

APPENDIX B:

DOCUMENTATION OF PUBLIC PARTICIPATION PROCESS

APPENDIX B:

DOCUMENTATION OF PUBLIC PARTICIPATION PROCESS

- Appendix B-1: Public Hearing Notices**
- Appendix B-2: Public Hearing Certification**
- Appendix B-3: Comment and Response document on Section 111(d) State Plan for existing designated EGUs**

Appendix B-1:

Public Hearing Notices

- 1. Pennsylvania Bulletin Notice**
- 2. Nine Newspaper Notices**





















Appendix B-2:

Public Hearing Certification



Appendix B-3:

**Testimony and Written Comments on the Section 111(d)
State Plan for existing designated EGUs**

**SUMMARY OF COMMENTS AND RESPONSES
ON THE PROPOSED SECTION 111(d) STATE PLAN FOR EXISTING
DESIGNATED COAL-FIRED ELECTRIC STEAM GENERATING UNITS**

November 2, 2006

**Bureau of Air Quality
Department of Environmental Protection
Commonwealth of Pennsylvania**

**SUMMARY OF COMMENTS AND RESPONSES
ON THE PROPOSED SECTION 111(d) STATE PLAN FOR EXISTING
DESIGNATED COAL-FIRED ELECTRIC STEAM GENERATING UNITS**

Hearings Held: **September 6, 2006 in Pittsburgh, Pa**
 September 6, 2006 IN HARRISBURG, PA
 September 6, 2006 IN NORRISTOWN, PA

On August 5, 2006, the Pennsylvania Department of Environmental Protection (Department) published a notice concerning the proposed Section 111(d) State Plan for the control of mercury emissions from existing designated coal-fired electric steam generating units (EGUs) in the *Pennsylvania Bulletin* (36 Pa.B.4269). Public notices were also published in the following nine newspapers across the Commonwealth of Pennsylvania:

1. Patriot News
2. Delaware County Daily News
3. Wilkes-Barre Times Leader
4. The Times Herald
5. The Morning Call
6. Bucks County Courier Times
7. Pittsburgh-Post Gazette
8. Williamsport Sun-Gazette
9. Erie Daily Times.

In addition, the public notices were sent through e-mail to surrounding states. PADEP held three public hearings, and solicited written testimony on the proposed State Plan. Pursuant to 40 CFR §60.23, the hearings were held to gather comments on the proposed State Plan for existing EGUs.

This document responds to comments that were received during the public comment period. PADEP appreciates the input from those that testified at the public hearings and submitted written comments.

LIST OF COMMENTATORS

No.	Date	Name of Commenter	Organization/Address
1.	9-6-2006	Mary Jo White, Chairman	Senate Environmental Resources & Energy Committee 169 State Capitol Building, Harrisburg, PA 17120
2.	9-7-2006	Judith M. Katz, Director Air Protection Division	U.S. EPA, Region III, 1650 Arch Street, Philadelphia, PA 19103
3.	9-6-2006	Eric J. Epstein, Chairman	Three Mile Island Alert 4100 Hillsdale Rd, Harrisburg, PA 17112
4.	9-6-2006	Melody Zullinger, Exe. Director	Pennsylvania Federation of Sportsmen's Clubs 2426 North Second Street, Harrisburg, PA 17110
5.	9-6-2006	Gene Barr, Vice President	Political and Regulatory Affairs, Pennsylvania Chamber of Business & Industry 417 Walnut Street, Harrisburg, PA 17101
6.	9-6-2006	Nathan Wilcox, Energy and Clean Air Advocate	Penn Environment 1420 Walnut Street, Suite 650, Philadelphia, PA 19102
7.	9-7-2006	Robert J. Barkanic, Director-Env.	PPL Services Corp. Two North Ninth Street, Allentown, PA 18101
8.	9-8-2006	Suzanne Seppi, Project Manager	Group Against Smog and Pollution Inc. 140 Oakhurst Road, Pittsburgh, PA 15215
9.	9-8-2006	Joseph Otis Minott, Esq. Joshua Garbarino	Clean Air Council 135 S. 19 th Street, Suite 300, Philadelphia, PA 19103
10.	Submitted at hearing	Alisha Deen-Steindler, Eastern Pennsylvania Director	Clean Water Action 100 N. 17 th Street, Suite 900, Philadelphia, PA 19103
11.	9-5-2006	Douglas L. Biden, President	Electric Power Generation Association 800 North Third Street, Suite 303, Harrisburg, PA 17102

Responses to Comments on the Proposed Section 111(d) State Plan for Existing Coal-Fired Electric Steam Generating Units

The Honorable Mary Jo White, Chairman
Senate Environmental Resources & Energy Committee
(Commentator #1)

Comment 1: The commentator is opposed to the Department of Environmental Protection's (DEP) submittal of the plan to the U.S. Environmental Protection Agency (EPA). The commentator's substantive objection to the proposed state plan is her belief that the plan fails to provide any commensurate public health benefit to Pennsylvanians as compared to those achieved under the federal Clean Air Mercury Rule. The commentator goes on to state that "there are potentially significant detrimental impacts associated with the rule", but further states that these comments will be made at a later time.

Response: The Department issued a "Final Decision Document For Reducing Mercury Emissions From Coal-Fired Electric Generating Units" to address, in part, this very concern to better define the "public health benefit to Pennsylvanians." This document provides a detailed analysis concerning the benefits of the Pennsylvania-specific regulation.

The Department has reviewed a large body of scientific evidence, some of which was developed as a result of EPA's obligations under the federal Clean Air Act. This body of scientific evidence has clearly demonstrated that mercury is a persistent, toxic, bio-accumulative pollutant that can have adverse effects on human health and the environment.

Additionally, data generated by EPA has shown that Pennsylvania has the highest wet deposition of mercury in the nation with a direct correlation to the location and quantity of mercury emissions from coal-fired electric generating facilities. For example, the EPA-funded Steubenville study, which looked at the source contribution to wet mercury deposition in the environment, has shown that local and regional coal-fired utilities contribute up to 70% of the measured mercury deposition. Additionally, according to the Goddard Earth Observing System-Chem and CMAQ modeling results for 2001, Pennsylvania is where the maximum percentage of utility-attributable deposition of 71% compared to total deposition from all sources occurs.

Furthermore, there is an accumulation of State-specific and general risk assessment data that points to concerns regarding consumption patterns of freshwater anglers. This data also has a strong environmental justice component for minorities and persons of lower incomes. Statewide fish advisories, and the cited fish consumption patterns, demonstrate that Pennsylvanians may be at significant risk from mercury contamination through fish consumption. Additionally, data suggests a correlation between higher mercury fish concentrations and power plants within a 50-mile radius from the sampling sites.

Studies in different parts of the United States demonstrate that local control of mercury emissions leads to reduced levels of contamination in fish tissue. An Everglades mercury study, for example, examined fish tissue mercury concentrations before and after pollution controls were installed at municipal and medical waste combustors in southern Florida. According to this study, between 1991 and 2000, the total estimated local mercury emissions dropped nearly 93% and mercury deposition declined by about 60%. Concurrently, from the mid-1990s to the year 2002, mercury concentrations in the Everglades fish tissue declined by about 75% (Florida Department of Environmental Protection, 2003). Similar, but perhaps more rapid improvements were observed in a Massachusetts study (Hutcheson, M.S. et al., 2005). Over a 3 to 4 year period, an 85% decrease in local incinerator mercury emissions was followed by an average 30-38% reduction in fish tissue concentrations.

The Department's assessment is that the state-specific final-form mercury regulation does not have any detrimental impacts associated with it, when compared to the Clean Air Mercury Rule (CAMR). The final-form regulation assures a specific maximum level of actual mercury emissions that can be emitted from Pennsylvania by affected EGUs, and assures that these emission levels are achieved in a much shorter timeframe than CAMR. All of these additional mercury emission reductions will occur in Pennsylvania at either no additional costs compared to CAMR, or minimal additional costs.

In addition, the Department's "Decision Document" provides a clear evaluation of the facts and the reasons why the Department has determined that a state-specific rule to reduce mercury emissions from coal-fired power plants in Pennsylvania is necessary to protect the public health and the environment.

Comment 2: The commentator objects to the process by which DEP seeks to finalize the state plan. The basis for the state plan is a regulation prepared by DEP for adoption by the Environmental Quality Board (EQB). The public comment period closed on August 26, 2006. Comments from the Independent Regulatory Review Commission (IRRC) are anticipated by September 26, 2006. Both the Senate and House Environmental Resources and Energy Committees are permitted to submit comments up to 24 hours prior to publication of a final rule.

Response: The Department respectfully disagrees with this comment. The development of the Department's State-specific final-form mercury regulation has involved more industry, public, and technical review and comment than any previous rulemaking to our knowledge. The Mercury Workgroup, the unprecedented number of public comments and the generation of a "Decision Document" are all additional efforts by the Department to involve stakeholders in the development of this regulation. All of the comments by both the IRRC and the Senate Environmental Resources and Energy Committees were included in the Department's Comment and Response document.

Comment 3: The Senate Environmental Resources and Energy Committee submitted extensive questions to the Department on August 7, 2006, and is still awaiting a response that will help inform its comments.

Response: The Department received the August 7, 2006 letter from the Senate Environmental Resources and Energy Committee. A detailed response to the letter was prepared on September 8, 2006 and can be found in Appendix A of the Comment-and-Response document of the Final-form mercury regulation.

Comment 4: DEP has announced its intention to submit a final rule to the EQB at the Board's October 17, 2006 meeting. Therefore, DEP ostensibly intends to review and respond to all comments received from the public, IRRC and the standing oversight committees in a period of approximately three to five weeks. This does not appear to be a reasonable timetable for responsible review and response to the extensive comments, which have been submitted to DEP.

Response: The Department disagrees that the timetable for finalizing the regulation is of concern. This issue has been subject to extensive public comment and debate since the Petition was submitted on August 9, 2004 by Citizens for Pennsylvania's Future, PennEnvironment, Pennsylvania Federation of Sportsmen's Clubs, Pennsylvania NOW, Pennsylvania State Building and Construction Trades Council, Pennsylvania Trout, Planned Parenthood Pennsylvania Advocates, Sierra Club Pennsylvania Chapter, Women's Law Project and WomenVote PA under

Chapter 23 (relating to Environmental Quality Board policy for processing petitions--statement of policy) requesting that the Board adopt regulations to reduce mercury emissions from electric utilities located in this Commonwealth. The debate about the regulation of mercury emissions from coal-fired EGUs has continued since the passage of the CAA amendments in 1990. As part of the process of developing a proposed rulemaking, the Department convened, at the Board's direction, a Mercury Rule Workgroup as a forum for discussion of the issues related to mercury regulation. Since the publication of the proposed rulemaking, the Department has held six public hearings- three on the proposed rulemaking and three on the proposed Section 111(d) State Plan. In addition, the Department has held additional meetings with the Mercury Rule Workgroup, Citizens Advisory Committee (CAC) and Air Quality Technical Advisory Committee (AQTAC) at all stages of this process. Moreover, the Comment and Response Document to the final-form rulemaking has addressed each and every comment submitted to the Environmental Quality Board. Clearly, this extensive process allowed members of the public and affected industry ample opportunity to comment on the proposed rulemaking and the Department has duly considered each comment that was submitted. Had legislation preventing the enactment of the State-specific rulemaking passed, these opportunities for public comment would not have occurred.

Comment 5: DEP has stated that it is required to finalize a state plan by November 17, 2006, both the Department and affected stakeholders know that should the Commonwealth fail to finalize its state plan by this date, a temporary federal plan would be instituted. There are, therefore, no compelling reasons for not taking time to give meaningful review to all submitted comments.

Response: The Department disagrees with the comment. CAMR requires that Pennsylvania submit a 111(d) State Plan for mercury by November 17, 2006. The Department has demonstrated the significant benefits of the state-specific final-form rulemaking. Implementation of the federal plan under CAMR would cause confusion among the owners and operators of affected EGUs if they were allocated allowances under the EPA-managed cap and trade program and were subsequently required to comply with the nontradable allowance program established under the Pennsylvania-specific mercury rulemaking.

Comment 6: It is disingenuous for the Department to utilize the timeframe requirements of CAMR to justify its "expeditious" handling of a final regulation when the Department has alleged that CAMR is not only fundamentally flawed, but also actually illegal.

Response: The Department is committed to meeting the timetable prescribed under CAMR for submittal of a State Plan by November 17, 2006. The State Plan is dependant on the finalization of Pennsylvania's final-form mercury regulation. This issue has been subject to public comment and debate since the Petition was submitted on August 9, 2004 by Citizens for Pennsylvania's Future, Penn Environment, Pennsylvania Federation of Sportsmen's Clubs, Pennsylvania NOW, Pennsylvania State Building and Construction Trades Council, Pennsylvania Trout, Planned Parenthood Pennsylvania Advocates, Sierra Club Pennsylvania Chapter, Women's Law Project and Women Vote PA under Chapter 23 (relating to Environmental Quality Board Policy for processing petitions--statement of policy) requesting that the Board adopt regulations to reduce mercury emissions from electric utilities located in this Commonwealth. The debate about the regulation of mercury in general has continued since the passage of the CAA amendments in 1990. As part of the process of developing a proposed rulemaking, the Department convened, at the Board's direction, a Mercury Rule Workgroup as a forum for discussion of the issues related to mercury regulation. Since the publication of the proposed rulemaking, the Department has held six public hearings, three on the proposed rulemaking and three on the proposed Section

111(d) State Plan. In addition, the Department has held additional meetings with the Mercury Rule Workgroup, Citizens Advisory Committee (CAC) and Air Quality Technical Advisory Committee (AQTAC) at all stages of this process. Moreover, the Comment and Response Document has addressed comments submitted to the Board by approximately 11, 000 commentators. Clearly, this extensive process allowed members of the public and affected industry ample opportunity to comment on the proposed rulemaking and the Department has duly considered each comment that was submitted.

Comment 7: The 40 - 10 bipartisan vote earlier this year in the Senate in support of SB 1201, essentially opposing this state plan, should be an indication to both EPA and IRRC, if not the Department, that major concerns exist.

Response: There is no dispute regarding the 40-10 Senate vote in support of SB 1201. However, the final-form regulation approved by the Board meets the applicable requirements of the Air Pollution Control Act, the federal Clean Air Act and the Regulatory Review Act. With regard to issues raised during the comment period, the Department believes that valid concerns were directly addressed in changes made to the final-form rulemaking package as adopted by the Board on October 17, 2006 and discussed extensively in both the "Decision Document" and the final-form rulemaking Comment and Response document.

Comment 8: The commentator urges the Department not to finalize the state plan during its announced timeframe, but instead to embrace a genuine public comment period that examines and provides serious good faith response to the comments it has solicited.

Response: The Department's Mercury State Plan is simply a reflection of the requirements contained in the final-form Mercury Regulation and a demonstration of how these requirements will allow Pennsylvania to comply with the CAMR mercury emission limitations and compliance timeframes. Furthermore CAMR requires that Pennsylvania submit a 111(d) State Plan for mercury by November 17, 2006.

The final-form rulemaking Comment and Response Document has addressed each and every comment submitted to the Board. Clearly, this extensive process allowed members of the public and affected industry ample opportunity to comment on the proposed rulemaking and the Department has duly considered each comment that was submitted.

Judith M. Katz, Director, Air Protection Division, EPA Region III
Commentator #2

Comment 1: Pennsylvania's general statement in the first paragraph of its summary that the emission guidelines found at 40 CFR 60, subpart HHHH, "apply to existing designated EGUs, which commenced construction, modification, or reconstruction before January 30, 2004" could be confusing to sources in Pennsylvania, given that Pennsylvania has proposed to adopt a -State-specific rule for controlling mercury emissions from electric generating units. EPA suggests that Pennsylvania note that Subpart HHHH applies only if the State in which an Electric Generating Unit (EGU) is located has adopted Subpart HHHH (which covers both existing and new EGUs) by reference or has otherwise adopted the requirements of the subpart. As stated in Subpart HHHH at 40 CFR § 60.4101, "The owner or operator of a unit or a source shall comply with the requirements of this subpart as a matter of Federal law only if the State with jurisdiction over the

unit and the source incorporates by reference this subpart or otherwise adopts the requirements of this subpart in accordance with § 60.24(h)(6).

Response: The Department agrees that Subpart HHHH applies only if the State in which an Electric Generating Unit (EGU) is located has adopted Subpart HHHH (which covers both existing and new EGUs) by reference or has otherwise adopted the requirements of the subpart. References to Subpart HHHH have been removed in the final plan. The final version of the State Plan is being revised to clarify that designated EGUs in Pennsylvania must comply with the requirements of the Pennsylvania-specific mercury final-form regulation. In addition, the Plan clarifies that Pennsylvania will not participate in the EPA-managed cap-and-trade program.

Comment 2: Pennsylvania states that "Under CAMR, each State receives an annual budget for mercury emissions from existing coal-fired EGUs with a nameplate capacity larger than 25 megawatts" and that "A State can meet its CAMR budget either by joining the EPA managed cap-and-trade program or by demonstrating that the State mercury budgets codified in 40 CFR§60.4140 (relating to state trading budgets) will not exceed the budget in any year." As a point of clarification, each State's budget covers both existing and new EGUs, and a State, such as Pennsylvania, which is submitting State-specific rules and is not participating in the Clean Air Mercury Rule (CAMR) cap-and-trade program, must assure that mercury emissions from affected EGUs in the State will not exceed the levels specified in the annual EGU mercury emissions budget for the State found at 40 CFR §60.24(h)(3).

Response: The Department agrees with the comment since the Department will not be participating the EPA managed cap-and-trade program. Both the Pennsylvania state-specific rule and State Plan apply to both existing and new EGUs because the mercury budget established under CAMR will be a "hard cap" for affected and designated EGUs in Pennsylvania. The state-specific final-form regulation does contain such language and the State Plan has been modified to specifically address this issue.

Comment 3: The listing of State mercury budgets found at 40 CFR §60.24(h)(3) is repeated at 40 CFR §60.4140, but the listing at 40 CFR§60.4140 is part of EPA's model rule for States participating in the CAMR cap-and-trade program.

Response: The Department agrees with the comment. Since the Department will not be participating in the EPA managed cap-and-trade program, the reference to the listing of State mercury budgets found at 40 CFR§60.4140 has been deleted from the State Plan.

Comment 4: EPA is concerned that the Department states at IV. (2)(d) That "Annual allowances that have been created as part of the new EGU set-aside or unused annual allowances as part of the annual emission limitation for coal-fired EGUs will be set-aside in a supplemental pool for future use. EPA requests that Pennsylvania clarify that the set-aside allowances will only be useable during the year for which they were granted. Given that Pennsylvania has chosen not to participate in EPA's cap-and-trade program for the control of mercury emissions from EGUs, allowances granted under Pennsylvania's program cannot be carried over for use in future years, either by sources or by the State.

Response: The Department agrees that no allowance banking for future year's use will be allowed under the PA-specific rulemaking and State Plan because Pennsylvania will not be participating in EPA's cap-and-trade program under CAMR. A specific provision prohibiting such allowance banking has been included in the final-form Mercury regulation. Regulatory language in § 123.207(c)(6) has been added to clarify that no banking of allowances will be permitted under the Pennsylvania final-form mercury regulation.

Comment 5: EPA is also concerned that Pennsylvania states at IV. (2)(e) that "The annual allowances will not be set-aside for the owner or operator of an existing affected EGU, which is already shutdown, scheduled for shut down or is on standby as of the effective date of each set-aside phase." EPA's concern is that under this provision a source which is scheduled for shutdown prior to the effective date of a set-aside phase, but where the scheduled shutdown date is actually some time after the start of that phase, would not have annual allowances for the period it operated after the start of the set-aside phase until its final shutdown. This could result in Pennsylvania exceeding the cap on mercury emissions specified for the State at 40 CFR §60.24(h). EPA therefore requests that Pennsylvania clarify that the State will grant allowances to a unit scheduled for shutdown until the actual shutdown of the unit, but not after it is shutdown.

Response: The Department has revised the final-form regulation in § 123.207(l) to add regulatory language to address EPA's concern that sufficient allowances would be available for EGUs that are scheduled for permanent shutdown.

Comment 6: EPA is concerned that the Department states at IV. (3) that "The Department will submit the mercury allowance allocations, in a format prescribed by the Administrator and in accordance with §60.4142(a) and (b), to EPA for the control periods as mentioned below:....," and that Pennsylvania states at IV.(4) that EPA will record these allowances in the mercury budget source's compliance account. Given that Pennsylvania has chosen not to participate in EPA's cap and trade program for the control of mercury emissions from EGUs, Pennsylvania is not required to and should not submit to EPA information on the State's allocation of mercury allowances to EGUs. EPA will not be recording any such information with regard to EGUs in Pennsylvania.

Response: The Department agrees because Pennsylvania is not participating in the EPA administered cap-and-trade program for the control of mercury emissions from EGUs, that EPA is not required to record the Pennsylvania allocation of mercury allowances to EGUs. The Department has revised the Section IV of its 111(d) State Plan to reflect this change and remove the reference to EPA record keeping.

Comment 7: EPA notes that Pennsylvania states at IV.(5) that "No mercury budget permit will be issued, no emissions data reports will be accepted, and no mercury allowance tracking system account will be established for a mercury budget unit at a source, until the EPA has received a complete certificate of representation under § 60.4113 for a mercury designated representative of the source and the mercury budget units at the source." Even though Pennsylvania has chosen not to participate in EPA's cap and trade program for the control of mercury emissions from EGUs, Pennsylvania must still, as specified at 40 CFR § 60.24(h)(4), require sources to meet the monitoring, record keeping, and reporting requirements found at 40 CFR Part 75 with regard to mercury mass emissions.

Response: The Department agrees. The final-form mercury regulation approved by the Environmental Quality Board requires compliance with the Part 75 requirements and mercury designated representative provisions are incorporated by reference in the final form regulation.

EGUs are required under subsections 123.210 (a), (b) and (c)(1), to meet the monitoring, record keeping, and reporting requirements of 40 CFR Part 75 Subpart I for mercury mass emission monitoring systems. The monitoring exemption for low mass emitters, at 40 CFR § 75.81(b) through (e), is provided under § 123.210(c)(2). The definitions in 40 CFR Part 60, Subpart HHHH are adopted under § 123.202, and the provisions in 40 CFR 60.4110-60.4114 relating to authorization and responsibilities of mercury designated representative; objections concerning mercury designated representative, are adopted in their entirety and incorporated by reference in § 123.210(a) and (b), and extended by reference in § 123.210(c)(1), to low mass emitters that elect to comply with the monitoring requirements. Provisions of 40 CFR 75 Subpart I requiring a designated representative, are thereby applicable for purposes of Part 75 compliance for mercury mass emission monitoring systems, and that designated representative or alternate designated representative must be established according to the procedures in 40 CFR 60.4110-60.4114.

Comment 8: It is necessary to require sources to submit to EPA a complete certificate of representation, since sources will need to designate a representative in order to be able to meet their obligations under 40 CFR part 75. Please note that, since Pennsylvania has chosen not to participate in EPA's cap and trade program for the control of mercury emissions from EGUs, EPA will not be establishing Federal mercury allowance tracking accounts for sources in Pennsylvania.

Response: The provisions in 40 CFR 60.4110-60.4114 relating to authorization and responsibilities of mercury designated representative; objections concerning mercury designated representative, are adopted in their entirety and incorporated by reference in § 123.210(a) and (b). In addition, § 123.210(c)(1) address requirements applicable to low mass emitters that elect to comply with the monitoring requirements. Provisions of 40 CFR 75 Subpart I requiring a designated representative, are thereby applicable for purposes of Part 75 compliance for mercury mass emission monitoring systems, and that designated representative or alternate designated representative must be established according to the procedures in 40 CFR 60.4110-60.4114.

Comment 9: EPA understands that Pennsylvania's intent is to regulate mercury emissions from EGUs entirely under the terms of its State-specific regulation. If so, it is not appropriate to cite the requirements of Subpart HHHH, which establishes model requirements for the Federal cap-and trade program for the control of mercury emissions from EGUs.

Response: The Department agrees that Subpart HHHH applies only if the State in which an Electric Generating Unit (EGU) is located has adopted Subpart HHHH (which covers both existing and new EGUs) by reference or has otherwise adopted the requirements of the subpart. All of the references to the requirements of Subpart HHHH have been removed in the final 111(d) State Plan.

