that the "record supports only a finding that emissions of Hg and Ni warrant regulation. Nothing in the Study or the information EPA following that study even arguably supports the proposition that EPA should address HAP emissions fro utility units other than emissions of Hg and Ni."[170]

EPA's approach rests on a legal theory that the CAA "only authoriz[es] regulation of utility units under section 112 with respect to HAP emissions from such units that EPA has determined are 'appropriate and necessary' because they are reasonably anticipated to result in a hazard to public health even after imposition of the other requirements of the CAA."[171] This theory echoes one put forward by Latham & Watkins on behalf of certain utility interests, which argued that the December 2000 Regulatory Finding constituted a decision about which pollutants would be regulated in the subsequent MACT rulemaking proceeding and that, for coal-fired units, EPA decided only to regulate mercury emissions. But EPA's regulatory determination was not, and indeed could not possibly have been, a decision about which HAPs would be regulated, except to the extent that it legally committed the agency to develop standards for all listed HAPs that utility units emit. First, the plain language of the determination was much broader than mercury; EPA concluded that "regulation of *HAP emissions* from coal- and oil-fired electric utility

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[169] Environmental Coalition, Utility MACT Working Group, EPA'S Duty to Regulate All Non-Mercury Hazardous Air Pollutants Emitted by Coal- and Oil-Fired Electric Generating Units (March 3, 2003). A-92-55 Item II-E-119.

[170] 69 Fed. Reg. at 4683.

[171] 69 Fed. Reg. at 4660.

steam generating units under section 112 is 'appropriate and necessary.'"[172] Second, with that finding made, section 112(n) mandates that EPA must regulate the EGU source category "under this section" – namely section 112. The statute is clear that the finding and listing decision concern the *source category*, not the *pollutants* to be regulated.[173] EPA's Regulatory Finding and listing decision reflect this.[174] Third, having made the finding and listing, EPA has stated that regulation under section 112(d) is required as a "rather obvious" consequence of "the language and structure of section 112 itself."[175] Consequently, EPA's 2000 determination represented a conclusion that MACT standards, with all of their attendant requirements, should be established for utility units.

In *National Lime Ass'n v. EPA*,[176] the court ruled that section 112(d) standards must include each listed HAP emitted by the regulated category. During the development of the MACT standards for the portland cement manufacturing plant source category, EPA found that such facilities emit significant levels of several categories of HAPs listed in CAA section 112(b).[177] In the final MACT rule, however, EPA set no standards ("floors of no control") for three of the HAPs emitted by the source category, because it "found no cement plants using control technologies for these pollutants."[178] Sierra Club argued, and the Court agreed, that the result – EPA's failure to set emission limits for three HAPs listed in CAA section 112(b) and emitted by the major sources in the listed

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[172] 65 Fed. Reg. at 79,830 (emphasis added); *see also* U.S. EPA, "Fact Sheet: EPA to Regulate Mercury and Other Air Toxics Emissions From Coal- And Oil-Fired Power Plants" (Dec. 14, 2000) ("To reduce the risk mercury poses to people's health, the Environmental Protection Agency . . . is announcing that it will regulate emissions of mercury *and other air toxics* from coal- and oil-fired electric utility steam generating units" (emphasis added)).
[173] *See* CAA §§ 112(n)(1), 112(c).
[174] 65 Fed. Reg. at 79,830 ("[t]herefore, the EPA is adding coal- and oil-fired electric utility steam generating units to the list of source categories under §112(c) of the CAA").
[175] Reply Br. of EPA in Support of Motion to Dismiss, *Utility Air Regulatory Grop v. EPA*, No 01-1074 & consol. case, at 4 (D.C. Cir., May 17, 2001).
[176] 233 F.3d 625 (D.C. Cir. 2000).

source category – violated CAA section 112(d)'s requirement that the Administrator must establish emission limits for each of the HAPs listed in CAA section 112(b).[179]