Comment 10: EPA notes that Pennsylvania states that sources can "demonstrate compliance with the mercury emission limitations by using compliance on a unit-by-unit basis or facility-wide emissions averaging." This option doesn't seem applicable with respect to the requirements for sources to hold sufficient allowances; perhaps what is meant with respect to that requirement is an option to comply on a facility-by-facility basis.

Response: The Department has clarified this issue of "compliance demonstration" by adding regulatory language to 123.207, which adds detail to the process for both facility-wide and system-wide compliance demonstrations. This portion of the rule addresses how an EGU owner or operator can demonstrate compliance on a unit-by-unit, facility wide, or system wide basis, and removes the use of the term "emissions averaging".

Comment 11: Pennsylvania's adopting by reference the EPA model rule's requirements pertaining to monitoring, recordkeeping, and reporting as specified at 40 CFR §§60.4171 through 60.4176 is the appropriate way to ensure that EGUs in Pennsylvania meet the requirements of 40 CFR part 75, as required in 40 CFR §60.24(h)(4). Pennsylvania needs to include, in the adoption by reference, the general monitoring and reporting requirements at 40 CFR §60.4170.

Response: The provisions of 40 CFR §§60.4170 through 60.4176 are inadequate to establish monitoring requirements for the full variety of emissions standards established in § 123.205 and mercury allowances in §123.207, and their adoption in Pennsylvania's Mercury Rule would establish some requirements that are unnecessary or inappropriate for inclusion in Pennsylvania's mercury rule. Pennsylvania has therefore added provisions that provide for all of the essential elements of 40 CFR §§60.4170 through 60.4176 that are appropriate and necessary to meet the monitoring, record keeping, and reporting requirements of 40 CFR Part 75 with regard to mercury mass emissions, as required by §60.24(h)(4).

Comment 12: EPA requests that Pennsylvania affirmatively state that its legal authority to implement the plan stems from the APCA and its regulations (25Pa Code).

Response: The Department has complied with EPA's for proof of "legal authority" by adding language to address Pennsylvania's legal authority to implement the plan. The Plan will contain a legal opinion relating to legal authority to implement the State Plan, as a demonstration that the Department has sufficient statutory and regulatory authority under its plan approval, State operating permits and Title V permit programs to implement and enforce the applicable requirements adopted under Section 111(d) of the Clean Air Act, including those for existing coal-fired EGUs.

Eric J. Epstein, Chairman

Three Mile Island Alert

Commentator #3

Comment 1: I believe we should invest in Pennsylvania.

Response: The Department agrees with the comment. The final state plan envisions the installation of control equipment on existing EGUs to comply with the mercury budget established by EPA. This control equipment will allow the continued use of Pennsylvania coal and the use of these low-cost base load EGUs.

Comment 2: I believe we should partner with Pennsylvania business and labor.

Response: The Department agrees with the commentator. The Department established the Mercury Rule Workgroup to provide a forum for all stakeholders, including business and labor, to discuss and air their concerns and recommendations to develop a state-specific mercury rulemaking.

Comment 3: I believe we should reward utilities, but hold them accountable for decreasing their total share of pollution. I also believe enforcement works best with a carrot and a hammer.

Response: The Department agrees. Improving and protecting the air resources will require stewardship and leadership in both the public and private sectors. The final-form regulation will not only result in actual emission reductions from new and existing EGUs but will also provide additional flexibility for the potentially regulated community. Compliance assistance will be provided as necessary during the implementation of the program. However, for willful or negligent violators of the law, enforcement is a better approach.

Comment 4: I don't believe a national cap and trade mercury emissions plan serves Pennsylvania's economic or environmental interests. It fails to address our society's desire for a balanced risk-reward formula. "A simple cap and trade program treats all emissions equally, but it is important to recognize that there are significant regional differences in the effects of pollution. Emissions from California and states in the mid-Atlantic area cause the greatest economic damages because they lead to changes in exposure for a large population...These large differences suggest there would be advantages to differentiating the programs by origin of emissions." (Palmer, Banzhaf & Burtraw, "Capping Emissions: How Low - Investigating Where Environmental Efficiency and Good Public Policy Intersect," *Public Utilities Fortnightly*, December 2002, pp. 28-36.)

Response: As noted in the preamble to the proposed Pennsylvania-specific rule, the Department does not believe that EPA's Section 111 approach to mercury control for the electric generating sector is best for Pennsylvania. The Department strongly opposes the cap-and-trade approach under CAMR for the regulation of mercury emissions from the utility sector for a number of reasons. First, the Department believes that EPA does not have the legal authority to regulate a hazardous air pollutant like mercury under the less stringent provisions of Section 111 of the CAA, as opposed to the more stringent provisions under Section 112 of the CAA. Second, the Department believes this approach will significantly delay the control of mercury emissions from the utility sector and that it will not reduce exposure to methylmercury expeditiously. In addition, the proposed Pennsylvania-specific rule would require an 80% reduction of mercury present in the coal fired in EGUs by 2010, and 90% reduction of mercury present in the coal fired in EGUs by 2015. EPA concedes that due to the banking and trading provisions of CAMR, projected reductions may not be achieved until 2026 or later. Because of the trading provisions under CAMR, owners and operators of EGUs in Pennsylvania do not have to make reductions in actual mercury emissions in Pennsylvania. The owners and operators can purchase allowances to offset the amount of mercury they emit over their cap to ensure compliance, which means that reductions in Pennsylvania may only be realized on paper. Moreover, mercury emissions in Pennsylvania may be much higher than EPA projects.

Comment 5: The only way to eliminate personal animus and bridge philosophical chasms is to establish a Working Group. The tools of negotiation have been successfully implemented by those of us involved in multibillion dollar restructuring settlements. Recently, PPL, DEP and several groups successfully negotiated an agreement on Brunner Island relating to effluent emissions.

Response: In October 2005, the Department convened a Mercury Rule Workgroup to discuss all of the issues related to reducing mercury emissions in Pennsylvania. In addition, the Department has held numerous individual meetings with interested parties. Significant compromises were incorporated in the final-form mercury regulation to address the majority of factual issues raised. Material presented at the Mercury Rule Workgroup meetings and minutes of the meetings are available on the Department's mercury rule website.

Comment 6: We need to get to a number we can agree on through a partnership plan. I believe it's possible to achieve significant and lasting mercury reductions in an expedited period without mandating or implementing a national mercury cap and trade program. We must utilize a combination of market based incentives, tax tools, and measured enforcement.

Response: The Department agrees that in some instances these combinations are useful. However, as it relates to mercury, the Department has opted for emission standards to reduce mercury emissions at each facility. The non-tradable mercury allowance program is designed to ensure that the mercury budget established under the CAMR is not exceeded. The Department believes that EPA does not have the legal authority to develop a regulatory scheme for a hazardous air pollutant (HAP) under Section 111 of the CAA. The Congressional intent related to the regulation of mercury is clear and unambiguous – it must be regulated under Section 112 of the CAA. Mercury is explicitly identified as a hazardous air pollutant under Section 112(b). EPA's proposed "cap-and-trade" program is an unreasonable interpretation of its statutory authority under Section 111 and Section 112. The fact that Congress chose to list specific HAPs under Section 112 indicated that Congress believed that these pollutants required more stringent measures than those permitted under Section 111. As a result, market based programs and tax tools are not appropriate in this case.

Comment 7: The rule-making process focused on the reduction of mercury emissions, but also sought to encourage clean coal technologies, discourage the use of dirty fuel-switching, and factor the impact of the rule on capacity and reliability standards.

The Alternative Energy Portfolio Standards Act will require greater percentages of retail electricity from alternative energy sources and energy efficiency technologies over a 15-year period. Compliance is required on an annual basis. Demand side management (DSM) and distributed generation are located in Tier II.

Demand side management could play a role in reducing mercury pollution, and increase available market energy supplies without increasing generating capacity. DSM could include a credit that allows for companies to achieve "super" mercury reductions, or reach agreed upon reduction levels ahead of prescribed deadlines.

Response: Clean energy is one of the top priorities of the Governor Rendell Administration. The Department's Office of Energy and Technology Deployment is responsible for promoting "...advanced energy technologies and to encourage markets that will help Pennsylvania realize dividends in environmental protection, economic growth and energy security." Since the first round of "Energy Harvest Grants" in 2003, approximately \$15.9 million has been awarded and another \$ 43.7 million leveraged in private funds to deploy advanced clean energy technology in this Commonwealth. The grant program "...provides the last increment of funding for clean and renewable energy projects from sources such as biomass, wind, solar, small-scale hydroelectric, landfill methane, coal-bed methane and waste-coal...."

Comment 8: We are attempting to reduce corporate tax expenditures for building new cleaner energy generating plants in Pennsylvania. We should not be in the business of encouraging companies to extend the lives of older facilities. Nor should we encourage power companies to "write-off" a salvageable asset. Older fossil plants will necessarily serve as a bridge to the green energy economy.

Response: The Pennsylvania-specific mercury rule is neither designed to encourage or discourage the continued operation of older plants. Those are decisions best left to the owners and operators of those facilities. As the comment relates to tax write-offs it is beyond the scope of this rulemaking and beyond the authority of the Department in this instance.

Comment 9: The science and technology tax credit, in tandem with accelerated geometric depreciation, could be used to provide tax relief and asset preservation. This instrument could facilitate investments in cleaner technologies, and could possibly help convert older generating stations into newer KOZ energy parks or KIZ technology campuses.

A geometric depreciation option allows for asset value preservation should more aggressive multi-pollutant legislation be mandated.

Response: To the extent that these comments may be aimed at mercury reduction the Department disagrees. The Department has decided to regulate mercury emissions through an emission standards approach under § 123.205 and emission limitation approach under § 123.208. The Department believes that this approach is the most cost effective and fastest way to reduce these emissions.

Comment 10: Tax abatements could be created for certain mechanical and chemical systems that monitor and manage mercury emissions as well as additional equipment used to assess plant ventilation and leak-detection and other industrial activities.

Response: The Department disagrees. The Pennsylvania-specific mercury rule is neither designed to encourage or discourage the continued operation of older plants. Those are decisions best left to the owners and operators of those facilities. As the comment relates to tax abatements it is beyond the scope of this rulemaking and beyond the authority of the Department in this instance.

Comment 11: An earned annual abatement could be a powerful tool in achieving rigorous mercury reductions. DEP has already innovated a successful pollution prevention program with small businesses.

The Department of Environmental Protection would inspect, verify, and certify if a generating station is complying with established tax technology. If deemed compliant, the business would be granted a tax exemption, which could be renewed on an annual basis. Conversely, failure to meet DEP's certification standards through noncompliance (which would be appealable to the Environmental Hearing Board) would result in an assessment and temporary loss of the tax abatement designation.

Response: The Department disagrees. The Pennsylvania-specific mercury rule is neither designed to encourage or discourage the use of older plants. Those are decisions best left to the owners and operators of those facilities. As the comment relates to tax abatements it is beyond the scope of this rulemaking and beyond the authority of the Department in this instance.

Comment 12: There are site-specific tools and remedies that should be considered for each community deemed a sensitive area or "hot spot" based on the LAX model. Among the available community tools: provide technical training funds for related jobs, create a local hiring program to give priority to local residents, study the health impacts of plant operations on surrounding communities, create a health registry, and maintain atmospheric monitoring.

Response: The Department already employs some atmospheric monitoring of mercury impact due to wet deposition in Pennsylvania. The Department will be evaluating what additional monitoring and air quality modeling is most appropriate to evaluate mercury reductions and possible "hotspots" that may remain even after implementation of its Final-form Mercury regulation

Comment 13: The commentator is also concerned about "masking" that occurs when fossil fuel plants emit radioactive particulates and gases in close proximity to nuclear power plants. Brunner Island is across the Susquehanna River from Three Mile Island, the Bruce Mansfield plant and Beaver Valley Nuclear Generation Station are both in Shippingport, and Montour is within 25 miles of the Susquehanna nuclear power plant.

Response: Current particulate matter (PM) control equipment does not control 100% of the PM coming out of the boilers, so some of the PM will go out of the stack. The fact that some of the exhausted PM is radioactive is beyond the scope of this rulemaking and additionally it is a naturally occurring isotope(s). The same argument holds for radioactive gases.

Melody Zullinger, Executive Director
Pennsylvania Federation of Sportsmen's Clubs

Commentator #4

Comment 1: Power companies should not be given the option to buy pollution credits from out of state to meet their emission limit and sell their excess pollution credits to companies out of state.

Response: Thank you for your support of the Department's proposed State Plan to reduce mercury emissions from coal fired power plants. The final-form regulation does not allow the sale or purchase of mercury allowances. The owners and operators of existing pulverized coal-fired (PCF) EGUs must achieve a minimum 80% control of total mercury, as measured from the mercury content in the coal as fired, from January 1, 2010, through December 31, 2014 (Phase 1), and a minimum of 90% control of total mercury as measured from the mercury content in the coal as fired beginning January 1, 2015, and each subsequent year (Phase 2). Alternatively, the owners and operators of PCF EGUs may comply with an output-based mercury emission standard of 0.024 pounds of mercury per gigawatt-hour (lb/GWh) during Phase 1 and an output-based standard of 0.012 lb/GWh during Phase 2. The owners and operators of circulating fluidized bed (CFB) EGUs will have the option of complying with an output-based mercury emission standard of 0.0096 (lb/GWh) or achieving a minimum 95% control of total mercury, as measured from the mercury content in the coal as fired.

Comment 2: The commentator states that 75 percent of hunters and anglers said it was very or extremely important that Pennsylvania adopt a regulation that requires the state's coal plants to cut mercury pollution 80% by 2010 and 90% by 2015.

Response: The Department agrees that mercury emissions need to be reduced as soon as possible. That is why the Department has opted for the 2010 (Phase 1) and 2015 (Phase 2) implementation dates. These dates were chosen to mesh with the co-benefits expected under EPA's Clean Air Interstate Rule (CAIR). Since the mercury regulation adopted by the Environmental Quality Board on October 17, 2006 will not allow interstate trading, Pennsylvania will realize at least an 80% mercury reduction in Phase 1 and a 90% mercury reduction in Phase 2 from the coal mercury content. Additionally, since no banking of allowances will be permitted these reductions will not be delayed. These reductions will occur sooner than if Pennsylvania had adopted the CAMR.

Comment 3: People who hunt, fish, and trap want to see an aggressive plan to reduce mercury pollution in a timely manner in Pennsylvania.

Response: Thank you for your support of the Department's proposed Pennsylvania specific mercury emissions reduction rule. The claims that implementation of the CAMR in Pennsylvania would result in an 86% reduction in mercury emissions in PA by 2018 overestimates the actual reduction under the cap-and-trade program. According to the independent Congressional Research Service, EPA's projected mercury emission reductions may not be met until 2030. The final-form "state-specific" regulation establishes emission standards for coal-fired EGUs. The owners and operators of existing pulverized coal-fired (PCF) EGUs must achieve a minimum 80% control of total mercury, as measured from the mercury content in the coal as fired, from January 1, 2010, through December 31, 2014 (Phase 1), and a minimum of 90% control of total mercury as measured from the mercury content in the coal as fired beginning January 1, 2015, and each subsequent year (Phase 2). Alternatively, the owners and operators of PCF EGUs may comply with an output-based mercury emission standard of 0.024 pounds of mercury per gigawatt-hour (lb/GWh) during Phase 1 and an output-based standard of 0.012 lb/GWh during Phase 2. The owners and operators of circulating fluidized bed (CFB) EGUs will have the option of complying with an output-based mercury emission standard of 0.0096 (lb/GWh) or achieving a minimum 95% control of total mercury, as measured from the mercury content in the coal as fired.

Comment 4: There will be an immediate beneficial impact from mercury reduction.

Response: The Department agrees. Recent studies in the Florida Everglades and in the state of Massachusetts indicate that mercury concentrations found in fish and wading birds in the Everglades have dropped significantly. These illustrate the point that despite the fact that there are global mercury transportation issues, local emission reduction efforts are very significant to the local air quality and environmental impacts, and reductions in mercury emissions do translate into real, measurable improvements. Continued improvements to the ecosystem are expected in the long-term as these reductions work their way through the food chain.

A multi-agency State of Florida study launched in 1994 compared mercury levels in the Everglades before and after pollution controls were installed at municipal and medical waste incinerators in South Florida. Since the 1980s, mercury emissions from waste incinerators close to the Everglades have dropped nearly 99%. Over the last ten years, scientists documented a 70% decline in mercury in bird feathers and a 60% decrease in fish tissue. While this study focused on waste incinerators and not bituminous coal-fired power plants, it is important to note that both of these source categories emit comparable amounts of ionic mercury, which deposits locally. As a result, the conclusions in the multi-agency State of Florida study are applicable to Pennsylvania.

The mercury concentration in fish was investigated in a region of Massachusetts predicted to have regionally high atmospheric deposition of mercury from 1999 to 2004. In 8 of the 9 water bodies located in northeastern Massachusetts, significant decreases in mercury in yellow perch were observed with a range of 26.0% to 61.9%. The mean decrease over all lakes was 32.4%. Five of the remaining eight lakes around the rest of the state also had statistically significant, but not as large, decreases in yellow perch mercury levels ranging from 20.1% to 28.0% with an overall mean decrease of 15.4%. These reductions were achieved primarily through the imposition of stringent mercury emissions controls on Municipal Solid Waste Combustors and Medical Waste Incinerators, as well as reductions from other regional sources.

In both studies, the emission reductions, which are predominantly in the form of oxidized mercury from local incinerators, resulted in significant reductions in mercury levels in fish.

Comment 5: The commentator asserts that cap and trade is bad for Pennsylvania.

Response: The Department agrees. As noted in the preamble to the proposed Pennsylvania-specific rule, the Department does not believe that EPA's Section 111 approach to mercury control for the electric generating sector is best for Pennsylvania. The Department strongly opposes the cap-and-trade approach under CAMR for the regulation of mercury emissions from the utility sector for a number of reasons. First, the Department believes that EPA does not have the legal authority to regulate a hazardous air pollutant like mercury under the less stringent provisions of Section 111 of the CAA, as opposed to the more stringent provisions under Section 112 of the CAA. Second, the Department believes this approach will significantly delay the control of mercury emissions from the utility sector and that it will not reduce exposure to methylmercury expeditiously. In addition, the proposed Pennsylvania-specific rule would require an 80% reduction of mercury present in the coal fired in EGUs by 2010, and 90% reduction of mercury present in the coal fired in EGUs by 2015. EPA concedes that due to the banking and trading provisions of CAMR, projected reductions may not be achieved until 2026 or later. Because of the trading provisions under CAMR, owners and operators of EGUs in Pennsylvania do not have to make reductions in actual mercury emissions in Pennsylvania. The owners and operators can purchase allowances to offset the amount of mercury they emit over their cap to ensure compliance, which means that reductions in Pennsylvania may only be realized on paper. Moreover, mercury emissions in Pennsylvania may be much higher than EPA projects.

Comment 6: The Federal Clean Air Mercury Rule is not adequate.

Response: The Department agrees with your comment. EPA's Office of Inspector General (OIG) has also raised concerns with the adequacy of EPA's CAMR. In May 2006, Acting Inspector General Bill Roderick stated in the conclusion of the OIG Evaluation Report, "Monitoring Needed to Assess Impact of EPA's Clean Air Mercury Rule on Potential Hotspots Report No. 2006-P-00025," that "...EPA has acknowledged uncertainties and limitations in its analysis of the potential for "utility-attributable" hotspots. The results from two studies – the Mechanisms of Mercury Removal Study and the Steubenville Study – illustrate uncertainties about some of the key assumptions used in the Community Multi-scale Air Quality (CMAQ) numerical simulation model and the deposition results projected by the model. Further consideration of uncertainties could alter EPA's conclusions about the potential for "utility-attributable" mercury hotspots. In response to the OIG report, EPA indicated it will closely monitor hotspots, continue to advance mercury science, and take appropriate actions if hotspots arose. To accomplish this, the Agency needs to establish a monitoring plan to conduct source-apportionment studies to measure the impact of CAMR and to assist in evaluating the accuracy of its model predictions against actual field data...."

Comment 7: Mercury fish consumption warnings are a cause for concern.

Response: The Department agrees. Pennsylvania has fish consumption advisories for mercury in 77 waterways across the Commonwealth, which includes the Delaware, Ohio, Potomac, and Susquehanna River Basins and the Lake Erie Basin. Mercury fish advisories account for 60% of the fish consumption advisories throughout the Commonwealth.

In EPA's Mercury Study Report to Congress (1997) EPA estimated that 7% of women of childbearing age would have blood mercury concentrations greater than those equivalent to the RfD. The estimate of 7% of women of childbearing age above the RfD was based on patterns of fish and shellfish consumption and methylmercury concentrations present in fish and shellfish. Blood mercury analyses in the 1999-2000 National Health and Nutrition Examination Survey (NHANES) for 16-to-49 year old women showed that approximately 8% of women in the survey had blood mercury concentrations greater than 5.8 µg/L (which is a blood mercury level equivalent to the current RfD). NHANES is a continuous survey of the health and nutritional status of the civilian, non-institutionalized U.S. population; data are released and reported in 2-year cycles. NHANES results for 1999-2002 confirmed that blood mercury levels in young children and women of childbearing age usually are below levels of concern. However, approximately 6% of childbearing-aged women had levels at or above the reference dose. Based on this prevalence for the overall U.S. population of women of reproductive age and the number of U.S. births each year, it is estimated that more than 300,000 newborns each year may have increased risk of learning disabilities associated with in-utero exposure to methylmercury. Therefore, the Department believes that a State-specific rule is appropriate to reduce mercury emissions and protect public health and the environment.

Comment 8: The commentator states that the financial impact on the Pennsylvania economy from Pennsylvania sportsmen is very significant.

Response: The Department agrees with this comment and believes that a Pennsylvania-specific rule would assist in protecting these industries. The Pennsylvania Fish and Boat Commission has determined that approximately 800,000 anglers fished in Pennsylvania waters in 2005. Fish licensing sales in Pennsylvania amounted to \$18.5 million in 2005. According to the Erie Regional and Growth Partnership, Pennsylvania residents age 16 years and older spent \$400 million on fishing in Pennsylvania in 2001. The average angler spent \$458 in 2001 on fishing. These direct expenditures created \$1.2 billion in Pennsylvania economic output. As a result, the Commonwealth has a significant economic interest in fresh water fishing as an economic driver. Therefore, any improvement, or prevention of loss, to Pennsylvania's fish activities through implementation of Pennsylvania's mercury rule could have a positive impact to this important industry.

Pennsylvania has fish consumption advisories for mercury in 77 waterways across the Commonwealth, which includes the Delaware, Ohio, Potomac, and Susquehanna River Basins and the Lake Erie Basin. Mercury fish advisories account for 60% of the fish consumption advisories throughout the Commonwealth.

Resources for the Future conducted a study on mercury contamination of the Chesapeake Bay entitled "The Benefits and Costs of Fish Consumption Advisories for Mercury." October 2002. Applying an estimate of the percentage of consumer surplus lost due to an advisory from the literature to consumer surplus estimates for a fishing day in the Chesapeake Bay, they estimate an annual consumer surplus loss over all Maryland saltwater fishing days of \$8.83 million (\$2000). For the commercial striped bass fishery, they estimate a very simple model of supply and demand that predicts equilibrium price and quantity with reasonable accuracy. Using parameter estimates from this model, they estimate annual consumer and producer surplus losses of \$215,800 and \$304,500, respectively, under commercial consumption advice, for a total annual surplus loss of \$520,300. As a result of this data the Department believes a State-specific mercury rule would assist in protecting these industries.

Gene Barr, Vice President

Pennsylvania Chamber of Business and Industry

Commentator #5

Comment 1: The commentator strongly supports the federal Clean Air Interstate Rule (CAIR) and the federal Clean Air Mercury Rule (CAMR) both of which are a comprehensive national approach to reduce mercury emissions from power plants.

Response: The Department is on record for supporting CAIR and intends to adopt the CAIR requirements with appropriate changes in the Department adopted regulation. The Department does have some concern that CAIR may not provide all of the emission reductions required in Pennsylvania in order to achieve and maintain the National Ambient Air Quality Standards for some pollutants in all parts of Pennsylvania. However, the Department is on record as being opposed to adopting CAMR's cap-and-trade provisions on legal, policy, and public health grounds. For example, CAMR's cap-and-trade approach may result in hot spots to which the Commonwealth is particularly susceptible given that all 36 of Pennsylvania's coal-fired utilities burn bituminous coal as their primary fuel source. Bituminous coals generally have high mercury, chlorine, and sulfur contents and low calcium content, resulting in a high percentage of oxidized mercury. This type of mercury has a residence time of a few days and is deposited near the source of the release. Therefore, it is not a suitable candidate for emission trading against emission reductions in other regions because it results in hot spots.