Latham & Watkins offers several arguments by which utility units can avoid this clear statutory requirement to address all emitted HAPs, but none of them bears scrutiny. First, the *National Lime* Court did *not* interpret a "different subsection of 112" than is pertinent and dispositive here. In *National Lime*, the court interpreted CAA section 112(d) as imposing a mandatory duty to regulate all HAPs emitted by a listed source category and, as EPA has admitted, utility units must be regulated under section 112(d) following the agency's listing decision. Second, the sparse legislative history upon which Latham & Watkins (and EPA) relies – consisting of floor statements of Representative Michael Oxley – does not contradict this view. Nor does it support the notion that Congress intended any different result for utility units than for any other source category listed under section 112(c) – that is the development of MACT regulation for all emitted HAPs. Rather, Rep. Oxley's statements simply describe the process leading up to the listing decision for utility units. Rep. Oxley argues that the conferees accepted the provisions of the bill that became section 112(n) "because of the logic of basing any *decision to regulate* on the results of scientific study . . ."[180] But of course EPA made the "decision to regulate," referred to by Rep. Oxley, in its science-based decision in 2000 that it is "appropriate and necessary" to regulate utility units.

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[177] *Id.* at 629-30.
[178] *Id*. at 630, 633.
[179] *Id*. at 633 ("the statute lists over one hundred specific HAPs, 42 U.S.C. § 7412(b)(1), and requires EPA to 'promulgate regulations establishing emissions standards for each category or subcategory of major sources . . . of [HAPs] listed for regulation.'"*(quoting* 42 U.S.C. § 7412(d)(1))).
[180] 136 Cong. Rec. E3670, E3671 (emphasis added).

Similarly, EPA quotes Rep. Oxley as saying that the EPA Administrator may "regulate only those units that he determines . . . have been demonstrated to cause a significant threat of serious adverse effects on the public health."[181] The utility industry construes this comment to mean that "the regulation of *any HAP emissions* from power plants that do not satisfy this criteria . . . would be ultra vires,"[182] but this statement says nothing about picking and choosing which particular pollutants to regulate. Instead, Rep. Oxley's focus on those units that are "appropriate and necessary" to regulate is completely consistent with the December 2000 determination and listing of coal- and oil-fired utility units, which was based on a great deal of scientific evidence[183] that major EGU source emissions indeed present a significant threat of serious adverse effects on the public health.

Even if Rep. Oxley's comments could be construed as the utility industry would prefer, they are still nothing more than the comments of one conferee.[184] Moreover, these comments are further discredited by the fact that they are at odds with the language of section 112(n), which requires EPA to regulate utility units under section 112 of the Act."[185] Section 112(n) does not require EPA to regulate only those units that EPA determines to present a threat to public health.

Utility interests assert that Congress did not intend for utility units to be regulated "independently" of the § 112(n) study. We concur with this view – but do not agree that the section 112(n) study (or any of the studies supporting the section 112(n) finding and

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[181] *Id.*
[182] Latham & Watkins, L&W Non-Mercury HAPs Memo at 4.
[183] Indeed, far more than Congress required in 1990, see CAA § 112(n), 42 U.S.C. § 7412(n).
[184] *See, e.g., National Small Shipments Traffic Conf., Inc. v. Civil Aeronautics Bd.*, 618 F.2d 819, 828 (D.C. Cir. 1980) (noting that statutory language should control over inserted statements in the legislative history).

listing decision) limited which pollutants will be regulated. Congress established a framework, as described above, in which the section 112(n) study is to be "considered" by the Agency in making the finding that it is appropriate and necessary to regulate utility units.[186]

EPA now has proposed a rule that utterly fails to regulate all of the recognized HAPs (aside from mercury and nickel) known to be emitted by utility units. Under the plain language of the Act, as authoritatively interpreted by the U.S. Court of Appeals for the D.C. Circuit, the agency's actions are simply unlawful.