Comment 2: The commentator has significant concerns with the state specific plan proposed by DEP. The commentator believes the Department has put forward a proposal that ignores a significant body of evidence regarding health studies on the impact of mercury, overlooks the significant reductions that will come with the existing federal program, threatens the reliability of Pennsylvania's electric grid, threatens jobs in the mining, energy generation, and manufacturing sectors, and is likely to result in higher costs for all Pennsylvania consumers. Most importantly, this will result in little if any benefit to human health and the environment.

As a participant in the discussions held on the mercury issue, both at the stakeholder and through the legislative process, the commentator remains unconvinced that a state specific mercury rule is necessary to protect human health and the environment here in Pennsylvania. Moreover, the commentator believes that imposition of such a rule could have dire consequences for jobs in Pennsylvania's utility, mining, and manufacturing industries, adversely impact reliability of Pennsylvania's electricity market, and raise costs to business, industry, and residential consumers.

Since air knows no boundaries, the commentator believes that a national approach to reduce mercury emissions from power plants makes the most sense from all perspectives.

The critical question in this debate is not whether we will reduce mercury emissions. The only question to answer is to quantify the benefit a state specific rule will have for Pennsylvania. Given that DEP has failed to provide an adequate response, and given the likely adverse implications of a state specific rule for Pennsylvania business and consumers, the commentator encourages DEP to reconsider a state-specific proposal and cooperate with other states and the federal government on a cost-effective approach for the Commonwealth.

Response: The Department disagrees. The Department is on record opposing CAMR's cap-and-trade provisions on legal, policy, and public health grounds. For example, CAMR's cap-and-trade approach may result in hot spots to which the Commonwealth is particularly susceptible given that all 36 of Pennsylvania's coal-fired utilities burn bituminous coal as their primary fuel source. Bituminous coals generally have high mercury, chlorine, and sulfur contents and low calcium content, resulting in a high percentage of oxidized mercury. This type of mercury has a residence time of a few days and is deposited near the source of the release. Therefore, it is not a suitable candidate for emission trading against emission reductions in other regions because it results in hot spots. Additionally, the Department has added the option of a system-wide compliance demonstration to the final-form regulation that will provide an incentive to over-control. Under this provision an owner or operator of two or more EGUs under common ownership or operator control in the Commonwealth may demonstrate compliance with the annual emission limitation by ensuring that the aggregate of actual mass emissions are less than the aggregate of allowable mass emissions for all EGUs included in the system-wide demonstration.

Section 123.206 of the final-form regulation provides that the Department may approve of an alternative mercury emission standard or schedule, or both, if the owner or operator of an EGU subject to the emission standards of §

123.205 demonstrates in writing to the Department's satisfaction that the mercury reduction requirements are economically or technologically infeasible. This provision was added at the request of Air Quality Technical Advisory Committee (AQTAC) to address the concerns about smaller, older plants. While the Department's approval of an alternate standard or compliance schedule will not relieve the owner or operator of an EGU from complying with the other requirements of §§ 123.207-123.215, owners and operators of these smaller, older plants may also petition the Department for supplemental allowances under § 123.209. The Department has also added a new provision to § 123.207 of the final-form regulation to allow the owner or operator of an EGU to demonstrate compliance with the annual emission limit by using the option of system-wide compliance demonstration. This compliance option will be in addition to the options included in the proposal for compliance on a unit-by-unit basis or by facility-wide compliance demonstration. As a result, there are a number of provisions in the final-form regulation to ensure that smaller, older plants are safeguarded.

The Pennsylvania-specific mercury rule is designed, in part, to take advantage of the co-benefit reductions that will occur under CAIR, designed to reduce SO₂ and NO_x emissions from EGUs. The Phase 1 and Phase 2 timeframes under the Pennsylvania rule coincide with the timeframes under CAIR. As a result, the owners and operators of EGUs are not disadvantaged under this timeframe, and there should not be any reliability concerns for delivery of power over the electric grid. It is anticipated that the majority of EGUs in the Commonwealth will opt to comply with both phases of the rule using existing WFGD and SCR technology, which will be necessary in order to comply with CAIR. While some EGUs may opt to install mercury specific control technology, the Department believes that there are a number of currently available control technologies that coal-fired power plants can use to reduce their emissions of mercury to the atmosphere, which will result in a minor cost increase on a cents per KWh basis.

The Department has reviewed a large body of scientific evidence, some of which was developed as a result of EPA's obligations under the federal Clean Air Act. This body of scientific evidence has clearly demonstrated that mercury is a persistent, toxic, bio-accumulative pollutant that can have adverse effects on human health and the environment.

Data generated by EPA has shown that Pennsylvania has the highest wet deposition of mercury in the nation with a direct correlation to the location and quantity of mercury emissions from coal-fired electric generating facilities. For example, the EPA-funded Steubenville study, which looked at the source contribution to wet mercury deposition in the environment, has shown that local and regional coal-fired utilities contribute up to 70% of the measured mercury deposition. Additionally, according to the Goddard Earth Observing System- Chem and CMAQ modeling results for 2001, Pennsylvania is where the maximum percentage of utility-attributable deposition of 71% compared to total deposition from all sources occurs.

There is an accumulation of State-specific and general risk assessment data that points to concerns regarding consumption patterns of freshwater anglers. This data also has a strong environmental justice component for minorities and persons of lower incomes. Statewide fish advisories, and the cited fish consumption patterns, demonstrate that Pennsylvanians may be at significant risk from mercury contamination through fish consumption. Additionally, data suggests a correlation between higher mercury fish concentrations and power plants within a 50-mile radius from the sampling sites.

Studies in different parts of the United States demonstrate that local control of mercury emissions leads to reduced levels of contamination in fish tissue. An Everglades mercury study, for example, examined fish tissue mercury concentrations before and after pollution controls were installed at municipal and medical waste combustors in southern Florida. According to this study, between 1991 and 2000, the total estimated local mercury emissions dropped nearly 93% and mercury deposition declined by about 60%. Concurrently, from the mid-1990s to the year 2002, mercury concentrations in the Everglades fish tissue declined by about 75% (Florida Department of Environmental Protection, 2003). Similar, but perhaps more rapid improvements were observed in a Massachusetts study (Hutcheson, M.S. et al., 2005). Over a 3 to 4 year period, an 85% decrease in local incinerator mercury emissions was followed by an average 30-38% reduction in fish tissue concentrations.

The Department has determined that effective mercury control technology does exist to significantly reduce mercury emissions from EGUs. Furthermore, mercury control technology is presently being implemented at a

number of air pollution emitting sources, and recent testing has shown that these mercury control technologies on coal-fired utilities were effective in reducing mercury emissions.

The Department's State-specific mercury regulation assures a specific maximum level of actual mercury emissions from Pennsylvania utilities, and assures that these levels are achieved in a much shorter timeframe than CAMR. The Phase 2 mercury emissions caps will be achieved in Pennsylvania by 2015, not 2018 as under CAMR (which translates into 2030 because of emissions allowance trading under CAMR). Furthermore, in Pennsylvania, under the State-specific rule, each and every owner or operator of an electric generating facility will make significant reductions in their mercury emissions at each and every one of their facilities. Not so under CAMR. Additionally, under the federal CAMR mercury emissions trading program, it is even possible that mercury emissions in Pennsylvania could actually increase because there would not be any regulatory ability to restrict such actual emission increases resulting from the importation of out-of-state allowances.

As a result of this analysis, the Department has determined that a State-specific rule to reduce mercury emissions from coal-fired power plants in Pennsylvania is necessary to protect the public health and the environment.

Comment 3: The commentator states that elemental mercury emissions can travel thousands of miles. One estimate is that up to 70% of the mercury deposited in the US comes from foreign sources.

Response: The EPA has estimated that EGUs located in the United States represent approximately 1% of the worldwide mercury emissions. In Pennsylvania, EGUs represent approximately 80% of the mercury emissions, while nationally EGUs represent only approximately 40% of the mercury emitted. Because Pennsylvania EGUs predominately burn bituminous coal, which contains high levels of chlorine, the majority of their mercury emissions are in the oxidized form. The oxidized form of mercury not only deposits locally, but is most readily converted in the ecosystem to the toxic form of methylmercury. EPA's modeling shows that Pennsylvania received some of the highest levels of mercury deposition in the country. The EPA funded Steubenville study, which looked at the source contribution to mercury wet deposition in the environment, has shown that local and regional coal-fired power plants contribute up to 70% of the measured mercury deposition. Based on the results of the Steubenville study and the modeling conducted by Sullivan on the Bruce Mansfield plant, the Department concludes that the majority of the mercury deposited in the Commonwealth is emitted from sources in Pennsylvania.

Comment 4: The commentator was an active participant in the Mercury Stakeholder group formed by DEP, at the behest of EQB. The commentator states that it was disappointing to hear at the outset of the meetings that DEP would not use this opportunity to decide whether a state specific rule was necessary but merely as a forum for those participating to help craft a state rule.

Response: The role of the Mercury Rule Workgroup was not to determine whether a state-specific mercury rule would be developed. On August 16, 2005, the Environmental Quality Board, by a vote of 16-3, approved the Department's recommendation to develop a state-specific regulation to reduce mercury emissions from coal fired power plants. The Board required that the regulation be developed in consultation with various stakeholders including the petitioners, advisory committees and business and industry representatives including the Electric Power Generation Association, PA Coal Association, PA Chamber of Business & Industry and the United Mine Workers of America. Consequently, the Mercury Rulemaking Public Involvement process was initiated to consult with a diverse group of public and private sector individuals, including representatives of the petitioners, industry and trade associations. The primary objectives of the public involvement process were to: discuss key information relevant to a "state-specific" mercury regulation and obtain recommendations on the technical aspects of the proposed rulemaking, including control levels, testing, monitoring, recordkeeping and reporting, and compliance schedules. This process was initiated by the Environmental Quality Board in a motion that states, "During the development of its regulatory proposal, the Department will confer with various stakeholders including, but not limited to, the Pennsylvania Chamber of Business and Industry, Pennsylvania Chemical Industry Council, Associated Petroleum Industries of Pennsylvania, Pennsylvania Manufacturers Association, Industrial Energy Users of Pennsylvania, Electric Power Generation Association, Pennsylvania Coal Association, United Mine Workers of

America, Air Quality Technical Advisory Committee, Citizens Advisory Council, the petitioners and other representatives of the potentially regulated community.”

At the first meeting of the Mercury Rule Workgroup on October 14, 2005, the Department explained that the purpose of the workgroup would be to receive information and data and that the participants were not expected to reach consensus. Rather, the Department hoped that the Mercury Rule Workgroup would provide a forum for all parties to provide relevant data and articulate their position. The Department admits that the entire Mercury Rule Workgroup has not sanctioned the final rulemaking.

Comment 5: In the commentator’s view, the majority of the information presented at the stakeholders meetings showed that mercury is not the acute public health crisis that proponents of a state specific rule have purported it to be. Evidence further showed that the federal rule is a reasonable, cost effective approach to further reduce man-made emissions of mercury. Those testifying in support of a state-specific rule both during the stakeholder process as well as during subsequent legislative appearances have failed to provide any compelling evidence as to the benefits to public health and the environment by a state rule versus implementation of federal legislation.

Response: The Department strongly disagrees with the commentator’s view. Research work presented to the Mercury Workgroup by Dr. Trasande indicated that the mercury RfD established by EPA is actually too high and should be set at a lower dose level. According to Trasande, “There is no evidence to date validating the existence of a threshold blood mercury concentration below which adverse effects on cognition are not seen.” This is of special importance due to the large number of babies born in the U.S. each year that are at, or above, the established level. In January, 2004, an EPA researcher estimated that at least 7.8% (and possibly as many as 15.7%) of women of childbearing age had blood mercury levels high enough that approximately 630,000 newborns may be at risk from the adverse effects of mercury. Kathryn R. Mahaffey, PhD., Methylmercury: Epidemiology Update (Jan. 26, 2004).

The Department has determined that the owners and operators of EGUs in Pennsylvania would most likely purchase significant amounts of mercury allowances from outside the state of Pennsylvania as projected by EPA to meet the allowance requirements of CAMR. The importation of additional allowances to Pennsylvania will result in additional mercury emissions in Pennsylvania with an increase in local mercury deposition. Congress determined that health-based standards related to HAPs like mercury were inappropriate given the lengthy and time consuming purpose necessary to conduct a risk analysis and ambient air quality analysis to list and establish emission standards. Congress concluded that routine and episodic releases of HAPs, like mercury, posed a significant threat to public health, that the risk of adverse health effects related to these emissions were significant and that HAPs may cause significant environmental damage. As a result, the burden of proof is on those who believe a State specific rule would not improve the public health and environment in Pennsylvania.

Furthermore, the Department believes that all scientific evidence overwhelmingly shows that mercury emissions in Pennsylvania must be reduced to a level where they will no longer pose a significant threat to public health and the environment. The Department further believes that compliance with the State-specific mercury reduction rule will reduce emissions to safer levels where the public health and safety will improve. Consequently, the Department believes that there is an adequate scientific foundation to reduce mercury emissions in this Commonwealth through a State-specific mercury rule.

Comment 6: The commentator states that many groups urging a state specific rule have used highly inflammatory claims in an attempt to garner public support for their position. For example, they have claimed that hundreds of thousands of children are born each year with “brain damage” or “mercury poisoning” as a result of mercury. The commentator stated that these claims are patently and demonstrably false. The commentator then went on to cite a number of areas where he felt the health risk from mercury emissions had been overstated.

Response: The Department disagrees with the commentator’s assertions concerning statements made during the Mercury Rule Workgroup. A review of the minutes of the meetings shows that no proponent of a state-specific rule made claims concerning mercury poisoning. However, there is evidence that exposure to mercury can be demonstrated in the population. According to EPA, “blood mercury analyses in the 1999-2000 National Health and Nutrition Examination Survey (1999-2000 NHANES) in 16-to-49 year old women showed that approximately 8% of women in the survey had blood mercury concentrations greater than 5.8 µg/L (which is a blood mercury level

equivalent to the current RfD). Based on this prevalence for the overall U.S. population of women of reproductive age and the number of U.S. births each year, it is estimated that more than 300,000 newborns each year may have increased risk of learning disabilities associated with in utero-exposure to methylmercury.” An updated NHANES report for 1999-2002 found that “approximately 6% of childbearing-aged women had levels at or above a reference dose, an estimated level assumed to be without appreciable harm ($>5.8 \mu\text{g/L}$)...” It should be noted that the NHANES is a “continuous survey of the health and nutritional status of the civilian, noninstitutionalized U.S. population”...that is updated in two-year cycles.

One area in which the toxicokinetic data have been consistent is the finding that methylmercury is actively transferred to the fetus across the placenta via neutral amino acid carriers during gestation. Although maternal and cord blood mercury concentration is highly correlated, cord blood mercury is consistently higher than the corresponding maternal concentration with an average ratio of about 1.7 to 1. Consequently, for biomonitoring of adult women’s blood methylmercury levels commonly used as a surrogate for potential fetal exposure, the corresponding fetal level will be, on average, 70% higher than the maternal blood level and up to three times higher at the 95th percentile. The maternal body burden of methylmercury tends to decrease during gestation, consistent with hemodilution and a transfer of a portion of the maternal body mercury burden to the fetus.

Recent separate studies by Stern, et al (2006), Trasande et al (2005), and Mahaffey, et al (2004), suggest that even the EPA-established RfD is too high. According to Trasande, “There is no evidence to date validating the existence of a threshold blood mercury concentration below which adverse effects on cognition are not seen.” Stern in his 2006 presentation at the 8th International Conference on Mercury as a Global Pollutant entitled, “An Estimate of the Population Variability in the Relationship Between Cord Blood Mercury and Maternal Methylmercury Intake” found that the EPA RfD should be reduced by 33%. In January 2004 an EPA researcher estimated that at least 7.8% (and possibly as many as 15.7%) women of childbearing age had blood mercury levels high enough that approximately 630,000 newborns may be at risk from the adverse effects of mercury. Kathryn R. Mahaffey, PhD., Methylmercury: Epidemiology Update (Jan. 26, 2004).

Because of the concern for the concentration of mercury across the placenta giving rise to a 1.7 fold increase in the mercury blood concentration exposure to the fetus, along with slight variations in estimates of population exposure have given rise to estimates between 300,000 and 600,000 newborns each year may be at risk from the adverse effects of mercury. As a result of these studies the Department strongly disagrees with the commentator that no individuals in the US has an unsafe level of mercury in their blood from eating fish.”

Comment 7: During a hearing before the PA Senate Environmental Resources and Energy Committee earlier this year, Dr. Jack Snyder, the former staff toxicologist at Thomas Jefferson Medical College stated that “the legislature has not been provided credible evidence supporting speculation that any women, children, or fetuses have been harmed, or have been placed at increased risk of harm as a result of eating fish obtained from bodies of water in PA or other parts of the US.”

In summary, the commentator stated there is little evidence that methylmercury in fish is the public health crisis many groups claim it to be. A July 5, 2006 release by US EPA demonstrated that mercury emissions here in the US have fallen drastically (45% since 1990) and CAIR and CAMR will continue to reduce those levels.

Response: The Department disagrees with the comment. Evidence of exposure to mercury and the health effects of mercury were presented to the Senate during testimony presented by Secretary McGinty. The Mercury Rule Workgroup heard a number of presentations concerning these issues.

Congress determined that health-based standards related to HAPs like mercury were inappropriate given the lengthy and time consuming purpose necessary to conduct a risk analysis and ambient air quality analysis to list and establish emission standards. Because Congress concluded that routine and episodic releases of HAPs, like mercury, posed a significant threat to public health, that the risk of adverse health effects related to these emissions were significant and that HAPs may cause significant environmental damage. As a result, the burden of proof is on those who believe a State specific rule would not improve the public health and environment in Pennsylvania.

Furthermore, the Department believes that all scientific evidence overwhelmingly shows that mercury emissions in Pennsylvania must be reduced to a level where they will no longer pose a significant threat to public health and the environment. The Department further believes that compliance with the State-specific mercury reduction rule will reduce emissions to safer levels where the public health and safety will improve. Consequently, the Department believes that there is an adequate scientific foundation to reduce mercury emissions in this Commonwealth through a State-specific mercury rule.

The commentator misinterprets the July 5, 2006, release on the reduction of mercury. Mercury emissions in Pennsylvania from coal-fired EGUs have not decreased significantly. The mercury monitoring and reporting techniques have been refined in recent years, including numerous mercury stack tests where very few source-specific tests existed until the last few years. As a result we have more accurate mercury emission numbers. This change in the availability of source specific mercury emissions information is the primary reason for the apparent mercury emission reductions, not actual reductions.

Comment 8: The commentator observes that DEP has strongly stated their opposition to the provision in federal law that allows for emissions trading to meet mercury reduction requirements. DEP believes that allowing for emission trading will lead to the creation of mercury “hot spots.” This topic was addressed in the stakeholder group by Dr. Terry Sullivan of Brookhaven National Lab whose work found no evidence of these hot spots. Opponents of trading have stated that a yet to be published study of the Steubenville, OH area shows the existence of hot spots. While the full details of this report have not been seen, the study appears to show that mercury emissions from those plants traveled 400 miles—a distance approximate to the width of the Commonwealth of Pennsylvania.

Response: The Department does not agree with this comment. The Department is concerned that CAMR’s cap-and-trade approach will result in hot spots to which certain areas of the Commonwealth are particularly susceptible given that all 36 of Pennsylvania’s coal-fired utilities burn bituminous coal as their primary fuel source. Bituminous coals generally have high mercury, chlorine and sulfur contents and low calcium content, resulting in a high percentage of oxidized mercury. This type of mercury has a residence time of a few days and is deposited near the source of the release. Therefore, mercury is not a suitable candidate for emission trading against emission reductions in other regions because it results in hot spots.

Impacts related to mercury deposition were studied at the Bruce Mansfield coal-fired power plant in Shippingport, Pennsylvania and reported in Sullivan, T.M, et al, “Assessing the Mercury Health Risks Associated with Coal-Fired Power Plants: Impacts of Local Depositions,” Brookhaven National Laboratory, Upton, NY. The Bruce Mansfield plant is characterized by high total mercury emissions. From the deposition modeling, the average increase in deposition as compared to a background deposition rate of 20 µg/m²/yr over a 2500 km² area around the plant was 15% at Bruce Mansfield. Over an area that is 50 – 100 km², immediately adjacent to the plant, deposition doubled at the Bruce Mansfield plant. The report concluded that if the plant emissions double the local deposition, the fish concentration would be similarly doubled. As a result, the mean fish mercury content of 0.41 ppm near the Bruce Mansfield plant would be doubled to 0.82 ppm.

The 2003 results of the EPA Office of Water study *Draft Mercury REMSAD Deposition Modeling Results* reinforce Pennsylvania’s concern. This Regulatory Modeling System for Aerosols and Deposition (REMSAD) study shows that, at mercury hot spots, local emission sources within a state can be the dominant source of deposition. At hot spots, local sources within a state commonly account for 50% to 80% of the mercury deposition. In-state sources contribute more than 50% of the pollution to sites in the top eight worst hot spot states, which are Michigan, Maryland, Florida, Illinois, South Carolina, North Carolina, Pennsylvania and Texas, respectively. In addition to these studies, on September 8, 2006, results from the EPA Steubenville Mercury Deposition Source Apportionment Study were released. This study found that nearly 70% of the mercury in rain collected at an Ohio River Valley monitoring site originated from nearby coal-burning industrial plants.

Comment 9: The commentator states that emissions trading has been used to good effect in a large number of pollution reduction strategies, including lead. Credits are generated in one of two ways—either reductions made at a facility earlier than required or reductions done at a facility above and beyond those that are required. Given the transport issues involved with mercury, if states upwind of PA can make those reductions on a more cost effective basis then it appears to us that the consumer wins both from a financial as well as a health basis.

In support of this statement, a 2004 article in the "Environment Reporter" which studied the impact of trading programs on air emissions concluded "none of the programs evaluated has resulted in regional shifts of emissions, and all trading programs led to proportionately greater reductions from the larger sources. Overall, the data from the programs reviewed in this report indicate that the effects of trading have been slight but beneficial with regards to geographic hot spots, in the sense of smoothing out emissions concentrations instead of concentrating them, and cooling and creating hot spots."

Response: The Department does not agree with this comment as it relates to mercury. The Department does agree that cap-and-trade programs have been effective. The Department has promoted certain trading programs for nitrogen oxides as a cost-effective means of achieving the National Ambient Air Quality Standard for ozone. In contrast to the information stated in the Environmental Reporter that no programs of emissions trading have resulted in regional shifts of emissions, a review of the acid rain program by the state of New York showed that there has been a transfer of emissions through long-range emissions trading which resulted in little reduction of acid precipitation for many of New York's lakes. Emissions trading of criteria pollutants to reduce a long-range transport issue may be a cost effective method, but at the expense to the environment. The trading of mercury which readily forms the neurotoxin methylmercury in the environment, and which has been shown to have significant local deposition that bio-accumulates in the food chain, is not a candidate for emissions trading. The Department is concerned that CAMR's cap-and-trade approach will result in hot spots to which the Commonwealth is particularly susceptible given that all 36 of Pennsylvania's coal-fired utilities burn bituminous coal as their primary fuel source. Bituminous coals generally have high mercury, chlorine and sulfur contents and low calcium content, resulting in a high percentage of oxidized mercury. This type of mercury has a residence time of a few days and is deposited near the source of the release. Therefore, mercury is not a suitable candidate for emission trading against emission reductions in other regions because it results in hot spots.

The Department provided charts to the Mercury Rule Workgroup that showed that each year, Pennsylvania utilities import approximately 500,000 SO₂ allowances (One allowance equals one ton of SO₂ emissions). The Department is concerned that CAMR's cap-and-trade approach will result in hot spots to which the Commonwealth is particularly susceptible given that all 36 of Pennsylvania's coal-fired utilities burn bituminous coal as their primary fuel source. Bituminous coals generally have high mercury, chlorine and sulfur contents and low calcium content, resulting in a high percentage of oxidized mercury. This type of mercury has a residence time of a few days and is deposited near the source of the release. Therefore, mercury is not a suitable candidate for emission trading against emission reductions in other regions because it results in hot spots.