1. The Record Supports the Development of MACT Floors for Non-Mercury HAPs Emitted by Utility Units.

As described in Chapter 1, the electric utility industry is one of the largest industrial emitters of listed toxic chemicals other than mercury. The health effects of these chemicals are well-documented, as shown in Table I-1. Some are known to cause cancer, others impair reproduction and the normal development of children, and still others damage the nervous and immune systems. Many are respiratory irritants that can worsen already existing respiratory conditions such as asthma. Some of these pollutants are of environmental concern because they damage ecosystems and can harm the plants and animals that rely on these ecosystems.

EPA cannot hide behind a supposed lack of data about the emissions of these chemicals from the electric utility sector, and use that alleged lack of data to avoid MACT standard-setting for these chemicals. First, it is clear that EPA has authority, spelled out in section 114(a) of the Clean Air Act, to collect information necessary for the

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[185] *Cf. Brock v. Pierce County*, 476 U.S. 253, 263 (1986)(controlling effect should not be given to individual legislators' statements; although they may be helpful if they are consistent with the statutory language).

purposes of any standard setting under section 112(d) of the Act. The environmental community has urged the Agency repeatedly since 2000 to augment its data set if the Agency had reason to believe it was lacking.

Second, the stack test data set collected during the development of the Utility HAP report is by itself sufficient to support a floor for 'non-mercury HAP metals' emitted by coal fired units. The Agency must use these data to set emission standards for all of the non-mercury HAP metals. The currently available emissions data for other non-mercury HAPs do not appear to be sufficient to develop a MACT floor. Consequently, we again recommend (as our stakeholder community did in 2001 in the Utility Working Group process) that the agency collect sufficient data on the other non-mercury HAPs to enable the agency to develop emission rates for all of the other non-mercury HAPs as required by the CAA.[187]

A floor for the non-mercury HAP metals emitted by existing coal-fired units must be based on the average of the best performing 12 percent of the 30 power plants tested. Based on these data we recommend a MACT floor (in the form of an output-based emission rate) that would reflect a 99 percent removal for all metals. Table II-24 below lists the input-based emission rates that represent the average of the best performing 12 percent for the tested units; as discussed above, we recommend that EPA develop output-based standards, but do so consistent with the MACT approach.

Table II-24. Recommended Floor Emissions Rates for Non-Mercury HAPs emitted by the Electric Utility Industry.

Metal	Emission Rate (lbs./Trillion Btu)

[186] 42 U.S.C. § 7412(n)(1)(A).
[187] Letter to Sally Shaver, U.S. EPA and John Paul, Co-chairs of Utility MACT Working Group, from environmental group representatives on Utility MACT Working Group (December 17, 2001).

Antimony	0.15
Arsenic	0.24
Barium	1.34
Beryllium	0.01
Cadmium	0.16
Chromium	0.91
Cobalt	0.19
Copper	1.3
Lead Compounds	0.34
Manganese	2.38
Molybdenum	0.61
Nickel	1.34
Selenium	0.19
Vanadium	0.58

D. Granting a Global Compliance Extension is Beyond EPA's Authority Under the Act.

EPA requests comments on whether a one-year extension should be granted to all existing facilities required to comply with the MACT control requirements.[188] EPA simply is not authorized by the statute even to offer such a blanket extension. Section 112(i) defines the compliance schedule for new and existing sources; section 112(i)(3) provides EPA authority to establish compliance as expeditiously as practicable but not

[188] 69 Fed. Reg. 4682.

later than three years after promulgation -- with very limited exception. Up to one additional year may be permitted for an existing source to comply with the standard, if such additional period is "necessary for the installation of controls."[189] But the one-year extension provision obviously contemplates a source-specific exception -- issued by the permitting authority .[190] EPA is not authorized by the statute to use this provision to extend compliance for all sources in a source category.[191]