Impacts related to mercury deposition were studied at the Bruce Mansfield coal-fired power plant in Shippingport, Pennsylvania and reported in Sullivan, T.M, et al, "Assessing the Mercury Health Risks Associated with Coal-Fired Power Plants: Impacts of Local Depositions," Brookhaven National Laboratory, Upton, NY. The Bruce Mansfield plant is characterized by high total mercury emissions. From the deposition modeling, the average increase in deposition as compared to a background deposition rate of 20 µg/m²/yr over a 2500 km² area around the plant was 15% at Bruce Mansfield. Over an area that is 50 – 100 km², immediately adjacent to the plant, deposition doubled at the Bruce Mansfield plant. The report concluded that if the plant emissions double the local deposition, the fish concentration would be similarly doubled. As a result, the mean fish mercury content of 0.41 ppm near the Bruce Mansfield plant would be doubled to 0.82 ppm.

The 2003 results of the EPA Office of Water study Draft Mercury REMSAD Deposition Modeling Results reinforce Pennsylvania's concern. This Regulatory Modeling System for Aerosols and Deposition (REMSAD) study shows that, at mercury hot spots, local emission sources within a state can be the dominant source of deposition. At hot spots, local sources within a state commonly account for 50% to 80% of the mercury deposition. In-state sources contribute more than 50% of the pollution to sites in the top eight worst hot spot states, which are Michigan, Maryland, Florida, Illinois, South Carolina, North Carolina, Pennsylvania and Texas, respectively.

In addition to these studies, on September 8, 2006, results from the EPA Steubenville Mercury Deposition Source Apportionment Study were released. This study found that nearly 70% of the mercury in rain collected at an Ohio River Valley monitoring site originated from nearby coal-burning industrial plants.

Comment 10: The commentator is extremely concerned about the impact the DEP proposed rule will have on our economy.

Because of the deregulation of Pennsylvania's electricity market, in-state producers are forced to compete on the open market for customers. If they are burdened with unnecessary costs, such an action could make them uncompetitive with plants in other states. Faced with such a situation, certain plants could opt not to make the necessary spend in order to comply. This would threaten not only the jobs at the energy generating facility, but the mining jobs associated with supplying the coal for that plant. While industrial and commercial consumers can certainly buy from out of state producers, a reduction in energy producing facilities can be expected to produce further upward pressure on energy prices. For many of the Chamber's members whose energy costs can be as much as 60% or more of operating costs such as scenario has the real possibility to adversely impact the Commonwealth's manufacturing sector and threaten those jobs as well. Imposition of burdensome, unnecessary mercury regulations can have a devastating, rippling effect throughout the energy production, mining, and manufacturing sectors.

Public Utility Commission Chair Wendell Holland recognized these concerns in comments he submitted at the May 17, 2006 EQB meeting. He expressed his concerns about the impact DEP's rule could have on the reliability of Pennsylvania's electric grid.

Even proponents of the state specific rule have admitted that plants could be shut down as a result of this proposed rule. (PennFuture Facts Vol 8 No 16.)

It is no surprise that business and industry is joined in its opposition to DEP's rule by the United Mine Workers, International Brotherhood of Electrical Workers, and the Conference of Teamsters.

Response: The Department does not anticipate the premature retirement of plants or increased electric prices resulting from the adoption of a Pennsylvania-specific mercury regulation. The Department disagrees that smaller generating units are at risk for retirement. Section 123.206 provides that the Department may approve of an alternate mercury emission standard or compliance schedule, or both, if the owner or operator of an EGU subject to the emission standards of § 123.205 demonstrates in writing to the Department's satisfaction that the mercury reduction requirements are economically or technologically infeasible. The provision was added at the request of AQTAC to address the concerns about smaller, older plants. While the Department's approval of an alternate standard or compliance schedule will not relieve the owner or operator of an EGU from complying with the other requirements of §§ 123.207-123.215, owners and operators of these smaller, older plants may also petition the Department for supplemental allowances under § 123.209. As a result, there are a number of provisions in the regulation to ensure that smaller, older plants are safeguarded.

The regulations will, to some extent, impact the owners and operators of all EGUs in Pennsylvania. There will be compliance costs related to the construction and operation of air pollution control devices to control mercury, NOx, and SOx. For Phase 1 the total annualized cost (capital and operating) of mercury-specific control technology that owners and operators of EGUs may opt to install beyond CAIR to comply with the Pennsylvania-specific mercury rule would be \$15.4 million per year. The total cost of purchasing mercury allowances (at \$953 per ounce, according to a U.S. Department of Energy estimate) if EGUs did not do anything beyond CAIR in order to comply with CAMR would be \$15.7 million per year. As a result, the total cost of complying with the Pennsylvania-specific mercury rule for Phase 1 would be no more than the cost of complying with CAMR.

The Phase 2 cost range is based on the control technologies needed to meet the annual limit. The high end cost estimate is based upon using TOXECON/COHPAC at an annual cost of \$53.4 million. The low end is based upon using BACI at an annual cost of \$16.7 million. The capital costs for each of these technologies were annualized based upon 20 years and an interest rate of 10%. The Phase 2 mercury allowance cost was estimated to be \$28.3 million annually based upon the assumption of allowances costing \$41,900/lb. This allowance cost is based on an average from DOE projected costs for 2015 and 2030.

The cost differential between allowance costs and technology costs were \$25.1 million on the high end and a savings of \$11.6 million on the low end. The total kilowatt-hours calculated for the 18 units that will not be installing CAIR controls to meet the Phase 2 requirements are 13,748,393,901. The resulting cost per kilowatt-hour

ranges from \$0.0018/KWh for the use of the TOXECON/COHPAC control technology to a savings of \$0.00084/KWh for using BACI to comply with the Phase 2 limits.

Comment 11: The commentator states that during deliberations on the CAIR and CAMR rules, the U.S. EPA and the U.S. Department of Energy looked at various control technologies for reducing mercury. What they found was that there are no commercially available technologies that can consistently reduce mercury emissions at all facilities to the levels called for in CAMR. As a result, the compliance date for CAMR was fixed at 2018 in the hopes that technologies will emerge to meet that standard. DEP's proposal to increase the reduction standard to 90% and advance that date poses real problems for energy producers. If DEP's rule were to pass, producers would be in the unenviable position of spending significant sums of money in hopes of attaining the requirements and still face a huge risk of non-compliance.

While the mercury stakeholder group did hear from certain interests who claimed that DEP's standard could be met, in most cases those persons are vendors of products they hope to market in the event of promulgation of a state-specific rule.

Proponents of a state specific rule have also said that compliance with DEP's rule will be relatively inexpensive. However, one Pennsylvania utility has filed financial disclosure statements that show they expect to spend as much as \$200 million here in PA if a state specific rule is adopted.

Response: The Department does not agree with this comment. In a Congressional Research Service Report dated April 15, 2005, EPA's own Office of Research and Development (ORD), in a white paper posted on the EPA website March 2, 2004, appears to conclude that technology is more available and more effective than is maintained in the agency's rulemaking. EPA's ORD found that fabric filters, a relatively simple technology that is currently installed on more than 12% of power plants, achieve a 90% reduction in mercury emissions at bituminous coal plants and a 72% reduction at sub-bituminous plants. The addition of a scrubber increased the emission reduction to 98% at bituminous plants, according to the ORD. The white paper further stated that, by 2010, activated carbon injection (ACI) with a fabric filter "has the potential to achieve 90% Hg reduction" on any rank of coal, and could be installed within 1-2 years of signing a contract to do so. Since the white paper was written, there have been reports that a European firm, Donau Carbon, has begun offering commercial guarantees for mercury removal from coal-fired power plants using ACI technology.

A variety of options exist for owners and operators of EGUs to achieve the necessary control of mercury emissions including: co-benefit CAIR controls, coal cleaning, installing mercury emissions specific control equipment, low mercury content Pennsylvania coal which exists in abundance in the southwestern corner of the state, along with various compliance demonstration options. More than one emission reduction technology can be employed together to achieve the required levels, such as coal cleaning to reduce the level of mercury going into the combustor and carbon injection. While there have not previously existed any regulatory requirement to control mercury emissions from EGUs, these control techniques have been employed in other source categories. Recent tests on bituminous coal-fired EGUs have shown mercury emission reductions up to 90% and above. Fabric filters and wet scrubbers have achieved greater than 90% control. The costs of these control measures have been demonstrated to not be unreasonable. Owners and operators of EGUs that face non-compliance despite good control efforts can also petition the Department for a Department approved alternate emission standard, compliance schedule and emission limitation for either technological or economic infeasibility.

Comment 12: The proponents of a state specific rule have claimed that there is no assurance that there will be any mercury reductions if we adopt the federal rule. Such a statement is simply not credible given the significant reductions already made in recent years. In July of this year, US EPA reported that US mercury air emissions have been reduced by 45% since 1990. Here in PA, power plants have already reduced mercury emissions 33% between the period 1999 and 2004, according to Toxics Release Inventory reports.

Further, a number of Pennsylvania's electric utilities have already announced plans to install pollution control equipment that will control mercury, as well as sulfur dioxide and nitrogen oxides. The capital cost of the controls announced by just these four companies is approximately \$3 billion.

Response: The Department does not believe that mercury emissions have decreased as significantly as the commentator contends. First, monitoring and reporting techniques have been refined, as a result we have more accurate emission numbers. For example, more EGU owners and operators are now reporting emissions from stack tests and using more refined secondary techniques like emission factors. More accurate accounting methods do not mean that emissions have decreased. Second, those facilities that do not use refined techniques may use techniques that to some degree do not provide accurate emissions data. Third, the owners and operators of some facilities experience economic downturns that reduce emissions, but emissions increase when higher economic activity returns. As a result, it is not unusual for emissions to fluctuate. However, what we do know is that the primary reason that coal-fired power plants represent such a large percentage of mercury emissions in the United States and Pennsylvania is because mercury emissions from this source category were not subject to regulation. While both the national and Pennsylvania figures show that coal-fired power plants emit a disproportionate amount of mercury, mercury emissions from coal-fired power plants in Pennsylvania are disproportionate to the national figure. Nationally, coal-fired EGUs account for approximately 40% of mercury emitted to the atmosphere. As per mercury emission data submitted to the EPA Toxic Release Inventory (TRI), the mercury emissions from EGU increased from 2003 level of 6489 pounds per year to 6650.9 pound per year for 2004. In Pennsylvania, however, coal-fired EGUs account for approximately 80% of the mercury emissions reported in inventory statements submitted to the Department. Therefore, the Department believes that coal-fired EGUs operating in Pennsylvania must achieve actual mercury emission reductions.

Comment 13: The commentator states that in 1996, then Governor Tom Ridge promulgated Executive Order 1 of 1996. This order dictates that state rules should be no more stringent than federal requirements unless there is a compelling state reason to do so. One of the reasons for this order was to avoid placing Pennsylvania's job creators in an uncompetitive position by levying a regulatory burden on those entities that is not placed on competitors in other states and has no benefit to human health and the environment.

To date, DEP has demonstrated no compelling reason to implement a state specific mercury rule. Certain groups supporting a state specific rule have stated that one of the reasons we should do a state rule is because utilities can afford it. There are two fatal flaws in such an argument. First, the ability to pay is a question that should not be confused with the necessity for any given regulation. Second, many of the facilities that would be impacted by DEP's rule are small operators and may opt to go out of business rather than attempt to comply with this rule.

Since executive orders stand until formally withdrawn and such an action has not occurred with Executive Order 1 of 1996, DEP's mercury rule should not be promulgated.

Response: The Department believes that it has demonstrated that a State-specific rule is necessary because of compelling reasons. A large body of scientific evidence, some of which was developed as a result of EPA's obligations under the federal Clean Air Act, has clearly demonstrated that mercury is a persistent, toxic, bio-accumulative pollutant that can have adverse effects on human health and the environment. The Department has determined that effective mercury control technology does exist to significantly reduce mercury emissions from EGUs. Furthermore, mercury control technology is presently being implemented at a number of air pollution emitting sources, and recent testing of mercury control technologies on coal-fired utilities has been shown to be effective in reducing mercury emissions. The Department has joined a number of other parties in a lawsuit challenging EPA's national cap-and-trade approach as both inappropriate for regulating a potent neurotoxin like mercury and also contrary to the statutory provisions of the Clean Air Act. The Department has determined that the provisions in EPA's final mercury rule (CAMR) for the utility sector that was promulgated under Section 111 of the CAA are not adequate to ensure that the citizens of Pennsylvania and the environment will be adequately protected from the harmful effects of mercury emissions.

Nathan Wilcox, Energy and Clean Air Advocate
Commentator #6

Comment 1: Given the public health and environmental threats posed by mercury pollution from Pennsylvania's coal-fired power plants, the Bush administration's weakening of the Clean

Air Act's federal mercury pollution reduction requirements, and the availability of mercury pollution control technologies, Penn Environment supports DEP's State Plan to opt out of the federal EPA-managed cap-and-trade program, and instead meet federal Clean Air Mercury Rule requirements by implementing DEP's state-specific proposal to cut mercury pollution from Pennsylvania's coal-fired power plants by 90 percent by 2015.

Response: Thank you for your support of the Department's proposed Pennsylvania specific mercury rule. The final-form regulation is designed to achieve significant mercury emission reductions from coal-fired power plants operating in Pennsylvania. The owners and operators of existing pulverized coal-fired (PCF) EGUs must achieve a minimum 80% control of total mercury, as measured from the mercury content in the coal as fired, from January 1, 2010, through December 31, 2014 (Phase 1), and a minimum of 90% control of total mercury as measured from the mercury content in the coal as fired beginning January 1, 2015, and each subsequent year (Phase 2). Alternatively, the owners and operators of PCF EGUs may comply with an output-based mercury emission standard of 0.024 pounds of mercury per gigawatt-hour (lb/GWh) during Phase 1 and an output-based standard of 0.012 lb/GWh during Phase 2. The owners and operators of circulating fluidized bed (CFB) EGUs will have the option of complying with an emission standard of 0.0096 (lb/GWh) or achieving a minimum 95% control of total mercury, as measured from the mercury content in the coal as fired.

Comment 2: The commentator is supportive of DEP's State plan to opt out of the Federal EPA-managed cap-and-trade program, and instead meet federal Clean Air Mercury Rule requirements by implementing DEP's proposed State-specific mercury reduction rule to require 90 percent mercury reductions from Pennsylvania's coal-fired power plants by 2015.

Response: The Department agrees. While CAMR establishes a two-phase mercury budget for Pennsylvania at 1.779 tons (3,558 lbs) per year from 2010 through 2017 for a 64% reduction from 1999 baseline emission levels and 0.702 tons per year for 2018 and every year thereafter for a 86% reduction from 1999 baseline emission levels, CAMR does not specifically require the owners or operators of any EGU to reduce mercury emissions to any specific level. Because of the trading provisions under CAMR, owners and operators of EGUs in Pennsylvania do not have to make reductions in Pennsylvania. They can purchase allowances to offset the amount of mercury they emit over their cap to ensure compliance, which means that reductions in Pennsylvania may only be realized on paper. Moreover, mercury emissions in Pennsylvania may be much higher than EPA projects. In fact, EPA concedes that due to the banking and trading provisions of CAMR, projected reductions may not be achieved until 2026 or later.

These concerns regarding "paper" reductions and increased actual emissions have a historical basis under the Title IV provisions of the CAA. In Pennsylvania the total current SO₂ acid rain allowances equal 540,000. The owners and operators of Pennsylvania EGUs emit about 1,000,000 tons per year of SO₂. Therefore, Pennsylvania currently "imports" about 460,000 SO₂ acid rain allowances per year from reductions in other states. The trading of mercury allowances under CAMR may mimic the acid rain program. CAMR's cap-and-trade approach may result in hot spots to which the Commonwealth is particularly susceptible given that all 36 of Pennsylvania's coal-fired utilities burn bituminous coal as their primary fuel source. Bituminous coals generally have high mercury, chlorine, and sulfur contents and low calcium content, resulting in a high percentage of oxidized mercury. This type of mercury has a residence time of a few days and is deposited near the source of the release. Therefore, it is not a suitable candidate for emission trading against emission reductions in other regions because it results in hot spots.

Comment 3: The commentator supports the Department's efforts to require all coal-fired power plants in Pennsylvania to reduce their mercury emissions and oppose any pollution trading rules for mercury.

Response: The Department agrees. While CAMR establishes a two-phase mercury budget for Pennsylvania at 1.779 tons (3,558 lbs) per year from 2010 through 2017 for a 64% reduction from 1999 baseline emission levels and 0.702 tons per year for 2018 and every year thereafter for a 86% reduction from 1999 baseline emission levels, CAMR does not specifically require the owners or operators of any EGU to reduce mercury emissions to any specific level. Because of the trading provisions under CAMR, owners and operators of EGUs in Pennsylvania do not have to make reductions in Pennsylvania. They can purchase allowances to offset the amount of mercury they

emit over their cap to ensure compliance, which means that reductions in Pennsylvania may only be realized on paper. Moreover, mercury emissions in Pennsylvania may be much higher than EPA projects. In fact, EPA concedes that due to the banking and trading provisions of CAMR, projected reductions may not be achieved until 2026 or later.

These concerns regarding “paper” reductions and increased actual emissions have a historical basis under the Title IV provisions of the CAA. In Pennsylvania the total current SO₂ acid rain allowances equal 540,000. The owners and operators of Pennsylvania EGUs emit about 1,000,000 tons per year of SO₂. Therefore, Pennsylvania currently “imports” about 460,000 SO₂ acid rain allowances per year from reductions in other states. The trading of mercury allowances under CAMR may mimic the acid rain program. CAMR’s cap-and-trade approach may result in hot spots to which the Commonwealth is particularly susceptible given that all 36 of Pennsylvania’s coal-fired utilities burn bituminous coal as their primary fuel source. Bituminous coals generally have high mercury, chlorine, and sulfur contents and low calcium content, resulting in a high percentage of oxidized mercury. This type of mercury has a residence time of a few days and is deposited near the source of the release. Therefore, it is not a suitable candidate for emission trading against emission reductions in other regions because it results in hot spots.

Comment 4: These commentators concern about the public health impacts posed by mercury pollution to humans through the consumption of mercury-contaminated fish. Mercury is a bio-accumulative toxin that builds up in body tissue by eating fish contaminated with mercury. A potent neurotoxin, mercury poses significant human health hazards. Mercury can affect multiple organ system, including the nervous, cardiovascular, and immune systems, through out an individual’s life. Infants and children are at higher risk of problems associated with mercury exposure because their nervous systems continue to develop until about age 14. These public health problems carry them with economic costs.

Response: Thank you for sharing with the Department your concerns about mercury contamination and its threat to health. The Department agrees that the detrimental health effects of mercury exposure are well documented. Even EPA acknowledges on its website that “For fetuses, infants, and children, the primary health effect of methylmercury is impaired neurological development. Methylmercury exposure in the womb, which can result from a mother’s consumption of fish and shellfish that contain methylmercury, can adversely affect a baby’s growing brain and nervous system. Impacts on cognitive thinking, memory, attention, language, and fine motor and visual spatial skills have been seen in children exposed to methylmercury in the womb...” In addition, Dr. Calvin Johnson of the Pennsylvania Department of Health referenced several studies in his June 2006 testimony before the Pennsylvania Senate’s Environmental Resources and Energy Committee. He stated in his discussion of “Mercury Effects on Human Health” that “...[a] study by the National Academy of Sciences (NAS) concluded that human exposure to methylmercury from eating contaminated fish and seafood is associated with adverse neurological and developmental health effects. This further confirms that women of childbearing age and pregnant women represent sensitive populations. NAS found that chronic low dose prenatal methylmercury exposure has been associated with poor performance on neurobehavioral tests by children, measured by language ability, fine motor skills and intelligence. Adults can be affected by high mercury exposures as well, with effects on the nervous system and impaired vision and hearing. Also, there are two published studies showing an association between low level methylmercury exposure and cardiovascular effects. One of these studies reported, based on an investigation of 1,000 seven year-old children in the Faroe Islands, mercury ingestion increased the diastolic and systolic blood pressures by 13.0 and 14.6 mm Hg, respectively, as the cord-blood mercury increased from 1 to 10 micrograms/liter. The other study showed that 1,833 Finnish men with hair mercury levels of 2 parts per million or higher had twice the risk of acute myocardial infarction than the rest of the study population...”

Comment 5: Mercury pollution poses a significant threat to our natural environment. Mercury’s threat to our environment extends to waterways, vegetation and a variety of animal species beyond fish.

Response: Thank you for sharing your concerns about the effects of mercury contamination on the health and welfare of Pennsylvania’s environment, animals and fish with the Department. The PA-specific mercury regulation will reduce the threat to environmental health and welfare from the effects of mercury. The final-form regulation will require EGU owners and operators to comply with both an emissions standard and an annual emission limitation to ensure that mercury emissions do not exceed the “firm caps” for affected EGUs in Pennsylvania. In addition to the mercury emission limitation requirements of § 123.207, the owner or operator of an existing EGU

subject to the requirements of § 123.203 must comply on a rolling 12-month basis with either an emission rate or percent control of total mercury. During Phase 1, which will remain in effect from January 1, 2010, through December 31, 2014, pulverized coal-fired EGUs must comply with either a mercury emission standard of 0.024 pounds of mercury per gigawatt-hour (lb/GWh) or achieve a minimum 80% control of total mercury as measured from the mercury content in the coal as fired. The owners and operators of circulating fluidized bed (CFB) EGUs must achieve a mercury emission standard of 0.0096 lb/GWh or a minimum 95% control of total mercury as measured from the mercury content in the coal as fired. Phase 2 of the program, which begins on January 1, 2015 and continues each year thereafter, establishes a mercury emission standard of 0.012 lb/GWh or a minimum 90% control of total mercury as measured from the mercury content in the coal as fired for pulverized coal-fired EGUs. The owners of CFB EGUs must continue to meet either the mercury emission standard of 0.0096 lb/GWh or achieve a minimum 95% control of total mercury as measured from the mercury content in the coal as fired starting on January 1, 2015. These emission standards are designed to achieve actual mercury emission reductions at each EGU facility.

Comment 6: The CAMR is bad for Pennsylvania.

Response: The Department agrees with the comment that CAMR is bad for Pennsylvania. The Department has previously stated the many reasons why the trading of mercury is both a bad idea and illegal under the Clean Air Act. In addition, even EPA's Office of Inspector General raised concerns with the adequacy of EPA's CAMR. In May 2006, Acting Inspector General Bill Roderick stated in the conclusion of the OIG Evaluation Report, "Monitoring Needed to Assess Impact of EPA's Clean Air Mercury Rule on Potential Hotspots Report No. 2006-P-00025," that "...EPA has acknowledged uncertainties and limitations in its analysis of the potential for "utility-attributable" hotspots. The results from two studies – the Mechanisms of Mercury Removal Study and the Steubenville Study – illustrate uncertainties about some of the key assumptions used in the Community Multiscale Air Quality (CMAQ) numerical simulation model and the deposition results projected by the model. Further consideration of uncertainties could alter EPA's conclusions about the potential for "utility-attributable" mercury hotspots

Comment 7: There are a number of technologies that exist which can drastically reduce mercury pollution from Pennsylvania's coal-fired power plants.

Response: The Department agrees and has determined that a control technology combination of cold side-ESP and FGD would result in at least 80% control efficiency of mercury emissions from coal-fired power plants in Pennsylvania. Moreover, a control technology combination of cold side-ESP, FGD, and SCR would result in at least 90% control efficiency of mercury emissions from coal-fired power plants in Pennsylvania. Because of this determination, the Department has selected the 80 and 90% control efficiencies as requirements for the Pennsylvania specific mercury regulation. In addition, the Department has selected the Phase 1 and Phase 2 compliance dates of 2010 and 2015, because they coincide with the deadlines under CAIR.

Additionally, the Institute of Clean Air Companies (ICAC) found that air pollution control vendors are reporting booking new contracts for mercury control equipment for more than a dozen power plant boilers. The contracts for commercial systems are attributed to federal and state regulations, including new source permit requirements and consent decrees, which specify high levels of mercury capture.

Moreover, a Congressional Research Service Report, April 15, 2005, stated that EPA's own Office of Research and Development (ORD), in a white paper posted on the EPA website March 2, 2004, appears to conclude that technology is more available and more effective than is maintained in the agency's CAMR rulemaking. ORD found that fabric filters, a relatively simple technology that is currently installed on more than 12% of power plants, achieve a 90% reduction in mercury emissions at bituminous coal plants and a 72% reduction at sub-bituminous plants. The addition of a scrubber increased the emission reduction to 98% at bituminous plants, according to ORD. The white paper further stated that, by 2010, activated carbon injection (ACI) with a fabric filter "has the potential to achieve 90% Hg reduction" on any rank of coal, and could be installed within 1-2 years of signing a contract to do so.

Robert J. Barkanic, Director- Environmental
PPL Services Corp.
Commentator #7

Comment 1: The commentator states that remaining within the CAMR allocations very likely requires substantially greater capture of the total mercury in the coal and may well exceed the limits of current technology. Other than providing for a supplemental pool of allowances (which is likely to have insufficient allowances in it, as explained below), the Proposed Rule and Mercury Plan contain no provision for EGU facilities facing such technological impracticability to be able to operate and remain within the state's CAMR budget.

As the URS Report indicates, there are simply no control technologies in which there is any degree of confidence that will produce this capture efficiency on a reliable basis. (URS Report at 6, 22, 25.) Compliance with a requirement that each facility achieve its CAMR-based allocation is thus anything but assured.

While Pennsylvania EGUs will make a significant reduction in mercury emissions based on the mandated 90% capture efficiency, they will not meet the CAMR "firm cap" and it is unlikely to be technologically feasible to do so.

As noted above, the allowance pool is unlikely to provide any relief, since all Pennsylvania EGUs will be faced with the same dilemma and are thus unlikely to have any excess allowances available for the supplemental pool. In other words, since it is highly unlikely that it will be technologically feasible to meet the cap at a particular facility, it will likewise be infeasible to "over control" and generate additional allowances.

Units are likely to be unable to reliably achieve capture efficiencies in excess of 95% (URS Report at 4, 6, 24) and will not be able to meet their individual facility caps. In the aggregate, Pennsylvania therefore will not be able to demonstrate that it meets the statewide firm cap. Only some level of interstate trading will allow Pennsylvania EGUs to meet the CAMR-based cap.

Response: The estimates of required control from coal to stack for Phase 1 and Phase 2 are between 86% and 94% respectively. These estimates are based on the estimates of mercury coal contents included in the 1999 EPA data gathered from the facilities and the 2003 heat input data. Data acquired by the Department shows that coal washing is a viable pretreatment option. For example, the data from a facility shows an average "as received" mercury content of 26.73 lbHg/Tbtu. The average "as washed" mercury content is 12.93 lbHg/Tbtu. This translates into an average removal of 40.45%. The test data from the same facility also indicates a coal-stack mercury removal efficiency of about 97.9%, which was achieved with the existing control configuration of wet scrubber (SO₂ control), selective catalytic reduction system (NO_x control) and cold side-ESP (particulate matter control). With the coal cleaning and other available control options the Department believes that there is sufficient data available to show that both conventional and mercury-specific technologies can achieve the required levels of mercury emission reductions. Furthermore, the final-form regulation allows for the pretreatment of coal and system-wide compliance demonstration as additional means to demonstrate compliance.

In response to the URS Report, the Department has determined that effective mercury control technology does exist to significantly reduce mercury emissions from EGUs. Furthermore, mercury control technology is presently being implemented at a number of air pollution emitting sources, and recent testing of mercury control technologies on coal-fired utilities has been shown to be effective in reducing mercury emissions.

Comment 2: The State's Proposed Rule and Mercury Plan will either jeopardize the electric supply for the state (if the facilities must curtail operation), or jeopardize compliance with the state's CAMR budget (if the facilities do not curtail operation).

To the extent that the electricity supply is not made up by up-wind states, curtailment would jeopardize the electricity supply in Pennsylvania. This is because such curtailments could be quite substantial. The Department itself, anticipates through its waiver provision that certain EGUs may not be able to achieve even the 80% and 90% capture requirements, much less the 95-98% capture that might be required to achieve their CAMR-based caps. EGUs would be expected to use curtailments as a strategy to achieve the caps as a last resort, when any possibility of distributions from the supplemental allowance pool is exhausted and the end of the compliance period with inadequate allowances remaining approaches. This would magnify the impact on the electricity supply as EGUs in Pennsylvania simultaneously curtail generation due to the caps, and jeopardize electricity supply reliability.

Response: The Department strongly disagrees with the commentator's statement that Pennsylvania state-specific mercury regulation will have a negative impact on electricity generation and jeopardize supply reliability. The Pennsylvania mercury regulation and Stated Plan are designed, in part, to take advantage of the co-benefit reductions that will occur under CAIR, designed to reduce SO₂ and NO_x emissions from EGUs. The Phase 1 and Phase 2 timeframes under the Pennsylvania rule coincide with the timeframes under CAIR. As a result, the owners and operators of EGUs are not disadvantaged under this timeframe, and there should not be any reliability concerns for delivery of power over the electric grid. It is anticipated that the majority of EGUs in the Commonwealth will opt to comply with both phases of the rule using existing WFGD and SCR technology, which will be necessary in order to comply with CAIR. While some EGUs may opt to install mercury specific control technology, the Department believes that there are a number of currently available control technologies that coal-fired power plants can use to reduce their emissions of mercury to the atmosphere, which will result in a minor cost increase on a cents per KWh basis.

For Phase 1 the total annualized cost (capital and operating) of mercury- specific control technology that EGUs may opt to install beyond CAIR to comply with the Pennsylvania specific mercury rule would be \$15.4 million per year. The total cost of purchasing mercury allowances (at \$953 per ounce, according to a U.S. Department of Energy estimate) if EGUs did not do anything beyond CAIR in order to comply with CAMR would be \$15.7 million per year. As a result, the total cost of complying with the Pennsylvania-specific mercury rule for Phase 1 would be no more than the cost of complying with CAMR.

The Phase 2 cost range is based on the control technologies needed to meet the annual limit. The high end cost estimate is based upon using TOXECON/COHPAC at an annual cost of \$53.4 million. The low end is based upon utilizing BACI at an annual cost of \$16.7 million. The capital costs for each of these technologies were annualized based upon 20 years and an interest rate of 10 percent. The Phase 2 mercury allowance cost was estimated to be \$28.3 million annually based upon the assumption of allowances costing \$41,900/lb. This allowance cost is based on an average from DOE projected costs for 2015 and 2030.

The cost differential between allowance costs and technology costs were \$25.1 million on the high end and a savings of \$11.6 million on the low end. The total kilowatt-hours calculated for the 18 units that will not be installing CAIR controls to meet the Phase 2 requirements are 13,748,394,000. The resulting cost per kilowatt-hour ranges from \$0.0018/KWh for the use of the TOXECON/COHPAC control technology to \$0.00084/KWh for using BACI to comply with the Phase 2 limits.

Because of these analyses, the Department concludes that the costs related to the control of mercury emissions from coal-fired EGUs are reasonable and that any increased cost in electricity is insignificant on a dollar per kilowatt-hour basis. As a result, there should not be any competitive disadvantage in the marketplace.

Comment 3: The allowance pool is unlikely to provide any relief, since all Pennsylvania EGUs will be faced with the same dilemma and are thus unlikely to have any excess allowances available for the supplemental pool. In other words, since it is highly unlikely that it will be

technologically feasible to meet the cap at a particular facility, it will likewise be infeasible to "over control" and generate additional allowances.

Response: The final-form regulation and State Plan will provide additional compliance options. The Department has added the option of a system-wide compliance demonstration to the final-form regulation to address the commentator's concerns regarding incentives for early reductions. Under this approach owners or operators of two or more affected EGUs under common ownership or operator control within this Commonwealth may achieve compliance with the annual mercury emission limitation by ensuring that the aggregate of actual mass emissions from all units, under the system-wide demonstration, is less than or equal to the aggregate of allowable mass emissions from all such units.

After Phase 1 of the program, it is anticipated that the Pennsylvania rule would achieve a 29% greater reduction than CAMR. This would amount to 1.263 tons (2,526 lbs) of mercury emissions as opposed to 1.779 tons (3,558 lbs) of mercury emissions under the CAMR cap. After Phase 2, it is anticipated that the Pennsylvania rule would achieve a 39% greater reduction than what would be achieved by CAMR under Phase 2. This would mean that Pennsylvania would achieve its cap of 0.702 ton (1,404 lbs) by 2015 rather than exceeding it by 0.451 ton (902 lbs).

Comment 4: The commentator states that although the proposed Pennsylvania rule provides for a waiver in the case of technological or economic infeasibility, this provision is either meaningless or counterproductive. It is meaningless if it is applied as written because the waiver only applies on its face to the emission standard, not the cap.

Response: The Department believes that the state-of-the-art mercury control technology is such that each unit EGU owner or operator can, if the appropriate measures are taken, meet its emissions cap. The Department will retain the unused nontradable allowances in the annual emission limit supplement pool. Where an owner or operator is still not able to demonstrate compliance with either the emission standards or the emission limitations, petition processes for Department approved alternate emission standards, compliance schedules and emission limitations may be used. The petition process will ensure that those units that have demonstrated the most effort in reducing their mercury emissions will be foremost on the list to receive allowances. The Department has also revised § 123.207(p) of the final-form regulation to include the option of system-wide compliance demonstration. This provision allows the owners or operators of two or more affected EGUs under common ownership or operator control within this Commonwealth to demonstrate compliance by ensuring that the aggregate of actual mass emissions from all units, under the system-wide demonstration, is less than or equal to the aggregate of allowable mass emissions from all such units. This compliance option will be in addition to the options included in the proposed rulemaking for compliance on a unit-by-unit basis or by facility-wide compliance demonstration. This will allow owners and operators to shift allowances from units in their system that over-control to those that aren't meeting their caps.

Comment 5: In order to stay within the cap, EGUs will have to curtail operations. Requiring curtailments is not an appropriate strategy to assure that EGUs in Pennsylvania will achieve their CAMR-based caps. First, it could be counterproductive in controlling mercury emissions in Pennsylvania, if electricity supply is made up by EGUs outside (and likely upwind) of Pennsylvania, who have no such restrictions imposed on them. The commentator states that requiring curtailments will turn out to be unenforceable and thereby jeopardize Pennsylvania's ability to comply with CAMR. Requiring that EGUs facing technical impracticability curtail generation as a means to meet their caps even after they have received a waiver from their 80% and 90% capture requirements would seem unreasonable, and courts might well agree that requirements for such curtailment are unenforceable. For these reasons, a court would likely agree that requiring curtailments to comply with the cap is unreasonable and unenforceable. And without such curtailments, Pennsylvania's mercury emissions will likely exceed its overall CAMR budget. Under these circumstances, compliance with that budget certainly is not assured.

Response: The Department doesn't believe that the final-form mercury regulation will result in curtailment of operations. It is the Department's belief that the technology exists today to meet the emission standards in 25 Pa. Code § 123.205 in the specific Phase 1 and 2 timeframes. The Department has determined that a control technology combination of cold side-ESP and FGD would result in at least 80% control efficiency of mercury emissions from coal-fired power plants in Pennsylvania. Moreover, a control technology combination of cold side-ESP, FGD, and SCR would result in at least 90% control efficiency of mercury emissions from coal-fired power plants in Pennsylvania. Because of this determination, the Department has selected the 80% and 90% control efficiencies as requirements for the Pennsylvania-specific mercury regulation. In addition, the Department has selected the Phase 1 and Phase 2 compliance dates of 2010 and 2015, because they coincide with the deadlines under CAIR.

New PCF EGUs operate at approximately 35% efficiency and must achieve at least 90% control efficiency, which results in an output-based mercury emission standard of 0.011 lbHg/GWh. Existing PCF EGUs operate at approximately 32% efficiency and must achieve at least 80% control efficiency for Phase 1 for an output-based mercury emission standard of 0.024 lbHg/GWh. The existing PCF EGUs must achieve at least 90% control efficiency for Phase 2 to result in an output-based mercury emission standard of 0.012 lbHg/GWh.

Injection of dry sorbents, such as powdered activated carbon (PAC), has been used for control of mercury emissions from waste combustors since 1994 and has been tested at numerous utility units in the United States. Testing has primarily focused on removal of mercury from the flue gas of low rank (lignite and sub-bituminous coals) coals, since this is more difficult than mercury removal from flue gas of bituminous coal fired units. Mercury removal greater than 90% across the emission control system was generally possible.

Activated carbon injection (ACI) systems have been sold for installation on 21 coal-fired utility boilers in the US. Seven of these units use ACI enhanced with bromine. The Institute of Clean Air Companies (ICAC) lists these sales. Moreover, a Congressional Research Service Report dated April 15, 2005, stated that EPA's own Office of Research and Development (ORD), in a white paper posted on the EPA website March 2, 2004, appears to conclude that technology is more available and more effective than is maintained in the agency's CAMR rulemaking. EPA's ORD found that fabric filters, a relatively simple technology that is currently installed on more than 12% of power plants, achieve a 90% reduction in mercury emissions at bituminous coal plants and a 72% reduction at sub-bituminous plants. The addition of a scrubber increased the emission reduction to 98% at bituminous plants, according to ORD. The white paper further stated that, by 2010, activated carbon injection (ACI) with a fabric filter "has the potential to achieve 90% Hg reduction" on any rank of coal, and could be installed within 1-2 years of signing a contract to do so.

Comment 6: Pennsylvania's Section 111(d) Plan for complying with CAMR is inadequate and does not meet Pennsylvania's legal requirements. It is not sufficient to submit a Plan that proposes to meet the CAMR-based cap by simply dictating that all EGUs must comply with that cap when the underlying regulation eliminates the only reasonably available mechanism to achieve compliance —interstate trading.

Response: The Department's Section 111(d) State Plan relies upon the final-form mercury regulation to implement a detailed program of mercury emission reductions from coal-fired EGUs. The final-form regulation, which is an element of the State Plan, consists of specific maximum mercury emission levels for each EGU, along with a suite of compliance options, and a petition process for alternate emission standards, emission allowances and compliance schedules. The Department's mercury "Decision Document" and extensive response to comments on the proposed Mercury Regulation explain in detail the basis for the Department's final-form regulation and how it will achieve compliance with Pennsylvania's mercury emission caps from CAMR.

Comment 7: The DEP's Mercury Plan and the underlying regulation fail to satisfy the requirements of Section 111(d).

Response: The Department strongly disagrees. The Department has exhaustively demonstrated through its mercury “Decision Document”, its extensive response to comments on the proposed Mercury Regulation and it’s the Section 111(d) State Plan how the agency will meet its obligation to achieve the CAMR requirements of a Phase 1 cap of 1.779 tons and the Phase 2 emission cap of 0.708 tons. The Section 111(d) plan and the underlying Pennsylvania Mercury Rule provide both a legally approvable process and a program that can be implemented as a practical matter designed to ensure that EGUs in Pennsylvania meet those emission caps.

Comment 8: Pennsylvania's Plan should be amended to allow for interstate trading in conjunction with minimum technology requirements as further discussed in the commentator’s comments to the Proposed Rule.

Response: The Department does not believe this contention is correct. Coal-fired power plants that burn bituminous coal emit oxidized forms of mercury, which are deposited near their source. In Pennsylvania, 85 % of the coal burned by coal-fired power plants is bituminous, with the remainder waste coal. As a result, Pennsylvania would not see reductions in actual emissions of mercury within the environs of the Commonwealth and may even see increased emissions, if power plants in Pennsylvania were allowed to purchase allowances from out-of-state sources rather than installing controls.

These concerns regarding “paper” reductions and potential increases in actual emissions of mercury have a historical basis under the Title IV provisions of the Clean Air Act. In Pennsylvania the total current sulfur dioxide (SO₂) acid rain allowances equal 540,000. Pennsylvania EGUs emit about 1,000,000 tons per year of SO₂. Therefore, Pennsylvania currently imports about 460,000 SO₂ allowances per year from reductions in other states. The trading of mercury allowances under CAMR may mimic the acid rain program. The cap-and-trade approach under CAMR may result in hot spots to which the Commonwealth is particularly susceptible given that all 36 of Pennsylvania’s coal-fired utilities burn bituminous coal as their primary fuel source. Bituminous coals generally have high mercury, chlorine and sulfur contents and low calcium content, resulting in a high percentage of oxidized mercury. This type of mercury has a residence time of a few days and is deposited near the source of the release. Therefore, mercury is not a suitable candidate for emission trading against emission reductions in other regions because it may result in hot spots. In addition, trading allowances will not reduce exposure to methylmercury expeditiously.

Suzanne Seppi, Project Manager, Group Against Smog and Pollution-Commentator #8

Joseph Otis Minott, Clean Air Council - Commentator #9

Alisha Deen-Steindler, Eastern Pa Director, Clean Water Action - Commentator #10

Comment 1: The commentators support the Department’s proposed plan and accompanying rule because it is more stringent than the EPA CAMR. The Departments proposal will accomplish more reductions in a shorter time than CAMR. The Department’s rule does not allow for the CAMR cap and trade provision there by ensuring that Pennsylvania utilities cannot continue to avoid mercury emission reductions for an elongated amount of time. A commentator quoted the Governor’s declaration indicating that the federal rule if adopted will cause Pennsylvanians to continue to face exposure to dangerous levels of mercury and the Pennsylvania coal industry will face significant economic harm because of the federal rule’s unfair market barriers. A commentator stated that in a presentation given on August 31 at the Joint Meeting of the Air Quality Technical Advisory Committee, Citizens Advisory Council, and Mercury Rule Workgroup, DEP noted in their presentation that more than 60 health-affected, health, women's, children's, sporting, faith-based, environmental and conservation organizations around the state support the Pennsylvania rule. Over 100 hunting and angling clubs around the state support the rule. Over 100 medical

experts and faith leaders around the state have co-signed letters in support of the state-specific rule. A commentator is among this supportive group and recommends that the Environmental Protection Agency approve the DEP Pennsylvania State Specific Plan to Control Mercury Emissions as meeting the federal requirements of CAMR. Another commentator pointed out that Pennsylvania joins the company of more than twenty states that have adopted or are moving to adopt regulations stricter than EPA's. (8, 9, 10)

Response: The Department agrees. The Clean Air Mercury Rule (CAMR) does not require any specific reductions in mercury emissions by the owners or operators of any specific EGU facility. Due to the CAMR cap-and-trade provisions, the owners and operators of a facility that emits mercury beyond its CAMR allowance level can purchase allowances from credits generated at a facility anywhere in the U.S that emits below its CAMR allowance level. A large portion of the mercury emission reductions that will occur will be as a result of co-benefit reductions occurring where a Clean Air Interstate Rule (CAIR) compliance plan for a facility to reduce both its NOx and SOx emissions involves the installation of selective catalytic reduction (SCR) and wet flue gas desulfurization (WFGD) control technologies. The NOx emission control equipment of SCR oxidizes the elemental mercury of the mercury emissions, which makes the removal of mercury emissions even more efficient by the WFGD controls. However, if a facility only reduces its NOx emissions with a SCR control to meet the CAIR requirements, but does not also use a WFGD for SOx control, then this will result in much higher quantities of the ionic form of mercury being emitted and deposited nearby, which will result in a much greater negative mercury impact on the nearby environment. This is just one example of why cap-and-trade is not appropriate for a pollutant such as mercury.

Additionally, under the federal CAMR mercury emissions trading provision, it is even possible that mercury emissions in Pennsylvania could actually increase because there would not be any regulatory ability to restrict actual emission increases due to the importation of out-of-state allowances. Another important problem with EPA's national mercury emissions trading provisions under CAMR is that it allows significantly less control of mercury in one area compared to another; and it allows emissions to be further increased through the use of banked allowances from previous years. Allowing mercury emission reductions to be used in different control periods will further the delay of the real mercury emission reductions. The federal General Accounting Office evaluation of CAMR states that the mercury emission levels that are required by 2018, during the second Phase of the required CAMR reductions, will not actually occur until 2030 or later. This will result in a larger burden of mercury being emitted into the ecosystem over time and a significant lengthening of the time exposure to these emissions.

The Department's State-specific mercury regulation assures a specific maximum level of actual mercury emissions from Pennsylvania utilities, and assures that these levels are achieved in a much shorter time than CAMR. The Phase 2 mercury emissions caps will be achieved in Pennsylvania by 2015, not 2018 which translate into 2030 because of emissions trading under CAMR. Furthermore, in Pennsylvania each and every owner or operator of an electric generating facility will make significant reductions in their mercury emissions at each and every one of their facilities. This is not the case under CAMR.

Public support for the development of a "state-specific" rulemaking is undisputed. During the public comment period, comments on the proposed rulemaking were submitted to the Environmental Quality Board by an estimated 10,934 commentators. More than 99% of the comments submitted were in support of a more protective "state-specific" rulemaking. Thank you for your support of the Department's proposed Pennsylvania-specific mercury emissions reduction rule.

Comment 2: The commentators provided information about the health effects of mercury exposure, focusing on the mercury blood levels in pregnant women and the associated neurological effects on the developing fetus, along with supporting references from which the discussed health effects were derived. (8, 9)

Response: Thank you for sharing with the Department your concerns about mercury contamination and its threat to health. The Department agrees that the detrimental health effects of mercury exposure are well documented. Even EPA acknowledges on its website that "For fetuses, infants, and children, the primary health effect of methylmercury is impaired neurological development. Methylmercury exposure in the womb, which can result

from a mother's consumption of fish and shellfish that contain methylmercury, can adversely affect a baby's growing brain and nervous system. Impacts on cognitive thinking, memory, attention, language, and fine motor and visual spatial skills have been seen in children exposed to methylmercury in the womb....” In addition, Dr. Calvin Johnson of the Pennsylvania Department of Health referenced several studies in his June 2006 testimony before the Pennsylvania Senate’s Environmental Resources and Energy Committee. He stated in his discussion of “Mercury Effects on Human Health” that “...[a] study by the National Academy of Sciences (NAS) concluded that human exposure to methylmercury from eating contaminated fish and seafood is associated with adverse neurological and developmental health effects. This further confirms that women of childbearing age and pregnant women represent sensitive populations. NAS found that chronic low dose prenatal methylmercury exposure has been associated with poor performance on neurobehavioral tests by children, measured by language ability, fine motor skills and intelligence. Adults can be affected by high mercury exposures as well, with effects on the nervous system and impaired vision and hearing. Also, there are two published studies showing an association between low level methylmercury exposure and cardiovascular effects. One of these studies reported, based on an investigation of 1,000 seven year-old children in the Faroe Islands, mercury ingestion increased the diastolic and systolic blood pressures by 13.0 and 14.6 mm Hg, respectively, as the cord-blood mercury increased from 1 to 10 micrograms/liter. The other study showed that 1,833 Finnish men with hair mercury levels of 2 parts per million or higher had twice the risk of acute myocardial infarction than the rest of the study population....”

Comment 3: The proposed Section 111(d) State Plan contains detailed information that demonstrates that it will meet the requirements of the CAMR and provides other necessary information such as:

- Confirmation that the state emission standards will be based on a CAMR "not to exceed" cap.
- A demonstration that Pennsylvania will comply with the state's annual electric generating unit mercury budget.
- Specification of the test methods and procedures that will be used for determining compliance.
- Inclusion of language that indicates that the final compliance will be set no later than the published compliance date.
- A demonstration that Pennsylvania has the legal authority to administer the plan.

The commentator believes that Pennsylvania has met such requirements and also that the state expects to make some changes that would include concerns that EPA and other commentators expressed during the previous public comment process concerning the DEP Pennsylvania Specific Plan.

The commentator further stated that there has been an extensive public comment opportunity for the public regarding the DEP Pennsylvania Mercury Plan with three public hearings. A Joint Meeting of the Air Quality Technical Advisory Committee, Citizens Advisory Council, and Mercury Rule Workgroup met on August 31, 2006 to discuss the proposed DEP Pennsylvania Mercury Control Rule, to see summary comments from different sectors including EPA and to update the Plan with changes based in part on analysis of the comments. This has been very helpful to the public participation process. However, it would be a better situation for the public if these proposed changes in the August 31, 2006 DEP presentation were incorporated into specific language in the DEP Pennsylvania Plan for requested public comment (due September 8, 2006) with respect to the Pennsylvania Plan § 111 (d) of the Federal Clean Air Act. (8)

Response: The Department appreciates the commentators’ statements of support. The Department has provided extensive opportunities for public comment. The revised version of the final-form mercury regulation, Annex A, is available on the web at: <http://www.depweb.state.pa.us/pubpartcenter/cwp/view.asp?a=3&q=504724>.