Congress explicitly required the three-year compliance period in its 1990 amendments as part of its attempts to reign in EPA in its prior failures to regulate sources of hazardous air pollutants.[192] The goal of the 1990 Amendments to section 112 was to set a course for the rapid development and deployment of technology based standards for all sources categories that emitted HAPS – including electric generating units.[193] Congress's urgency for prompt compliance and its intent to encourage compliance as soon as possible was evident not only by this provision but by other incentives for early compliance that Congress enacted in 1990.[194]

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189 42 U.S.C. § 7412(i)(3)(B).
190 See the regulations implementing this section at 40 C.F.R. Section 63.6(i)(4)(B).
191 Although we realize that EPA has granted a one-year extension to all source categories in other MACT rulemakings pursuant to Section 112(i), we contend that it was and is an inappropriate use of this authority.
192 *See* S. Comm. Rep. No. 101-228, at 132 (Report on S. 1630, Clean Air Amendments of 1989).
193 There is nothing unique about electric generating units as far as the Section 112(i) compliance deadline is concerned. Furthermore, section 112(i) applies to all emission standards established under Section 112 of the Clean Air Act, which obviously includes any established pursuant to section 112(n), *if* one were to assume, *arguendo,* that it is an accurate to assert that the authority to 'establish regulations' is granted to EPA by section112(n) of the Act.
194 For example, Congress adopted an early compliance extension program to encourage sources to make reductions well in advance of when otherwise required. In exchange for substantial early reduction of HAPs, a facility can gain an additional six years to achieve compliance with the actual MACT standard. *See* Section 112(i)(5) and implementing regulations at 40 C.F.R. § 63.70, *et seq.*

1. Even if EPA had the legal authority to grant a blanket compliance extension, which it does *not*, the reasons set forth by industry and EPA simply do not provide a rational basis for such an extension.

Utility representatives argue that standards containing similar compliance dates for a large number of sources would result in numerous facilities competing for a limited number of experienced contractors in order to meet the standards at the same time. They suggest a staggered compliance schedule for the sources affected by the standards. They also state that many sources would require more than 3 years to install the required control equipment given the limited number of contractors experienced in installing control equipment and the lead time needed to meet permitting requirements. Industry asserts, for these reasons, that it is a practical impossibility to comply within the three-year period of time.[195]

EPA furthermore solicits comments on whether a 1-year extension should be granted for facilities required to install controls in order to comply with the proposed CAA section 112 MACT rule.[196] EPA states in the proposal that it believes a substantial number of sources would have to install control technologies to meet the limits of the proposed standard. EPA states that "such construction could be constrained by the potential impacts on electricity reliability, delays in obtaining permits and other factors (including potential labor and equipment shortages).[197] EPA identified as one of the most limiting factors in regards to the implementation of the emissions program a shortage of boilermaker labor. Predominately employed in the power industry, boilermakers are

[195] *See* L&W Global Compliance Memo.
[196] 69 Fed. Reg. at 4682.
[197] *Id.*

skilled laborers that perform welding, rigging and hoisting for the construction and maintenance of boilers and high pressure vessels.

The Institute of Clean Air Companies (ICAC), a nonprofit, national association of companies that supply air pollution control and monitoring technology for all types of stationary sources, including coal-fired power plants, performed a thorough evaluation of the availability of resources necessary for compliance with this rulemaking.[198] This evaluation included examination of the constraining assumptions EPA makes concerning the availability of boilermaker labor, usage of time to construct equipment, installation of equipment, the types of construction methods implemented, etc. The ICAC concluded that the air pollution control industry in fact is prepared, now, to install significant amounts of air pollution controls within a short period of time. In short, there are readily available equipment and labor resources to achieve regulatory timeframes far quicket than those envisioned by EPA.[199] ICAC points to great success in achieving controls with the NOx SIP call. In addition, ICAC points to impressive compliance timeframes achieved by the coal-fired power plants of both Germany and Japan.[200] In fact, given the wide-spread availability of control technologies and services combined with vendor and industry experience, EPA should have far greater optimism in what can and should be achievable by these rules than is reflected in the preamble.

Moreover, EPA's concerns about potential labor and equipment shortages also have been addressed in detail in comments submitted by the Clean Air Task Force,

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[198] *See* Testimony of David Foerter, before EPA Hearing on Utility MACT rulemaking (February 26, 2004), available online at http://www.icac.com/iaqrepacmt22604.pdf (visited June 24, 2004).

[199] *Id.*

[200] *Id.*

NRDC, and others on EPA's proposed Interstate Air Quality Rule.[201] In response to EPA's request for comments on this issue in the Utility MACT proposal, we incorporate these comments by reference.

The ICAC also submitted written comments on EPA's IAQR.[202] These comments analyzed the adequacy of boilermaker labor needed to install the control equipment projected by EPA to be necessary to implement the SO_2 and NOx reductions required by the IAQR. Based on a very conservative analysis of the projected demand and supply of boilermaker labor, ICAC concluded "there will be enough boilermaker labor to implement the 2015 targets of the IAQR rulemaking in the 2010 timeframe."[203] Using the conservative assumptions and analysis in the ICAC Study, CATF has analyzed the adequacy of boilermaker labor likely needed to install the controls projected to be needed to comply with several emission control scenarios. This analysis demonstrates that more stringent mercury controls than EPA has proposed -- including the 92 percent mercury MACT reductions we propose -- can be implemented in the 2008 timeframe, with or without consideration of the IAQR and the potential controls needed to meet the requirements of that proposal.

Our methodology is very simple. First, we have used IPM runs from EPA's IAQR and MACT rulemakings, as well as an additional, more stringent, IPM run conducted by ICF for CATF (Run "CATF-14b"), to project the amount of FGD, SCR and ACI emission controls that will be needed to meet the emission targets of two different scenarios. The first scenario examines EPA's proposed MACT requirements alone—that

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[201] *See* Docket ID No. OAR-2003-0053, dated March 30, 2004 (as corrected April 2, 2004)

[202] David C. Foerter, Institute for Clean Air Companies, "SO2 Control Technology Cost Estimates for Industrial Boilers" and "Analysis of Jobs Created and Labor Availability Under Bush and Carper Multi-Pollutant Bills" (March 30, 2004). Docket Id. Nos. OAR-2003-0053-1068 and OAR-2003-0053-1069.

is, without the IAQR. The second scenario is represented by CATF-14b, which assumes implementation of the IAQR as proposed by EPA on January 30, 2004, as well as tighter mercury MACT controls on coal-fired power plants.[204] We then have applied the conservative assumptions from the ICAC study to determine the demand, supply and timing of boilermaker labor needed to install that amount of controls, supplemented where needed by EPA assumptions in EPA's October 2002 Final Report entitled "Engineering and Economic Factors Affecting the Installation of Control Technologies for Multipollutant Strategies" (the "Engineering Report")[205] or in EPA's memo to the IAQR docket relative to boilermaker labor (the "Boilermaker Memo").[206]

According to EPA and CATF IPM runs, the following amount of additional FGD, SCR and ACI controls will be needed by 2010, over and above those projected as necessary for EPA's base case:

Table II-25. Additional FGD, SCR and ACI Controls Needed by 2010, Over and Above Those Projected as Necessary for EPA's Base Case.

	IAQR (GW)	MACT (GW)	CATF-14b (GW)	CATF14-b Minus IAQR (GW)
FGD	49	2	106	57
SCR	24	2	56	32

[203] ICAC Study at 1.
[204] Mercury emission limits for CATF 14b are as follows:
--units fueled on bituminous coal— 90% reduction;
--units fueled on sub-bituminous coal—rate limit of 1.5 lbs/TBtu;
--units fueled on lignite coal—rate limit of 4.5 lbs/TBtu.
These limits are sometimes hereafter referred to as "CATF14b MACT".
[205] EPA Document number EPA-600/R-02/073, available online at http://www.epa.gov/air/clearskies/pdfs/multi102902.pdf.
[206] Memo to the IAQR Docket entitled "An Analysis of the Impact of Boilermaker Labor Availability on the Installation of Pollution Control Equipment," January 28, 2004.