Comment 4: The commentator states that both the Department's rule and the STAPPA/ALAPCO model rule are in accordance on an 80% capture for Phase 1 and approximately 90% capture for Phase 2. However, the commentator believes that the Department should adopt lower mercury emission rates and percent control requirements, than those proposed in the Department’s mercury regulation, at those levels represented in the STAPPA/ALAPCO model rule proposal, which they believe are achievable and would be in the public's best, interest. Though the commentator does acknowledge the Department's commitment to develop the proposed mercury rule with stakeholder input and the antipathy of some legislators to the proposed rule. (9)

Response: While developing its proposed rulemaking, the Department carefully evaluated all of the available data for achieving the 80% control level in Phase 1 and the 90% control level in Phase 2, along with the total emission reductions needed to meet Pennsylvania's mercury CAMR caps. This evaluation involved all known, available mercury control equipment and technologies along with Pennsylvania specific mercury emissions and mercury-in-fuel data. At the time of the finalization of the Pennsylvania specific mercury regulation, the Department established the mercury emission standards for the EGUs at levels that were supported by the available data. The Department's Phase 1 and Phase 2 timeframes were established considering the time needed to install mercury reduction equipment that has either already been applied for permit with the Department or may need to be installed.

Comment 5: The commentator states that the Department's proposed rule gives owners/operators of EGUs more time to cut their mercury emissions than would the STAPPA/ALAPCO model rule, thereby allowing more mercury pollution to enter the environment. Given the general consensus on the harm caused by mercury, it seems wise to speed up the compliance dates as reflected in the STAPPA/ALAPCO model rule. The commentator acknowledges the Department's commitment to develop the proposed mercury rule with stakeholder input and the antipathy of some legislators to the rule.

The Department's rule for existing units has Phase 1 compliance ending December 31, 2014 and Phase 2 compliance effective January 1, 2015 and each subsequent year thereafter. In the STAPPA/ALAPCO model rule, the compliance period for Phase 1 ends 2008 and for Phase 2 ends 2012. The Department's timeframe is, however, better than EPA's because the Department's timeframe achieves greater reductions in mercury emissions in a shorter timeframe. (9)

Response: While developing its proposed rulemaking, the Department carefully evaluated all of the available data for achieving a minimum level of mercury control, as well as, the total mercury emission reductions that could be achieved in Pennsylvania's to meet the CAMR mercury caps. This evaluation involved all known, available mercury control equipment and technologies along with Pennsylvania specific mercury emissions and mercury-in-fuel data. At the time of the finalization of the Pennsylvania specific mercury regulation, the Department established the mercury emission standards for the EGUs at levels that were supported by the available data. The Department's Phase 1 and Phase 2 timeframes were established with regard to how quickly the needed installation of mercury reduction equipment could be achieved for those control proposals that have already been applied for a permit with the Department and for those that may need to be installed.

Comment 6: As a matter of public policy the commentator does not favor presumptions of compliance. While the evidence supports the belief that several technologies designed for controlling pollutants other than mercury are capable of achieving substantial reductions in mercury emissions, each plant should be required to demonstrate actual compliance with the Department's mercury reduction requirements. (9)

Response: The Department understands the commentators concerns. The presumptive provisions of paragraphs (b)(1), (2) and (3) of § 123.206 in the proposed rulemaking were applicable only to units burning 100% bituminous coal for the demonstration of compliance with the requirements of § 123.205 (relating to emission standards for coal-fired EGUs). The Department has deleted the presumptive provisions of paragraphs (b)(1), (2) and (3) of § 123.206 from the final-form regulation due to the constitutionality concerns raised by several commentators.

Comment 7: The Department's mercury rule does not allow trading of mercury emissions credits, therefore making it preferable to EPA's mercury trading scheme. The commentator strongly supports the Department's decision to propose a rule that does not provide for trading of toxics such as mercury.

According to a report by the Congressional Research Service, EPA's cap-and-trade-plan would fail egregiously to meet mercury reduction goals. The mercury reductions called for under the EPA cap-and-trade scheme would take at least 12 years beyond the target date to actually accomplish. The cap-and-trade approach will allow coal-fired power plants to purchase emissions reductions credits from other plants that have reduced their emissions below targeted levels, resulting in polluters having the opportunity to pass the mercury "buck" rather than actually being forced to install new pollution controls at their own plants. EPA's mercury rule sets national caps on mercury emissions from coal burning power plants of 38 tons per year by 2010—an abysmal 21% reduction. It then cuts

further emissions to 15 tons per year which EPA claims will result in a 70% reduction by 2018. The high emission limits and the unreasonably protracted deadlines render EPA's rule close to meaningless. Furthermore, EPA's own analyses suggest that the reductions actually achieved under the rule will be closer to 50% or 24.3 tons by 2020. Fortunately, a number of states and health advocates are challenging EPA's rule. (9)

Response: The Department agrees. While CAMR establishes a two-phase mercury budget for Pennsylvania at 1.779 tons (3,558 lbs) per year from 2010 through 2017 for a 64% reduction from 1999 baseline emission levels and 0.702 tons per year for 2018 and every year thereafter for a 86% reduction from 1999 baseline emission levels, CAMR does not specifically require the owners or operators of any EGU to reduce mercury emissions to any specific level. Because of the trading provisions under CAMR, owners and operators of EGUs in Pennsylvania do not have to make reductions in Pennsylvania. They can purchase allowances to offset the amount of mercury they emit over their cap to ensure compliance, which means that reductions in Pennsylvania may only be realized on paper. Moreover, mercury emissions in Pennsylvania may be much higher than EPA projects. In fact, EPA concedes that due to the banking and trading provisions of CAMR, projected reductions may not be achieved until 2026 or later.

These concerns regarding "paper" reductions and increased actual emissions have a historical basis under the Title IV provisions of the CAA. In Pennsylvania the total current SO₂ acid rain allowances equal 540,000. The owners and operators of Pennsylvania EGUs emit about 1,000,000 tons per year of SO₂. Therefore, Pennsylvania currently "imports" about 460,000 SO₂ acid rain allowances per year from reductions in other states. The trading of mercury allowances under CAMR may mimic the acid rain program. CAMR's cap-and-trade approach may result in hot spots to which the Commonwealth is particularly susceptible given that all 36 of Pennsylvania's coal-fired utilities burn bituminous coal as their primary fuel source. Bituminous coals generally have high mercury, chlorine, and sulfur contents and low calcium content, resulting in a high percentage of oxidized mercury. This type of mercury has a residence time of a few days and is deposited near the source of the release. Therefore, it is not a suitable candidate for emission trading against emission reductions in other regions because it results in hot spots.

Comment 8: The commentator states that the pernicious result of EPA's cap-and-trade approach will be high levels of mercury pollution remaining at plants that choose not to reduce their emissions. Localized high levels of pollution can create mercury hot spots. Although EPA has made much of the fact that mercury emissions can travel great distances, the evidence suggests that much of the pollutant is deposited near its source. In fact, there is recent evidence to show that sources of mercury can have significant local impacts. In November 2003, the state of Florida published a study entitled Integrating Atmospheric Mercury Deposition with Aquatic Cycling in South Florida, which estimated how quickly fish tissue levels respond to decreased regional mercury emissions. According to state officials, drastic reductions in the mercury concentrations in fish and wading birds in the Everglades are directly linked to the installation of technology that reduced mercury in emissions from industries in South Florida by 100-fold during the last two decades."

Research at a monitoring site in Steubenville, Ohio conducted by EPA itself has in fact shown that wet mercury deposition rates from local coal-fired industrial sources are many times higher than EPA's projections. In the Steubenville study, EPA found that nearly 70% of the mercury in rain collected at the Steubenville site originated from near-by coal-fired industrial plants.

EPA has likened the mercury-trading proposal to the acid rain trading program that is in place. Indeed, this has become the mantra of many utilities. Such a comparison is not appropriate because of the kinds of pollutants in question. The acid rain program focuses mainly on non-toxic emissions that contribute to welfare effects. The mercury rule focuses on mercury, which is a neurotoxin with serious health effects. The two programs are not comparable. (9)

Response: The Department agrees with these comments and believes the studies cited support the Pennsylvania specific mercury regulation requirements that prohibit the trading of mercury emissions under the federal CAMR cap-and-trade provisions. While CAMR establishes a two-phase mercury budget for Pennsylvania at 1.779 tons (3,558 lbs) per year from 2010 through 2017 for a 64% reduction from 1999 baseline emission levels and 0.702 tons per year for 2018 and every year thereafter for a 86% reduction from 1999 baseline emission levels, CAMR does not specifically require the owners or operators of any EGU to reduce mercury emissions to any specific level.

If the trading provisions under CAMR were implemented in this Commonwealth, owners and operators of EGUs in Pennsylvania would do not have to make reductions at each EGU. They could purchase allowances to offset the amount of mercury they emit over their cap to ensure compliance, which means that reductions in Pennsylvania would only be realized on paper. Moreover, mercury emissions in Pennsylvania may be much higher than EPA projects. In fact, EPA concedes that due to the banking and trading provisions of CAMR, projected reductions may not be achieved until 2026 or later.

Comment 9: The commentator stated that modeling by the Electric Power Research Institute has shown that at least 80% of the mercury deposited in Pennsylvania is originating in the U.S. from natural sources of mercury, as well as overseas sources, such as power plants in China, are clearly not a significant factor for reducing mercury in Pennsylvania. The lack of Pennsylvanian volcanoes and geysers should also be noted. Studies in Florida and Massachusetts have clearly shown that mercury levels in fish and other wildlife can be achieved through control of local mercury sources. We need a state rule in PA to ensure that those benefits are realized locally. **(10)**

Response: Thank you for your support. The Department agrees. The EPA has estimated that EGUs located in the United States represent approximately 1% of the worldwide mercury emissions. In Pennsylvania, EGUs represent approximately 80% of the mercury emissions. Nationally, EGUs represent approximately 40% of the mercury emitted. EPA's modeling shows that some of the highest mercury deposition concentrations in the country are found in Pennsylvania. The EPA funded Steubenville study, which looked at the source contribution to mercury wet deposition in the environment, has shown that local and regional coal-fired power plants contribute up to 70% of the measured mercury deposition. Based on the results of the Steubenville study and the modeling conducted by Sullivan on the Bruce Mansfield plant, the Department concludes that the majority of the mercury deposited in the Commonwealth is emitted from sources in Pennsylvania.

Douglas L. Biden, President
Electric Power Generation Association
Commentator #11

Comment 1: The commentator states that unless major changes are made in the proposed Chapter 123 regulation, it will result in the premature retirement of smaller electric generating plants in Pennsylvania, a reduction in output at other plants, a switch by many of the remaining power plant owners to lower mercury coals (predominantly from out of state), an unwarranted increase in electricity prices, and an export of jobs to other states.

We urge the Department to adopt the federal Clean Air Mercury rule as Pennsylvania's mercury reduction program, because it will reduce mercury emissions from Pennsylvania power plants by 86 percent using the incentives in a cap-and-trade program without the economic dislocation caused by DEP's rule.

Response: The Department disagrees with this commentator's statements. The CAMR discriminates against bituminous coal through the allowance allocation program as well as the emission limits established under the New Source Performance Standards. The Department's rulemaking treats all coal types evenly. Additionally, Pennsylvania has an abundance of low-mercury-content coal found in the southwestern part of the state. Much of this coal is exported to other states rather than being used at Pennsylvania power plants that currently use high-mercury-content coal. There are also a number of provisions in the regulation to ensure that smaller, older plants are safeguarded. Subsection (b) of § 123.206 of the final-form regulation provides that the Department may approve in a plan approval or operating permit, or both, an alternative mercury emission standard or schedule, or both, if the owner or operator of an EGU subject to the emission standards of § 123.205 demonstrates in writing to the Department's satisfaction that the mercury reduction requirements are economically or technologically infeasible. The Department's approval of an alternate emission standard or compliance schedule will not relieve the owner or operator of the EGU from complying with the other requirements of §§ 123.207-123.215. This provision was added

at the request of AQTAC to address the concerns about smaller, older plants. While the Department's approval of an alternate standard or compliance schedule will not relieve the owner or operator of an EGU from complying with the other requirements of §§ 123.207-123.215, owners and operators of these smaller, older plants may also petition the Department for supplemental allowances under § 123.209. The Department has also added a new provision to § 123.207 of the final-form regulation to allow the owner or operator of an EGU to demonstrate compliance with the annual emission limitation by using a system-wide compliance demonstration. This compliance option will be in addition to the options included in the proposal for compliance on a unit-by unit basis or by facility-wide emissions averaging.

The Department does not anticipate the premature retirement of plants or increased electric prices. The Department disagrees that smaller generating units are at risk for retirement. Section 123.206 provides that the Department may approve of an alternate mercury emission standard or compliance schedule, or both, if the owner or operator of an EGU subject to the emission standards of § 123.205 demonstrates in writing to the Department's satisfaction that the mercury reduction requirements are economically or technologically infeasible. The provision was added at the request of AQTAC to address the concerns about smaller, older plants. While the Department's approval of an alternate standard or compliance schedule will not relieve the owner or operator of an EGU from complying with the other requirements of §§ 123.207-123.215, owners and operators of these smaller, older plants may also petition the Department for supplemental allowances under § 123.209. The Department also added provisions that provide for credit toward compliance with the emission standard requirements for coal pre-cleaning. As a result, there are now a number of provisions in the final-form regulation to assist in complying with the provisions, especially for smaller, older plants.

Comment 2: The commentator claims that the most significant flaw in the proposal is the lack of market-based incentives for power plant owners that would cap mercury emissions and allow generators to buy and sell allowances to help meet emission reduction requirements in a cost-effective way.

For Pennsylvania, a cap-and-trade program has many environmental and economic benefits, but the proposed DEP mercury rule without cap-and-trade has many significant disadvantages for Pennsylvania workers, the coal industry and all electricity consumers within the Commonwealth.

The federal Clean Air Mercury Rule (CAMR) imposes steeper mercury emission reduction requirements on Pennsylvania than any other state (86 percent vs. the national average of 70 percent), due primarily to the higher mercury content of the coals that we mine in the Commonwealth. Consequently, Pennsylvania would be the greatest beneficiary of an interstate emissions trading program, and has the most to lose if interstate trading is not allowed.

The commentator states that scientific and medical experts, even DEP itself, have clearly shown there is no factual basis or that the information simply does not exist to support DEP's primary reason for opposing a cap-and-trade program— "hot spots."

A cap-and-trade program offers significant incentives for the early and over-control of mercury emissions from power plants, because plant operators get to keep or sell any extra credits to others.

Under DEP's proposed rule, plant owners have no opportunity to recoup their investment in air pollution controls because DEP, not plant owners, assigns any extra allowances to others, in most cases a competitor in the wholesale power market that cannot comply. This creates the

untenable situation where one generator that has made the significant investment in mercury emission reductions could be subsidizing a competing facility.

Response: Mercury emissions from EGUs in Pennsylvania are twice the national average. A large body of scientific evidence, some of which was developed as a result of the U.S. Environmental Protection Agency (EPA) obligations in the federal Clean Air Act (CAA), 42 U.S.C. §§ 7401 et seq., has clearly demonstrated that mercury is a persistent, toxic, bi-accumulative pollutant, which can have adverse effects on human health and the environment. There is an accumulation of State-specific and general risk assessment data that points to concerns regarding consumption patterns of freshwater anglers. This data also has a strong environmental justice component for minorities and persons of lower incomes. Statewide fish advisories, and the cited fish consumption patterns, demonstrate that Pennsylvanians may be at significant risk from mercury contamination through fish consumption. Data generated by EPA has shown that Pennsylvania has the highest wet deposition of mercury in the nation with a direct correlation to the location and quantity of mercury emissions from coal-fired electric generating facilities. The EPA-funded Steubenville study, which looked at the source contribution to wet mercury deposition in the environment, has shown that local and regional coal-fired utilities contribute up to 70% of the measured mercury deposition. Moreover, EPA data shows that in Pennsylvania 71% of the deposited mercury is attributable to utility EGUs compared to all sources of mercury. As a result, Pennsylvania is unusually susceptible to mercury deposition and needs to develop a regulatory approach to ensure that mercury levels in the Commonwealth are reduced.

The Department has been a strong proponent of traditional cap-and-trade programs related to criteria pollutants. However, because mercury is a designated hazardous air pollutant under Section 112 of the Clean Air Act and a potent neurotoxin, trading of mercury emission allowances is illegal under the Clean Air Act and bad environmental and public health policy. Because of the trading provisions under CAMR, owners and operators of EGUs in Pennsylvania do not have to make reductions of actual mercury emissions in Pennsylvania. They can purchase allowances to offset the amount of mercury they emit over their cap to ensure compliance, which means that reductions in Pennsylvania may only be realized on paper. Moreover, mercury emissions in Pennsylvania may be much higher than EPA projects. These concerns regarding “paper” reductions and increased actual emissions have a historical basis under the Title IV provisions of the Clean Air Act. In Pennsylvania the total current sulfur dioxide (SO₂) acid rain allowances equal 540,000. Pennsylvania EGUs emit about 1,000,000 tons per year of SO₂. Therefore, Pennsylvania currently imports about 460,000 SO₂ allowances per year from reductions in other states. The trading of mercury allowances under CAMR may mimic the acid rain program. The cap-and-trade approach under CAMR may result in hot spots to which the Commonwealth is particularly susceptible given that all 36 of Pennsylvania’s coal-fired utilities burn bituminous coal as their primary fuel source. Bituminous coals generally have high mercury, chlorine and sulfur contents and low calcium content, resulting in a high percentage of oxidized mercury. This type of mercury has a residence time of a few days and is deposited near the source of the release. Therefore, mercury is not a suitable candidate for emissions trading.

The Department has added the option of a system-wide compliance demonstration to the final-form regulation to provide additional incentives for reducing mercury emissions. Under this approach, owners or operators of two or more affected EGUs under common ownership or operator control within this Commonwealth may achieve compliance with the annual mercury emission limitation by ensuring that the aggregate of actual mass emissions from all units, under the system-wide demonstration, is less than or equal to the aggregate of allowable mass emissions from all such units.

Comment 3: The commentator observed that the Department of Environmental Protection (DEP) said in the Preamble to this rulemaking that the primary scientific reason for not supporting a cap-and-trade program was the potential for “hot spots” of local mercury exposure.

The written and oral testimony provided by DEP before the Senate and House and comments presented to DEP's Mercury Work Group clearly show there is no factual basis or credible evidence to support this position.

DEP told the Senate Environmental Resources and Energy Committee the agency does not have any data that shows a correlation between where mercury is being emitted from power plants and where it is deposited. (Hearing Transcript, Page 10)

In fact, Dr. James Lynch, the Penn State Professor who oversees DEP's Mercury Monitoring Network, told the DEP Mercury Work Group that he recommended DEP do a "source/receptor" study in order to pinpoint the source of mercury emissions, but DEP did not act on this recommendation. (DEP Work Group October 14, 2005 Meeting Transcript, Page52)

A presentation done by Dr. Terry M Sullivan of the Brookhaven National Laboratory to DEP 's Mercury Work Group outlining how a study Brookhaven conducted found no evidence of mercury "hot spots." Dr. Sullivan's testimony before the House10 Environmental Resources and Energy Committee on February 23, 2006 is also provided.

Scientific and medical experts, even DEP itself, have clearly shown there is no factual basis or that the information simply does not exist to support DEP's primary reason for opposing a cap-and-trade program— "hot spots."

In November 2005, EPGA wrote to DEP asking specific questions about how DEP defined a "hotspot, " what the background levels of mercury in Pennsylvania are, whether DEP has any information identifying hot spots and other specific questions. The reply from DEP did not contain any useful responses to our questions.

For example, the Brookhaven study DEP pointed to in the response to support its case actually showed the opposite as we noted for the record above. An unpublished report cited by DEP of mercury levels around Steubenville, Ohio as justification for "hot spots" actually shows that mercury emissions travel 400 miles or more, a distance longer than the width of Pennsylvania. If that represents a "hotspot, " then all of Pennsylvania and beyond is a "hot spot." (We ask that DEP produce all of the supporting data and conclusions in its possession related to the unpublished Steubenville report so it can be reviewed before any final regulation is presented to the Environmental Quality Board for action.)

Response: The Department does not agree with this comment and disagrees with the conclusions in the studies cited. The Department is concerned that the cap-and-trade approach under CAMR will result in hot spots to which the Commonwealth is particularly susceptible given that all 36 of Pennsylvania's coal-fired utilities burn bituminous coal as their primary fuel source. Bituminous coals generally have high mercury, chlorine and sulfur contents and low calcium content, resulting in a high percentage of oxidized mercury. This type of mercury has a residence time of a few days and is deposited near the source of the release. Therefore, mercury is not a suitable candidate for emission trading against emission reductions in other regions because it results in hot spots.

Mercury emissions from EGUs in Pennsylvania are twice the national average. A large body of scientific evidence, some of which was developed as a result of the U.S. Environmental Protection Agency (EPA) obligations in the federal Clean Air Act (CAA), 42 U.S.C. §§ 7401 et seq., has clearly demonstrated that mercury is a persistent, toxic, bio-accumulative pollutant, which can have adverse effects on human health and the environment. There is an accumulation of State-specific and general risk assessment data that points to concerns regarding consumption patterns of freshwater anglers. This data also has a strong environmental justice component for minorities and persons of lower incomes. Statewide fish advisories, and the cited fish consumption patterns, demonstrate that Pennsylvanians may be at significant risk from mercury contamination through fish consumption. Data generated by EPA has shown that Pennsylvania has the highest wet deposition of mercury in the nation with a direct correlation

to the location and quantity of mercury emissions from coal-fired electric generating facilities. The EPA-funded Steubenville study, which looked at the source contribution to wet mercury deposition in the environment, has shown that local and regional coal-fired utilities contribute up to 70% of the measured mercury deposition. Moreover, EPA data shows that it is in Pennsylvania where the maximum percentage of utility-attributable deposition of 71% compared to total deposition from all sources occurs. As a result, Pennsylvania is unusually susceptible to mercury deposition and needs to develop a regulatory approach to ensure that mercury levels in the Commonwealth are reduced.

Impacts related to mercury deposition were studied at the Bruce Mansfield coal-fired power plant in Shippingport, Pennsylvania and reported in Sullivan, T.M, et al, "Assessing the Mercury Health Risks Associated with Coal-Fired Power Plants: Impacts of Local Depositions," Brookhaven National Laboratory, Upton, NY. The Bruce Mansfield plant is characterized by high total mercury emissions. From the deposition modeling, the average increase in deposition as compared to a background deposition rate of 20 µg/m²/yr over a 2500 km² area around the plant was 15% at Bruce Mansfield. Over an area that is 50 – 100 km², immediately adjacent to the plant, deposition doubled at the Bruce Mansfield plant. The report concluded that if the plant emissions double the local deposition, the fish concentration would be similarly doubled. As a result, the mean fish mercury content of 0.41 ppm near the Bruce Mansfield plant would be doubled to 0.82 ppm.

The 2003 results of the EPA Office of Water study *Draft Mercury REMSAD Deposition Modeling Results* reinforce Pennsylvania's concern. This Regulatory Modeling System for Aerosols and Deposition (REMSAD) study shows that, at mercury hot spots, local emission sources within a state can be the dominant source of deposition. At hot spots, local sources within a state commonly account for 50% to 80% of the mercury deposition. In-state sources contribute more than 50% of the mercury pollution within the top eight worst hot spot states, which are Michigan, Maryland, Florida, Illinois, South Carolina, North Carolina, Pennsylvania and Texas, respectively.

Comment 4: The commentator states that DEP also told the Senate Committee that it had no studies linking mercury emissions from power plants to health impacts on communities. (June 6 2006 Hearing Transcript, Page 42-43).

Dr. Jack Snyder, a physician and former staff toxicologist at Thomas Jefferson Medical College in Philadelphia, in Senate testimony said the Committee has "not been provided credible evidence supporting speculation that any women, children, or fetuses have been harmed, or have been placed at increased risk of harm, as a result of eating fish obtained from bodies of water in Pennsylvania or other parts of the United States. " (May 2, 2006)

Dr. Donald J. McGraw, MD, an expert in occupational and environmental medicine who served on the faculty of the University of Pittsburgh and John Hopkins University, told DEP 's Mercury Rule Work Group-- "Studies of people eating lots of fish in other cultures do not show adverse health consequences. There is a huge benefit to eating fish and it would be an unfortunate tradeoff to reduce the consumption of fish for health effects (from mercury) we haven 't seen."*(emphasis added)* (October 28,2005)

The U S. Centers for Disease Control conducted a nationwide study of women of childbearing age, infants and young children and found not a single case where mercury levels approached the level that might cause adverse health effects. (2005)

Response: The analysis of environmental and public health impacts that must be conducted in order to "make a public health connection" has been mischaracterized. The analysis that the Committee has referred to is a risk assessment that is typically conducted at a discrete site for a hazardous substance release for a remedial investigation/feasibility study of Superfund sites. The analysis that EPA, the Department, and other public health and environmental agencies conduct for regulatory decisions is based on epidemiological studies, pollutant characteristics, emission

inventories, air quality modeling, exposure factors, and literature searches. The reason that the analyses are different is because a Superfund investigation deals with a discrete site, a discrete discharge, and a discrete population, whereas a regulatory analysis deals with multiple sites over large geographical distances that affect different populations. For example, the regulatory analysis conducted under CAIR and CAMR involved epidemiological studies, pollutant characteristics, emission inventories, air quality modeling, exposure factors, and literature searches. The Department reviewed this data, Department generated data, and Pennsylvania specific data to reach its conclusion that a Pennsylvania-specific mercury rule is appropriate for the Commonwealth.