ACI	0	63	102	102

In the Engineering Report, EPA estimated that about 304 person-hours of boilermaker labor is needed to install one MW_e of FGD control, 350 person-hours per MW_e of SCR control, and 5 person-hours per MW_e of ACI control.[207] Thus, the boilermaker labor needed (in million person-hours) to install controls for the various scenarios is as follows:

Table II-26. Boilermaker Labor Needed to Install Controls for Various MACT and Other Scenarios (million person-hours).

	IAQR Boiler Maker Labor Demand	**MACT Boiler Maker Labor Demand**	**CATF-14b Boiler Maker Labor Demand**	**CATF14-b Minus IAQR Boiler Maker Labor Demand**
FGD	14.9	1	32.2	17.3
SCR	8.4	1	19.6	11.2
ACI	0	0.3	0.5	0.5
Total	23.3	2.3	52.3	29.0

Both EPA's own Engineering Report and the ICAC Study set forth a number of factors that EPA failed to consider in its analysis of the adequacy of future boilermaker labor supply in the IAQR proposal. The most fundamental of these factors is the obvious, and completely accurate, observation made by EPA itself, that "increasing

[207] Engineering Report at 41.

demand for boilermakers that would result from a multipollutant rule should stimulate more workers to enter the trade."[208] Others include:

- Skilled labor from closely allied trades, such as iron and steelworkers (union has 150,000 members), especially those who had been boilermakers in the past, could likely move into boilermaker work fairly quickly;[209]
- The Canadian boilermaker's union has 4,000 members, some of which could work on IAQR implementation projects;[210]
- Boilermakers in the union's shipbuilding division (about 30,000 members) could, depending on industry conditions, move over to the construction division quickly;[211]
- Fewer boilermakers may be needed than EPA estimated because its "analysis does not consider any of the synergies or efficiencies that have been demonstrated to occur on multiple unit retrofits or multiple-technology retrofits;"[212]
- Boilermaker population may grow more quickly than EPA assumed in the Engineering Report, based on the recent annual growth rate of 6.7 percent;[213] and
- EPA's analysis "also neglects [to consider] overtime, which would reduce the demand for [the number of] workers somewhat."[214]
- Faster, modular construction could reduce demand for boilermaker labor by up to 30 percent on particular projects.[215]
- EPA's analysis did not consider the availability of non-union workers, which ICAC found could increase the supply of boilermakers in non-union states by 30-40 percent.[216]

The ICAC Study took the extremely conservative approach of not increasing projected boilermaker labor resulting from many of these factors. ICAC did, however, assume that the combined impact of non-union boilermakers and modular construction would reduce boilermaker demand by 10 percent (even though ICAC found that

[208] Engineering Report at 43; ICAC Study at 3-4.
[209] Engineering Report at 43; ICAC Study at 3-4.
[210] ICAC Study at 3.
[211] Engineering Report at 43; ICAC Study at 3-4.
[212] Engineering Report at 41, 46.
[213] Engineering Report at 46. *See also* ICAC Study at 3, 7 (stating "[t]he boilermaker membership grew by over 10,000 members in a two year period during the NOx SIP Call from 16,000 to almost 27,000 members" This represents an average increase of over 30% per year).
[214] Engineering Report at 46.
[215] ICAC Study at 4. ICAC further observes: "The decision to use modular construction is typically driven by cost so as the labor demand increases, the pressure to perform modular construction will likely increase with it. Modularization will look especially favorable in states that have deregulated electricity markets." *Id.*
[216] *Id.* at 5.

boilermaker demand could be reduced by these factors by up to 30-40 percent).[217] Applying ICAC's conservative 10 percent reduction in demand for boilermaker labor results in a projected need for 21 million personperson-hours to install IAQR controls, 2.1 million person-hours to install controls to meet EPA's proposed MACT, alone; 47.1 million person-hours for CATF 14-b (IAQR plus CATF-14b MACT) and 26.1 million man hours for the CATF MACT related controls that are part of scenario CATF 14b.

The ICAC Study projected that approximately 1.425 million person-hours per month of boilermaker labor will be available for control equipment installations.[218] This labor could be applied to either IAQR or MACT controls, or both. Thus, the total time required for control equipment installations for the various scenarios would be as follows:

- IAQR—21/1.425 = 15 months
- MACT—2.1/1.425 = 2 months
- CATF 14-b (IAQR + CATF14b MACT)—47.1/1.425 = 33months.

Furthermore, the CATF14b controls can be broken down into controls attributable to IAQR requirements and those attributable to CATF14b MACT requirements. The IAQR requirements are set forth above, and require 15 months of boilermaker labor. The CATF 14b MACT requirements represent the remainder, and thus would require about 18 months of boilermaker labor.

The ICAC study noted that a conservative IAQR implementation schedule would allow 24 months (from October 2007 to September 2009) for the application of boilermaker labor to complete the IAQR installations. *Thus, it is clear that there will be more than adequate boilermaker labor and time to install controls to meet both the the IAQR and more stringent MACT requirements separately.*

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[217] *Id*. at 8.

In order to determine the adequacy of boilermaker labor to implement the IAQR and MACT controls together, it is necessary to consider the likely timeframe for the installation of MACT-related controls. EPA is obligated by the terms of its settlement agreement with NRDC to promulgate its final rule by March of 2005. In the IAQR, EPA assumed that there would be no boilermaker labor utilized for the initial 15 months period following finalization of IAQR SIP requirements.[219] Assuming the same delay for MACT-related installations, boilermaker labor would be employed starting in June 2006. As indicated above, the MACT related installations in scenario CATF-14b would require 18 months of boilermaker labor, and thus would be completed by January 2008, in ample time to meet a March 2008 compliance deadline. Furthermore, the IAQR related installations would be completed within 15 months of October 2007, or by the end of 2008, again in plenty of time to meet the IAQR 2010 compliance deadline.

Thus, in conclusion, our analysis demonstrates that the supply of boilermaker labor should be adequate to complete installation of necessary controls for MACT by 2008 and for the IAQR by 2010. Delay beyond these deadlines is not justified.

E. EPA'S Complete Disregard for the Recommendations of the Federal Advisory Committee Act Working Group it Convened for The Utility MACT Rule Contravenes the Requirements of the Clean Air Act, and is Arbitrary, Capricious, and an Abuse of Discretion. Section 117 of the Clean Air Act specifies that,

> [i]n order to obtain assistance in the development and implementation of the purposes of this chapter, including [the development of]. . . standards, the Administrator shall from time to time establish advisory committees. Committee members shall include, but not be limited to, persons who are

[218] *Id*. at 8.
[219] Boilermaker Memo at 2.

> knowledgeable concerning air quality from the standpoint of health, welfare, economics or technology."[220]

Section 117(c) further mandates that the Administrator, to the "maximum extent practicable within the time provided, *consult* with appropriate advisory committees" prior to "publishing any standard under section 7411 or section 7412."[221] "Consult" is not defined in the Clean Air Act, nor is it defined in the Administrative Procedure Act. Legislative purpose, however "is expressed by the ordinary meaning of the words used."[222]

The Merriam-Webster's Collegiate Dictionary defines "consult" as "to have regard to: CONSIDER";[223] the Oxford English Dictionary, U.S. version, defines the verb "consult" as both to "seek information or advice from," and also to "seek permission or approval from."[224] EPA's proposal, by contrast, references its own Utility Working Group, which met from August 2001 to March 2003, only in passing and does not discuss its recommendations at all.[225] Although the Act requires that EPA "consult" with established advisory committees, "to the maximum extent practicable," in this instance that "consultation" was abruptly terminated before its conclusion. EPA's abrupt termination of the Utility Working Group and its subsequent failure to evaluate the Working Group recommendations, or even to include or discuss them in this proposal do not comport with section 117(c)'s clear requirement that the Agency "consult" with appropriate advisory committees.