Second, the Department's analysis shows direct benefits to Pennsylvania over CAMR. A large body of scientific evidence, some of which was developed as a result of the U.S. Environmental Protection Agency (EPA) obligations in the federal Clean Air Act (CAA), 42 U.S.C. §§ 7401 et seq., has clearly demonstrated that mercury is a persistent, toxic, bio-accumulative pollutant, which can have adverse effects on human health and the environment. Research has also shown that higher percentages of more recently deposited ionic mercury are more quickly methylated in the ecosystem. The methylation of mercury eventually leads to a concentration of methylmercury in the tissue of fish and other wildlife. These higher concentrations of mercury in the wildlife are not only directly affecting the wildlife in such ways as reduced reproductivity, but also affecting humans when they eat this wildlife. Both the national and Pennsylvania figures show that coal-fired EGUs emit a disproportionate amount of mercury emissions and that these emissions are disproportionate to the national average. Therefore, the Department believes that it is important to ensure that the uncontrolled mercury emissions from these units are reduced.

Data generated by EPA has shown that Pennsylvania has the highest wet deposition of mercury in the nation with a direct correlation to the location and quantity of mercury emissions from coal-fired electric generating facilities. The EPA-funded Steubenville study, which looked at the source contribution to mercury wet deposition in the environment has shown that local and regional coal-fired power plants contribute up to 70 percent of the measured mercury deposition.

There is an accumulation of State-specific and general risk assessment data that points to concerns regarding consumption patterns of freshwater anglers. This data also has a strong environmental justice component for minorities and persons of lower incomes. Statewide fish advisories, and the cited fish consumption patterns demonstrate that Pennsylvanians may be at significant risk from mercury contamination through fish consumption. Additionally, data suggests a correlation between higher mercury fish concentrations and power plants within a 50-mile radius from the sampling sites. Lastly, reduced mercury emissions and fewer advisories will assist the outdoor tourism industry. Since a Pennsylvania-specific mercury rule is likely to have a demonstrable impact on reducing local mercury deposition, it would improve public health, tourism, and ecosystems through reduced bioaccumulation of mercury from in-State coal-fired power plants.

Pennsylvania coal has a higher concentration of chlorine than coal found in non-bituminous coal burning regions of the country, thus the percentages of ionic and particle-bound mercury tend to be higher than those found in other areas. These forms of mercury have a greater affinity for water, thus are more prone to deposit near emission sources due to wet deposition, and also deposit out of the plume by gravity due to the settling characteristics of the particle-bound and ionic mercury. Under CAMR EPA anticipates that mercury levels in the 90th percentile will be reduced by 0.06 milligrams per kilogram (mg/kg), while under the Pennsylvania rule the department anticipates a reduction by 0.0985 mg/kg. Under CAMR EPA anticipates that mercury levels in the 99th percentile will be reduced by 0.19 mg/kg, while under the Pennsylvania rule the Department anticipates a reduction by 0.31 mg/kg. Under CAMR EPA anticipates that mercury levels at the maximum level will be reduced by 0.44 mg/kg, while under the Pennsylvania rule the Department anticipates a reduction by 0.72 mg/kg. When fully implemented, greater reductions will be realized under the State-specific regulation with collateral reductions in the deposition of mercury and reduced exposure to methylmercury.

Comment 5: The commentator would like to point out there has already been a 33 percent reduction of mercury emissions from Pennsylvania power plants between 1999 and 2004 (based on Toxics Release Inventory (TRI) reports and EPA 's mercury inventory), however, that reduction has not even registered on DEP's Mercury Monitoring Network.

This empirical data, along with the uncontested facts that mercury emissions from U.S. power plants make up only 1 percent of global mercury emissions, and EPA modeling that shows zeroing out ALL mercury emissions from ALL U.S. power plants would not measurably change mercury deposition relative to that expected from implementation of the federal rules, show that mercury is a regional, national and global problem and should be addressed that way.

Response: The Department strongly disagrees with the reported mercury emission reductions. Mercury emissions in Pennsylvania from coal-fired EGUs have not had actual emission reductions of 33 percent from 1999 levels. The majority of the TRI reported emission reductions have been from changes in mercury emission estimating techniques, not actual reductions. Mercury monitoring and reporting techniques have been refined and as a result we in general now have more accurate emission estimates. More coal-fired EGUs are reporting emissions from stack tests and using more refined secondary techniques like emission factors.

With regard to the assertion that DEP's mercury monitoring system did not register the 33 percent reduction there are two issues. First, as stated above, there was not a 33 percent actual emissions reduction since 1999. Secondly, the DEP weekly, multi-event wet deposition-monitoring network is not designed to document short-term emission reductions. Because the system does not measure single precipitation events, and because of wind direction variation, only long-term emissions trends are statistically significant.

It is well documented that some forms of atmospheric mercury are rapidly deposited by both wet and dry processes, and emissions of these forms of mercury, especially near ground level, are responsible for a large portion of the observed mercury deposition in the surrounding area. These more reactive forms of mercury are usually deposited from the atmosphere before they can travel long distances. Therefore the Department can say with confidence that elemental mercury is more inert and can be transported globally, and that ionic mercury compounds, which are emitted in greater quantities by bituminous coal-fired power plants, are more reactive and travel much shorter distances before depositing. According to the Goddard Earth Observing System- Chem and Community Multi-scale Air Quality (CMAQ) modeling results for 2001, in Figures 11 and 12 the mercury deposition attributable to U.S. utilities in the eastern portion of the country is generally 1 - 5 $\mu\text{g m}^{-2}$ range. However, in the eastern U.S. there is a large area in the Ohio River Valley with utility-attributable mercury depositions in the 5 – 10 $\mu\text{g m}^{-2}$ range and a much smaller area in the 10 –15 $\mu\text{g m}^{-2}$ range. U.S. utility-attributable mercury depositions over 20 $\mu\text{g m}^{-2}$ range are found in parts of the Commonwealth of Pennsylvania. It is in Pennsylvania where the maximum percentage of utility-attributable deposition of 71% compared to total deposition from all sources occurs. The Brookhaven study showed that even for a facility that has the advantage of having co-benefit mercury control, its mercury emissions could substantially increase the mercury deposition in the local area. Using the conditions set forth in the study, this increased deposition for the Bruce Mansfield facility had the effect of doubling the fish tissue concentration over background levels. The report concluded that if the plant emissions double local deposition, the fish concentration would be similarly doubled. As a result, the mean fish mercury content of 0.41 ppm near the Bruce Mansfield plant would be doubled to 0.84 ppm.

Comment 6: In the Record of Decision Document the Environmental Quality Board is requiring DEP to assemble for this rulemaking and in the Comment/Response Document, the commentator requests that DEP evaluate and respond to each of the studies and testimony (included below) in detail along with the scientific and technical basis for their response and again ask for the scientific basis for its position on "hot spots."

- June 6, 2006 Hearing Transcript, Senate Environmental Resources and Energy Committee.
- October 14, 2005 Meeting Transcript, Department of Environmental Protection Mercury Work Group.
- June 6, 2006 Hearing Transcript, Senate Environmental Resources and Energy Committee.
- Environment Reporter, Air Pollution Emissions Trading BNA, Inc. May 7, 2004.

- Testimony of Dr. Jack Snyder Before the Senate Environmental Resources and Energy Committee, May 2, 2006.
- Presentation of Dr. Donald J. McGraw, M.D., Before the DEP Mercury Work Group, October 28, 2005.
- Testimony of Dr. Gail Charnley Toxicologist with Health Risk Strategies Before the Senate Environmental Resources and Energy Committee, June 6, 2006.
- Third National Report on Human Exposure to Environmental Chemicals. U.S. Centers for Disease Control.2005.
- Presentation by Dr. Terry M. Sullivan of the Brookhaven National Laboratory Before DEP Mercury Work Group, October 28, 2005.
- Testimony by Dr. Terry M. Sullivan of the Brookhaven National Laboratory Before the House Environmental Resources and Energy Committee. February23, 2006.
- Letter dated n November 16, 2005 from the Electric Power Generation Association to Thomas K. Fidler, DEP Deputy for Air, Recycling and Radiation Protection.
- Letter dated January 3, 2006 from Thomas K. Fidler, DEP Deputy for Air, Recycling and Radiation Protection.

Response: The Department is not able to respond to non-specific “hotspot” issues generally referenced by the commentator through listing various documents. However, the Department has specifically addressed the issue of mercury “hotspots” in its “Final Decision Document For Reducing Mercury Emissions From Coal-Fired Electric Generating Units” and in numerous responses in its Comment-and-Response document for the final-form mercury. Both of these documents can be accessed at: <http://www.depweb.state.pa.us/pubpartcenter/lib/pubpartcenter/>

Comment 7: The commentator states that with no incentive for over-control in DEP's proposed rule, it would be impossible to financially justify the pollution controls needed to generate extra "non-tradable allowances" that DEP says it needs as a "safety valve" to allocate under its program. (We ask DEP to evaluate how the unavailability of allowances it can allocate under its rule would affect how its program is implemented, electric reliability and the cost of electricity.)

Response: The Department has been a strong proponent of traditional cap-and-trade programs related to criteria pollutants. However, because mercury is a designated hazardous air pollutant under Section 112 of the Clean Air Act and a potent neurotoxin, trading of such a substance is illegal under the Clean Air Act and bad environmental and public health policy. Because of the trading provisions under CAMR, owners and operators of EGUs in Pennsylvania do not have to make reductions of actual mercury emissions in Pennsylvania. Under CAMR owners and operators of EGUs could purchase allowances to offset the amount of mercury they emit over their cap to ensure compliance, which means that reductions in Pennsylvania may only be realized on paper. Moreover, mercury emissions in Pennsylvania may be much higher than EPA projects. These concerns regarding “paper” reductions and increased actual emissions have a historical basis under the Title IV provisions of the Clean Air Act. In Pennsylvania the total current sulfur dioxide (SO₂) acid rain allowances equal 540,000. Pennsylvania EGUs emit about 1,000,000 tons per year of SO₂. Therefore, Pennsylvania currently imports about 460,000 SO₂ allowances per year from reductions in other states. The trading of mercury allowances under CAMR may mimic the acid rain program. The trading of mercury emissions under CAMR may cause hot spots to which the Commonwealth is particularly susceptible given that all 36 of Pennsylvania’s coal-fired utilities burn bituminous coal as their primary fuel source. Bituminous coals generally have high mercury, chlorine and sulfur contents and low calcium content, resulting in a high percentage of oxidized mercury. This type of mercury has a residence time of a few days and is deposited near the source of the release. Therefore, mercury is not a suitable candidate for emission trading against emission reductions in other regions because it results in hot spots.

After Phase 1 of the program, the Department anticipates that the Pennsylvania rule will achieve approximately 20 to 30% greater reductions than CAMR. After Phase 2, the Department anticipates that the Pennsylvania rule will

achieve approximately 25 to 35% greater reductions than CAMR. As a result, the Department anticipates that there will be a supplemental pool available for use for eligible owners or operators of EGUs. Furthermore, the Department has added the option for a system-wide compliance demonstration to address the commentator's concerns regarding incentives for early reductions. Under this approach owners or operators of two or more affected EGUs under common ownership or operator control within this Commonwealth may achieve compliance with the annual mercury emission limitation by ensuring that the aggregate of actual mass emissions from all units, under the system-wide demonstration, is less than or equal to the aggregate of allowable mass emissions from all such units. The Department will assign or distribute mercury allocations in accordance with the provisions of § 123.207. The Department would grant additional allowances upon petition based on the information specified in the Final-form regulation in a uniform manner.

With the combination of various compliance options in the final-form regulation, the petitioning process, recognition of control measures such as coal pre-cleaning, the availability of surplus allowances in the supplemental pool and the minimum site-specific emission standard reduction requirements, there should be no shortage of available mercury allowances to meet Pennsylvania's mercury emission caps. Therefore, the Department does not anticipate any effect on electricity reliability.

Comment 8: Speculation by DEP that reducing mercury from one source in one state will have a measurable impact on the environment or reduce the need for fish advisories across the state simply is not supported by the facts. EPA analysis suggests there would be no change in the number of fish advisories if the DEP regulation is adopted rather than the federal approach because there would be no change in expected deposition in the state.

Dr. Gail Charnley/, a toxicologist with Health Risk Strategies and former director of the Toxicology and Risk Assessment Program at the National Academy of Sciences/National Research Council, told the Senate Environmental Resources and Energy Committee that, "Any claims that Pennsylvania's state-specific proposed rule will protect high consumers of Pennsylvania fish any better than will the federal rule are not scientifically supportable." (June 6, 2006)

Response: The CAMR establishes a two-phase mercury budget for Pennsylvania at approximately 1.779 tons per year from 2010 through 2017 for a 64% reduction from 1999 baseline emission levels and 0.702 tons per year for 2018 and every year thereafter for an 86% reduction from 1999 baseline emission levels. However, EPA concedes that due to the banking and trading provisions of CAMR, projected reductions may not be achieved until 2026 or later. CAMR does not specifically require any one electric generating unit (EGU) to reduce mercury emissions to any specific level. Because of the trading provisions under CAMR, owners and operators of EGUs would do not have to make reductions in Pennsylvania. They could purchase allowances to offset the amount of mercury they emit over their cap to ensure compliance, which means that reductions in Pennsylvania may only be realized on paper.

In comparison, the Pennsylvania-specific rule would require an 80% reduction of mercury present in the coal fired in EGUs on a 12-month rolling basis by 2010, and 90% reduction of mercury present in the coal fired in EGUs on a 12-month rolling basis by 2015. This regulation would also limit the mercury emissions on an annual basis based on the CAMR budgets. After Phase 1 of the program, it is anticipated that the Pennsylvania-specific approach would achieve approximately a 29% greater reduction than CAMR. After Phase 2, it is anticipated that the Pennsylvania rule would achieve approximately a 39% greater reduction than CAMR.

Pennsylvania coal has a higher concentration of chlorine than coal found in non-bituminous coal burning regions of the country, thus the percentages of ionic and particle-bound mercury tend to be higher than those found in other areas. These forms of mercury have a greater affinity for water, thus are more prone to deposit near emission sources due to wet deposition, and also deposit out of the plume by gravity due to the settling characteristics of the particle-bound and ionic mercury. Under CAMR, EPA anticipates that mercury levels in the 90th percentile will be

reduced by 0.06 milligrams per kilogram (mg/kg), while under the Pennsylvania rule the department anticipates a reduction by 0.0985 mg/kg. Under CAMR, EPA anticipates that mercury levels in the 99th percentile will be reduced by 0.19 mg/kg, while under the Pennsylvania rule the Department anticipates a reduction by 0.31 mg/kg. EPA also anticipated under CAMR that mercury levels at the maximum level would be reduced by 0.44 mg/kg, while under the Pennsylvania rule, a 0.72 mg/kg reduction is anticipated. The Pennsylvania mercury emission reductions are more substantial, may likely lead to fewer fish advisories, and may also result in increased fish consumption.

EPA's own analysis of the deposition of mercury in support of its CAMR shows that Pennsylvania receives the highest deposition of mercury in the eastern United States. This shows that there is a need for significant mercury emission reductions that will occur in this Commonwealth. The Pennsylvania-specific regulation will achieve these reductions on a faster schedule than achieved by EPA's CAMR.

Comment 9: The commentator states that some, including DEP, have said it is misleading to say that Pennsylvania will achieve an 86 percent reduction in mercury emissions if we allow interstate trading. The only ways that Pennsylvania sources can achieve less than an 86 percent reduction in emissions (by 2018) with trading is if they over-control their emissions sooner than required by CAMR, or if they purchase emission allowances from other sources that have over-controlled their emissions relative to their regulatory requirements.

If sources control their emissions sooner than required by regulation, most policymakers would agree that is a positive feature of a cap-and-trade approach to environmental regulation.

Response: The Department disagrees with both the level of mercury control and the timeframes for these reductions, which the commentator states will be achieved by CAMR. The Clean Air Mercury Rule (CAMR) establishes a two-phase mercury budget for Pennsylvania at 1.779 tons per year from 2010 through 2017 for a 64% reduction from 1999 baseline emission level and 0.702 tons per year from 2018 and every year thereafter for a 86% reduction from 1999 baseline emission level which will not be achieved in a timely fashion because of the market-based trading component. Moreover, CAMR does not specifically require any electric generating unit (EGU) to reduce mercury emissions to any specific level. Because of the banking and trading provisions under CAMR, owners and operators of EGUs are not required to achieve mercury reductions from each EGU. They can purchase "allowances" to offset the amount of mercury they emit over their cap to ensure compliance, which means that certain reductions in Pennsylvania may only be realized on paper.

These concerns regarding "paper" reductions and increased actual emissions have a historical basis under the Title IV provisions of the CAA. In Pennsylvania the total current SO₂ acid rain allowances equal 540,000. The owners and operators of Pennsylvania EGUs emit about 1,000,000 tons per year of SO₂. Therefore, Pennsylvania currently "imports" about 460,000 SO₂ acid rain allowances per year from reductions in other states. The trading of mercury allowances under CAMR may mimic the acid rain program. CAMR's cap-and-trade approach may result in hot spots to which the Commonwealth is particularly susceptible given that all 36 of Pennsylvania's coal-fired utilities burn bituminous coal as their primary fuel source. Bituminous coals generally have high mercury, chlorine, and sulfur contents and low calcium content, resulting in a high percentage of oxidized mercury. This type of mercury has a residence time of a few days and is deposited near the source of the release. Therefore, it is not a suitable candidate for emission trading against emission reductions in other regions because it results in hot spots.

Comment 10: The commentator states that if Pennsylvania sources purchase allowances from other sources in those instances where plants cannot economically or physically meet their emission caps under CAMR, plant owners would be partially redressing, at their own expense, the very competitive disadvantage for Pennsylvania that Secretary McGinty has repeatedly called attention to in her criticism of CAMR – the disparate treatment of western vs. eastern coal and the extra emission allowances allocated to states whose power plants burn western coal. Indeed, the Secretary has cited this disadvantage as a primary reason for needing a Pennsylvania-specific rule.

By requiring Pennsylvania generators to meet a stringent EPA cap based on a national trading program and at the same time preventing them from participating in that program, DEP is institutionalizing the very competitive disadvantage the Secretary is concerned about, removing the only remedy that power plant owners have to redress this source of competitive disadvantage, and adding a more significant source of competitive disadvantage of the state's own making.

Response: The Department disagrees that the final-form regulation institutionalizes competitive disadvantages in Pennsylvania. The Department has added to its regulation the option of a system-wide compliance demonstration to the final-form regulation that will provide an incentive to over-control. Under this provision an owner or operator of two or more EGUs under common ownership or operator control in the Commonwealth may demonstrate compliance with the annual emission limitation by ensuring that the aggregate of actual mass emissions are less than the aggregate of allowable mass emissions for all EGUs included in the system-wide demonstration.

Section 123.206 of the final-form state-specific regulation provides that the Department may approve of an alternative mercury emission standard or schedule, or both, if the owner or operator of an EGU subject to the emission standards of § 123.205 demonstrates in writing to the Department's satisfaction that the mercury reduction requirements are economically or technologically infeasible. This provision was added at the request of AQTAC to address the concerns about smaller, older plants. While the Department's approval of an alternate standard or compliance schedule will not relieve the owner or operator of an EGU from complying with the other requirements of §§ 123.207-123.215, owners and operators of these smaller, older plants may also petition the Department for supplemental allowances under § 123.209. The Department has also added a new provision to § 123.207 of the final-form regulation to allow the owner or operator of an EGU to demonstrate compliance with the annual emission limit by using the option of system-wide compliance demonstration. This compliance option will be in addition to the options included in the proposal for compliance on a unit-by-unit basis or by facility-wide compliance demonstration. As a result, there are a number of provisions in the final-form regulation to ensure that smaller, older plants are safeguarded.

The Pennsylvania rule is designed, in part, to take advantage of the co-benefit reductions that will occur under CAIR, designed to reduce SO₂ and NO_x emissions from EGUs. The Phase 1 and Phase 2 timeframes under the Pennsylvania rule coincide with the timeframes under CAIR. As a result, the owners and operators of EGUs are not disadvantaged under this timeframe, and there should not be any reliability concerns for delivery of power over the electric grid. It is anticipated that the majority of EGUs in the Commonwealth will opt to comply with both phases of the rule using existing WFGD and SCR technology, which will be necessary in order to comply with CAIR. While some EGUs may opt to install mercury specific control technology, the Department believes that there are a number of currently available control technologies that coal-fired power plants can use to reduce their emissions of mercury to the atmosphere, which will result in a minor cost increase on a cents per KWh basis.

The Department performed a cost analysis as part of the development process of the Pennsylvania Mercury Rule. The analysis was also conducted to determine the cost of the proposed rule emission limits above and beyond CAIR. CAIR involves the installation air pollution control equipment for sulfur dioxide and nitrogen oxides control. For each applicable electric generating unit (EGU) in the state, the Department determined the amount of mercury, if any, that would need to be controlled beyond CAIR control levels for Phase 1 and Phase 2.

For each unit the capital cost, annualized capital costs, and operating costs were determined. This was offset against how much it would cost to purchase an equivalent amount of emissions allowances based on EPA's projections of mercury allowance costs from 2010 through 2030. These projections come from a U. S. Department of Energy (DOE) document titled "Annual Energy Outlook 2006 With Projections to 2030". The costs of control were based on cost estimates for installing and operating activated carbon injection systems. The capital costs were determined by estimating the cost ranging from \$2/KW - \$4/KW of plant electrical generating capacity. This capital cost was then annualized over 20 years assuming a 10 percent interest rate. The operating costs were calculated for Phase 1 based on a brominated activated carbon injection (BACI) injection rate of 6 lbs per million actual cubic feet of exhaust gas. For Phase 2 an injection rate of 4.84 or 9.68 lbs per million actual cubic feet of exhaust gas was used depending on how much was needed to meet the emission limit. The injection rate was multiplied by the average of

the three highest years of heat input between 1998 and 2002 and then multiplied by \$0.0175 lb of sorbent/Million Btu. This calculation was performed for each affected emission unit.

For Phase 1, the Department estimated that 16 units at 7 facilities might opt for mercury specific control beyond the CAIR control installations. The total capital costs needed for BACI were estimated to be approximately \$4.9 to \$9.8 million. The annual operating costs were estimated to be approximately \$14.7 million. The total annualized costs for Phase 1 were estimated to be approximately \$15.4 to \$15.8 million. The cost of \$0.0012/KWh represents the upper bound cost estimate for the EGUs to comply with the Phase 1 limits.

The mercury allowance costs were approximately \$15.7 million using DOE's projections of mercury allowance costs from 2010 through 2015 at \$953 per ounce. As a result, the total cost of complying with Phase 1 of the Pennsylvania-specific mercury regulation would be no more than the cost of complying with CAMR.

For Phase 2, the Department estimated that 18 units at 7 facilities might opt for mercury specific control beyond the CAIR control installations. Some EGU owners and operators may choose to install compact hybrid powdered activated carbon (COHPAC) filter systems to comply with the Pennsylvania mercury rule. Electric Power Research Institute (EPRI) has patented the "TOXECON" process, which employs COHPAC in the control configuration. TOXECON/COHPAC has been demonstrated to achieve around 90% reduction of mercury emissions. The capital costs were determined by estimating the cost ranging from \$56.53/KW - \$125/KW of plant electrical generating capacity.

The difference between the lower-bound and upper-bound costs estimates reflects the difference between carbon injection and the installation of TOXECON/COHPAC filter systems. The total capital costs are estimated to range from \$141.6 to \$313.3 million. The total annualized cost (capital and operating) of mercury-specific control technology that EGU owners and operators might opt to install beyond CAIR to comply with the Pennsylvania Mercury Rule would range from \$16.7 to \$53 million per year. The resulting cost per kilowatt-hour would be no greater than \$0.0038/KWh for the EGUs utilizing the TOXECON/COHPAC control technology to comply with the Phase 2 limits. The cost of \$0.0038/KWh represents the upper bound cost estimate for the EGUs to comply with the Phase 2 limits.