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220 42 U.S.C. §§ 7417(a).
221 42 U.S.C. §§ 7417(a), (c)(3) (emphasis added).
222 *Bluewater Network v. EPA*, 2004 U.S. App. LEXIS 10632, *25 (D.C. Cir. 2004).
223 Merriam Webster's Collegiate Dictionary, Eleventh Ed. (2003).
224 http://www.askoxford.com/concise_oed/consult?view=get
225 69 Fed. Reg. at 4656.

For example, although the Working Group had a diverse set of recommendations regarding the level of emissions reductions that EPA should require as MACT, none of them was as weak as EPA's proposal. According to the Northeast States for Coordinated Air Use Management, implementation of the recommended emission rates of the various stakeholder groups would have reduced annual mercury emissions from utility units to somewhere between 2 and 28 tons.[226] By contrast, EPA estimates that its MACT proposal, if finalized, would reduce mercury pollution only to 34 tons per year. Indeed, EPA's refusal to meaningfully consult with this group goes deeper; despite soliciting the input of the Working Group and receiving their recommendations that the agency conduct certain specific modeling runs to assess alternate MACT approaches, EPA has refused to perform that modeling to date.[227]

Similarly, EPA's proposed approach to subcategorization completely disregards the recommendations from the Utility Working Group and from experts from all but the industry sector. The Working Group presented EPA with a range of ideas about subcategorization – the vast majority of stakeholders favoring an approach that did not involve subcategorization by fuel rank. Indeed, a subset of the Working Group, representing a diverse group of Working Group participants reached agreement around the subcategorization issue, and presented their consensus document to the Agency.[228] This group included a number of environmental stakeholders, electric generating

[226] NESCAUM, "Mercury Emissions From Coal-Fired Power Plants: The Case for Regulatory Action," at p. ES-2 (Oct. 2003) ("the stakeholder groups that participated in EPA's Utility MACT Working Group have recommended a range of standards that equate to annual national emissions from coal-fired utility boilers of between 2 and 28 tons").
[227] *See* Letter from John A. Paul , Regional Air Pollution Control Agency, to Congressman Tom Allen (May 4, 2004).
[228] See Memorandum: Areas of Agreement Among Stakeholders in Utility MACT Working Group (October 30, 2002), available at http:// www.epa.gov/ttn/atw/combust/utiltox/caaacmactmemo.doc. (visited June 24, 2004).

companies and representatives of state and local governments.[229] However, EPA in its proposal neither discusses nor even references the Working Group recommendations or the consensus document presented to it. Nor does the EPA discuss any of the other Working Group recommendations, related to floor setting, variability, form of the standard, monitoring, or regulation of nickel emissions from oil-fired units. EPA instead chooses to ignore the Utility Working Group's efforts entirely, rather than giving them due consideration.

[229] This group included: (1) Environmental stakeholders: Clean Air Task Force; National Wildlife Federation; National Environmental Trust; Natural Resources Defense Council and Environmental Defense; (2) Utility stakeholders: Clean Energy Group: member companies include Conective, Consolidated Edison, Inc., Exelon Corporation; Keyspan, Northeast Utilities, PG&E National Energy Group, Public Service Enterprise Group Inc., and Sempra Energy; (3) State and local government: Northeast States for Coordinated Air Use Management (NESCAUM) which represents its eight member states: Connecticut, Massachusetts, Maine, New Hampshire, New Jersey, New York, Rhode Island, and Vermont.