The estimated total cost of purchasing mercury allowances (using \$2,619 per ounce, according to a U.S. Department of Energy estimate) would be approximately \$28.3 million per year if EGU owners and operators did not implement additional measures beyond CAIR to comply with CAMR. At the low end of the cost estimate, the annualized cost of mercury specific technology may not be any more than the costs of purchasing the allowances. However, at the high end of the cost estimate, the additional cost above purchasing allowance would be around \$25.1 million. This would represent about \$0.0018/KWh.

Even for those owners and operators that may have to install mercury specific control equipment or control measures, the additional compliance cost over CAMR and CAIR are truly insignificant as demonstrated above.

Comment 11: The commentator states that if Pennsylvania sources purchase allowances from out-of-state sources who have over-controlled their emissions, in virtually all instances the selling sources would be located to the west and southwest of the Commonwealth. Since the prevailing winds are generally west to east, and mercury emissions are known to travel hundreds and even thousands of miles, Pennsylvania's environment could benefit as much or more from upwind mercury emissions reductions as it could from in-state reductions.

Response: The Department does not believe this contention is correct. There is no way to project where mercury allowances would be traded including from EGUs in the western part of the country. There is no certainty that mercury reductions will be made to Pennsylvania's immediate west or southwest. Additionally, coal-fired power plants that burn bituminous coal emit oxidized forms of mercury, which are deposited nearby their source, not hundreds or thousands of miles away. In Pennsylvania, 85% of the coal burned by coal-fired power plants is bituminous, which results in a large percentage of the mercury emissions in the oxidized form which deposits

locally. Under CAMR, Pennsylvania would not see reductions in actual emissions of mercury within the boundaries of the Commonwealth and could even see increased mercury emissions, if power plants in Pennsylvania were allowed to purchase allowances from out-of-state sources rather than installing controls.

Bituminous coals generally have high mercury, chlorine and sulfur contents and low calcium content, resulting in a high percentage of oxidized mercury. This type of mercury has a residence time of a few days and is deposited near the source of the release. Therefore, mercury is not a suitable candidate for emission trading against emission reductions in other regions because it may result in hot spots. In addition, trading allowances are projected by EPA to delay compliance with the Phase 2 emission caps until at least 2030.

Comment 12: The commentator states that a special 2004 Bureau of National Affairs BNA Environment Reporter study of the cap-and-trade programs used to control acid rain and ground-level ozone concluded:

"Although trading programs do not guarantee reductions at each source, the above data show that they have achieved consistent results between regions, and have also led to proportionately greater reductions at higher-emitting plants. These findings indicate that cap-and-trade programs similar to those evaluated would not be expected to lead to emissions concentrations or hot spots."

Cap-and-trade systems have worked effectively to significantly reduce sulfur dioxide, nitrogen oxide and volatile organic compounds in a way that benefits the environment and are a cost-effective way for electric generators and electricity consumers to fulfill these mandates. (See: 2004 BNA Environment Reporter study)

Even the toxic metal lead is controlled using a trading system in Pennsylvania. Lead presents health risks when inhaled, unlike mercury emissions from power plants. (We ask how lead emissions are different from mercury emissions in terms of their threat to public health in this context?)

Response: The lead trading program referenced by the commentator was utilized as an interim compliance measure for the removal of all lead in gasoline. There was a recognition that not every refinery could be modified at the same time and not have a disruption in the supply of gasoline. However, every refinery was eventually required to remove all lead additives, so that at the conclusion of the control program there was no remaining trading and all refineries were required to remove the lead. Additionally, this lead trading program was devised by EPA in the 1980's prior to the 1990 Amendments to the federal Clean Air Act that added the Section 112 MACT provisions for addressing toxic air pollutants.

With regard to the BNA Report study referenced by the commentator, the Department does not agree with the conclusion of the report. Emissions trading of criteria pollutants to reduce a long-range transport issue may be a cost effective method, but at the expense to the environment. The trading of mercury which readily forms the neurotoxin methylmercury in the environment, and which has been shown to have significant local deposition that bio-accumulates in the food chain, is not a candidate for emissions trading. The Department is concerned that CAMR's cap-and-trade approach will result in hot spots to which the Commonwealth is particularly susceptible given that all 36 of Pennsylvania's coal-fired utilities burn bituminous coal as their primary fuel source. Bituminous coals generally have high mercury, chlorine and sulfur contents and low calcium content, resulting in a high percentage of oxidized mercury. This type of mercury has a residence time of a few days and is deposited near the source of the release. Therefore, mercury is not a suitable candidate for emission trading against emission reductions in other regions because it results in hot spots.

Impacts related to mercury deposition were studied at the Bruce Mansfield coal-fired power plant in Shippingport, Pennsylvania and reported in Sullivan, T.M, et al, "Assessing the Mercury Health Risks Associated with Coal-Fired Power Plants: Impacts of Local Depositions," Brookhaven National Laboratory, Upton, NY. The Bruce Mansfield plant is characterized by high total mercury emissions. From the deposition modeling, the average increase in deposition as compared to a background deposition rate of 20 µg/m²/yr over a 2500 km² area around the plant was 15% at Bruce Mansfield. Over an area that is 50 – 100 km², immediately adjacent to the plant, deposition doubled at the Bruce Mansfield plant. The report concluded that if the plant emissions double the local deposition, the fish concentration would be similarly doubled. As a result, the mean fish mercury content of 0.41 ppm near the Bruce Mansfield plant would be doubled to 0.82 ppm.

The 2003 results of the EPA Office of Water study Draft Mercury REMSAD Deposition Modeling Results reinforce Pennsylvania's concern. This Regulatory Modeling System for Aerosols and Deposition (REMSAD) study shows that, at mercury hot spots, local emission sources within a state can be the dominant source of deposition. At hot spots, local sources within a state commonly account for 50% to 80% of the mercury deposition. In-state sources contribute more than 50% of the mercury pollution within the top eight worst hot spot states, which are Michigan, Maryland, Florida, Illinois, South Carolina, North Carolina, Pennsylvania and Texas, respectively.

In addition to these studies, on September 8, 2006, results from the EPA Steubenville Mercury Deposition Source Apportionment Study were released. This study found that nearly 70% of the mercury in rain collected at an Ohio River Valley monitoring site originated from nearby coal-burning industrial plants.

Comment 13: The commentator states that some individual generating units will not be able to justify the capital to install expensive scrubbers, and some plants face unique site-specific emission control equipment retrofit challenges. Mercury specific technologies have not been adequately tested to the point that power plant owners have confidence or assurances that they can achieve sufficient mercury reductions to meet their emission caps. Some of these situations will require the purchase of emission allowances to survive in the competitive market. But that is what a cap-and-trade program is for. It encourages those sources that face lower marginal costs (the largest sources of emissions) to over-control their emissions, so that smaller sources (with lower emissions) that face higher marginal costs can pursue lower-cost options and buy allowances from the larger sources to make up for shortfalls.

Response: The responsibility to make the necessary mercury reductions to meet the unit mercury emissions cap rests with the owners or operators of the units themselves. The Department has made the determination that the state-of-the-art mercury control technology is such that each unit can, if the appropriate measures are taken, meet its emissions cap. The Department will retain the unused allowances for each unit and allocate them to units that have not met their cap and have applied for additional allowances from the annual emission limit supplement pool. The Department's petition process will ensure that those units that have demonstrated the most effort in reducing their mercury emissions will be foremost on the list to receive allowances. The Department has also revised § 123.207(p) of the final-form regulation to include the option of system-wide compliance demonstration. This provision allows the owners or operators of two or more affected EGUs under common ownership or operator control within this Commonwealth to demonstrate compliance by ensuring that the aggregate of actual mass emissions from all units, under the system-wide demonstration, is less than or equal to the aggregate of allowable mass emissions from all such units. This compliance option will be in addition to the options included in the proposed rulemaking for compliance on a unit-by-unit basis or by facility-wide compliance demonstration. This will allow owners and operators to shift allowances from units in their system that over-control to those that aren't meeting their caps.

Comment 14: Faced with an 86 percent reduction requirement under CAMR, the commentator firmly believes that every affected plant in Pennsylvania will have to install some level of mercury removal technology or be retired. But not every plant will be able to install identical

levels of emission controls. DEP's command and control approach is unnecessarily punitive to small plants that cannot afford the most expensive controls.

Response: Section 123.206 provides that the Department may approve of an alternative mercury emission standard or schedule, or both, if the owner or operator of an EGU subject to the emission standards of § 123.205 demonstrates in writing to the Department's satisfaction that the mercury reduction requirements are economically or technologically infeasible. The provision was added at the request of AQTAC to address the concerns about smaller, older plants. While the Department's approval of an alternate standard or compliance schedule will not relieve the owner or operator of an EGU from complying with the other requirements of §§ 123.207-123.215, owners and operators of these smaller older plants may also petition the Department for supplemental allowances under § 123.209. As a result, there are a number of provisions in the regulation to ensure that smaller, older plants are safeguarded.

Comment 15: The commentator points out that PUC Chairman Wendell F. Holland has expressed concerns about the cost implications of DEP's rule saying the proposed rule has the potential to cause a reduction in electric generating capacity in the state which could have a negative effect on an already volatile energy market. (EQB meeting, May 16,2006)

Pennsylvania has already seen increases in electricity rates of 60 – 70 percent or more in other states as rate caps expire and utilities purchase electricity on the open market. Why does DEP want to lead Pennsylvania in the same direction by adopting a mercury plan that raises costs without any increase in health or environmental benefits?

Response: The Department disagrees, and notes that the PUC voted in favor of both the proposed and final Pennsylvania rule.

The Pennsylvania rule is designed, in part, to take advantage of the co-benefit reductions that will occur under CAIR, designed to reduce SO₂ and NO_x emissions from EGUs. The Phase 1 and Phase 2 timeframes under the Pennsylvania rule coincide with the timeframes under CAIR. As a result, the owners and operators of EGUs are not disadvantaged under this timeframe, and there should not be any reliability concerns for delivery of power over the electric grid. It is anticipated that the majority of EGUs in the Commonwealth will opt to comply with both phases of the rule using existing WFGD and SCR technology, which will be necessary in order to comply with CAIR. While some EGUs may opt to install mercury specific control technology, the Department believes that there are a number of currently available control technologies that coal-fired power plants can use to reduce their emissions of mercury to the atmosphere, which will result in a minor cost increase on a cents per KWh basis.

The Department performed a cost analysis as part of the development process of the Pennsylvania Mercury Rule. The analysis was also conducted to determine the cost of the proposed rule emission limits above and beyond the federal Clean Air Interstate Rule (CAIR). CAIR involves the installation air pollution control equipment for sulfur dioxide and nitrogen oxides control. For each applicable electric generating unit (EGU) in the state, the Department determined the amount of mercury, if any, that would need to be controlled beyond CAIR control levels for Phase 1 and Phase 2.

For each unit the capital cost, annualized capital costs, and operating costs were determined. This was offset against how much it would cost to purchase an equivalent amount of emissions allowances based on EPA's projections of mercury allowance costs from 2010 through 2030. These projections come from a U. S. Department of Energy (DOE) document titled "Annual Energy Outlook 2006 With Projections to 2030". The costs of control were based on cost estimates for installing and operating activated carbon injection systems. The capital costs were determined by estimating the cost ranging from \$2/KW -\$4/KW of plant electrical generating capacity. This capital cost was then annualized over 20 years assuming a 10 percent interest rate. The operating costs were calculated for Phase 1 based on a brominated activated carbon injection (BACI) injection rate of 6 lbs per million actual cubic feet of exhaust gas. For Phase 2 an injection rate of 4.84 or 9.68 lbs per million actual cubic feet of exhaust gas was used

depending on how much was needed to meet the emission limit. The injection rate was multiplied by the average of the three highest years of heat input between 1998 and 2002 and then multiplied by \$0.0175 lb of sorbent/Million Btu. This calculation was performed for each effected emission unit.

For Phase 1, the Department estimated that 16 units at 7 facilities might opt for mercury specific control beyond the CAIR control installations. The total capital costs needed for BACI were estimated to be approximately \$4.9 to \$9.8 million. The annual operating costs were estimated to be approximately \$14.7 million. The total annualized costs for Phase 1 were estimated to be approximately \$15.4 to \$15.8 million. The cost of \$0.0012/KWh represents the upper bound cost estimate for the EGUs to comply with the Phase 1 limits.

The mercury allowance costs were approximately \$15.7 million using DOE's projections of mercury allowance costs from 2010 through 2015 at \$953 per ounce. As a result, the total cost of complying with Phase 1 of the Pennsylvania-specific mercury regulation would be no more than the cost of complying with CAMR.

For Phase 2, the Department estimated that 18 units at 7 facilities might opt for mercury specific control beyond the CAIR control installations. Some EGU owners and operators may choose to install compact hybrid powdered activated carbon (COHPAC) filter systems to comply with the Pennsylvania mercury rule. Electric Power Research Institute (EPRI) has patented the "TOXECON" process, which employs COHPAC in the control configuration. TOXECON/COHPAC has been demonstrated to achieve around 90% reduction of mercury emissions. The capital costs for were determined by estimating the cost ranging from \$56.53/KW -\$125/KW of plant electrical generating capacity.

The difference between the lower-bound and upper-bound costs estimates reflects the difference between carbon injection and the installation of TOXECON/COHPAC filter systems. The total capital costs are estimated to range from \$141.6 to \$313.3 million. The total annualized cost (capital and operating) of mercury-specific control technology that EGU owners and operators might opt to install beyond CAIR to comply with the Pennsylvania Mercury Rule would range from \$16.7 to \$53 million per year. The resulting cost per kilowatt-hour (KWh) would be no greater than \$0.0038/KWh for the EGUs utilizing the TOXECON/COHPAC control technology to comply with the Phase 2 limits. The cost of \$0.0038/KWh represents the upper bound cost estimate for the EGUs to comply with the Phase 2 limits.

The estimated total cost of purchasing mercury allowances (using \$2,619 per ounce, according to a U.S. Department of Energy estimate) would be approximately \$28.3 million per year if EGU owners and operators did not implement additional measures beyond CAIR to comply with CAMR. At the low end of the cost estimate, the annualized cost of mercury specific technology may not be any more than the costs of purchasing the allowances. However, at the high end of the cost estimate, the additional cost above purchasing allowance would be around \$25.1 million. This would represent about \$0.0018/KWh.

Comment 16: The commentator states that PJM, the operator of the regional electricity grid, noted that "new limits on mercury emissions from coal-fired power plants now under consideration ... may be an important factor in potential future retirements."(PUC Hearing Testimony, Page 9 on May 24, 2006)

Electric generators met the record demand for electricity caused by the heat wave last week, but that may not be the case in the future if this proposed rule is not changed to prevent the premature shut-down of power plants needed to meet that demand. Pennsylvania has more than 30 smaller generating units that are at risk of premature retirement because it may not be economically feasible to install maximum mercury controls at these facilities. These plants represent approximately 20 percent of Pennsylvania's coal-fired generating capacity and are the same plants that afford electric generators the ability to produce more electricity during periods of peak demand, like the heat wave last week.

Without this capacity, there is considerable doubt whether we could have met the record peak demand experienced during the heat wave without emergency load curtailments which impose unacceptable costs on consumers. Because it can take five years or more to replace coal-fired generation, these are serious reliability and public safety issues that have not yet been addressed by DEP.

Response: The Department disagrees that smaller generating units are at risk for retirement under the PA-specific regulation and State Plan. Section 123.206 provides that the Department may approve of an alternative mercury emission standard or schedule, or both, if the owner or operator of an EGU subject to the emission standards of § 123.205 demonstrates in writing to the Department's satisfaction that the mercury reduction requirements are economically or technologically infeasible. The provision was added at the request of AQTAC to address the concerns about smaller, older plants. While the Department's approval of an alternate standard or compliance schedule will not relieve the owner or operator of an EGU from complying with the other requirements of §§ 123.207-123.215, owners and operators of these smaller older plants may also petition the Department for supplemental allowances under § 123.209. As a result, there are a number of provisions in the regulation to ensure that smaller, older plants are safeguarded.

Comment 17: The commentator states that encouraging plant operators to install advanced air pollution controls through a cap-and-trade system allows for the continued use of Pennsylvania coal which has a mercury content as much as twice as high as coal from West Virginia, Kentucky, Wyoming and other states. (We ask DEP to provide any studies it conducted on the mercury content of coal and the potential for switching fuels under its proposed rule.)

DEP's rule, without a cap-and-trade system, requires plant-by-plant reductions of mercury of 90 percent. The commentator believes the unit specific cap requirement of the DEP proposed rule will force many Pennsylvania high-mercury coals out of the market, resulting in the loss of jobs in the Pennsylvania mining industry. Even with scrubbers installed some coals won't be able to achieve compliance with the annual cap. For smaller plants that cannot afford to install scrubbers and that opt for lower capital cost options like activated carbon injection, here the proposed rule presents intolerable uncertainty without access to a market-based trading system. A source choosing this technology option, which in most tests to date has yielded mercury reductions in the range of 50-70 percent with eastern bituminous coals and 70-90 percent with western sub-bituminous coals, would appear to have a powerful incentive to switch to western sub-bituminous coal.

Response: The Department disagrees that the final-form regulation encourages fuel switching to sub-bituminous coal. A variety of options exist for owners and operators of EGUs to achieve the necessary control of mercury emissions including: co-benefit CAIR controls, coal cleaning, installing mercury emissions specific control equipment, low mercury content Pennsylvania coal which exists in abundance in the southwestern corner of the state, along with various compliance demonstration options. More than one emission reduction technology can be employed together to achieve the required levels, such as coal cleaning to reduce the level of mercury going into the combustor and carbon injection. While there has not previously existed any regulatory requirement to control mercury emissions from EGUs, these control techniques have been employed in other source categories. Recent tests on bituminous coal-fired EGUs have shown mercury emission reductions up to 90% and above. Fabric filters and wet scrubbers have achieved greater than 90% control. The costs of these control measures have been demonstrated to not be unreasonable. Owners and operators of EGUs that face non-compliance despite good control

efforts can also petition the Department for a Department approved alternate emission standard, compliance schedule and emission limitation for either technological or economic infeasibility.

The Pennsylvania-specific mercury emission reductions regulation does not require the installation of any specific type of control technology. Owners and operators may comply with the emission standards and limitations through any technological means necessary, including pretreatment of coal, the installation of CAIR-type controls or mercury-specific controls. The Department's assessment of fuel switching is that fuel switching is much more likely under the CAMR cap-and-trade program than under Pennsylvania's mercury regulation. Under CAMR an owner or operator could easily put together a compliance plan that used allowance purchases and fuel switching to achieve the required emission limitations. Under the Pennsylvania mercury regulation an owner or operator must make a significant mercury emission reduction, 80% in Phase 1 and 90% in Phase 2; and therefore does not have an added incentive to switch fuels. Based on the data submitted in response to the Department's information collection data request, fuel switching is not necessary to comply with its proposed emission standards. Therefore, fuel switching is not necessary to comply with the proposed rulemaking, and the continued use of the existing coal feedstocks should not be affected.

The Pennsylvania-specific mercury rule has a number of provisions that would not disadvantage any coal-type. For instance, coal washing may be used to reduce the mercury content of coal for which power plants owners and operators will receive credit. For example, a Department analysis showed the average "as received" mercury content is 26.73 lbHg/Tbtu. The average "as washed" mercury content is 12.93 lbHg/Tbtu, which results in an average removal of 49.5%.

The Pennsylvania rule is fuel-neutral. All new and existing units regardless of fuel-type are subject to the same mercury emission standards. This is not the case with CAMR which reserves the most stringent emission standards for bituminous burning coal-fired power plants and waste coal power plants. Also under CAMR existing units that burn bituminous coal are given fewer allowances under EPA's cap-and-trade scheme under CAMR than units that burn lignite and subbituminous coals. As a result, units that burn bituminous coal must make greater reductions than units that burn lignite and subbituminous coals. This particular allocation approach has been challenged by the Pennsylvania Coal Association (PCA) as part of the CAMR litigation in the Court of Appeals for the District of Columbia Circuit. As part of its challenge, PCA has said that this CAMR allocation scheme will result in less bituminous coal mined, fewer jobs for miners, and decreased revenue.

Comment 18: The commentator states that even if mercury specific control technology improves its performance dramatically with eastern bituminous coals, a source utilizing this option would be last in line in the DEP's order of preference for receiving non-tradable allowances, if it cannot meet its unit-specific cap. Under those circumstances, the commentator believes that lenders would not finance this investment in pollution control equipment because there would be no assurance that the plant would be able to operate a sufficient number of hours to recoup the investment in the highly competitive PJM market. And the commentator believes the pool of allowances that such a source would be dependent upon to make up any shortfalls is likely to be "under funded" because there are no incentives in this proposed rule to over-control emissions, and the CAMR cap for Pennsylvania is the most stringent of all the affected states. (We ask how DEP would propose to prevent the premature closing of power plants that install the technologies DEP requires, but cannot meet the cap due to the unavailability of mercury allowances available to DEP under its rule?)

Response: The final-form mercury rule, which is an element of the State Plan, allows the owner or operator of an EGU to demonstrate compliance with the annual emission limit by using a system-wide compliance demonstration. This compliance option will be in addition to the options included in the proposal for compliance on a unit-by-unit basis or by facility-wide emissions averaging. Therefore there will be less of a need to rely on the annual emission limit supplement pool for the additional allowances to comply with the annual emission limit, and an incentive to over control at other facilities.

After Phase 1 of the program, it is anticipated that the Pennsylvania rule would achieve a 29% greater reduction than CAMR. This would amount to 1.263 tons (2,526 lbs) of mercury emissions as opposed to 1.779 tons (3,558 lbs) of mercury emissions under the CAMR cap. After Phase 2, it is anticipated that the Pennsylvania rule would achieve a 39% greater reduction than what would be achieved by CAMR under Phase 2. This would mean that Pennsylvania would achieve its cap of 0.702 ton (1,404 lbs) by 2015 rather than exceeding it by 0.451 ton (902 lbs).

The petition process provisions under § 123.209(g) have been modified to remove the order of preference language in the proposed rule. While owners and operators of all affected EGUs, including CFBs, are eligible for supplemental allowances they must demonstrate that need based on the performance of the air pollution control technologies and measures that have been installed and are operating to control mercury emissions.

Comment 19: According to the U.S. Department of Energy, there is no reliable mercury-specific control technology available today that works on Pennsylvania coal to reduce mercury to the levels the DEP rule requires.

EPGA member companies, DOE and others continue to invest in research in this area and there has been some success, but we are far from a commercial application of the technology within the deadlines and at the consistent removal rates established in this proposed rule. (We ask DEP to provide any studies of the cost and removal efficiencies for mercury removal technologies using Pennsylvania coal in full-scale commercial applications at the levels required by the proposed rule.)

Response: The Department has determined that a control technology combination of cold side-ESP and FGD would result in at least 80% control efficiency of mercury emissions from coal-fired power plants in Pennsylvania. Moreover, a control technology combination of cold side-ESP, FGD, and SCR would result in at least 90% control efficiency of mercury emissions from coal-fired power plants in Pennsylvania. Therefore, the Department has selected the 80 and 90% control efficiencies as requirements for the Pennsylvania-specific mercury regulation. In addition, the Phase 1 and Phase 2 compliance dates of 2010 and 2015 in the final rulemaking and State Plan coincide with the deadlines under CAIR.

Additionally, the Institute of Clean Air Companies (ICAC) found that air pollution control vendors are reporting booking new contracts for mercury control equipment for more than a dozen power plant boilers. The contracts for commercial systems are attributed to federal and state regulations, including new source permit requirements and consent decrees, which specify high levels of mercury capture.

Moreover, a Congressional Research Service Report, April 15, 2005, stated that EPA's own Office of Research and Development (ORD), in a white paper posted on the EPA website March 2, 2004, appears to conclude that technology is more available and more effective than is maintained in the agency's CAMR rulemaking. ORD found that fabric filters, a relatively simple technology that is currently installed on more than 12% of power plants, achieve a 90% reduction in mercury emissions at bituminous coal plants and a 72% reduction at sub-bituminous plants. The addition of a scrubber increased the emission reduction to 98% at bituminous plants, according to ORD. The white paper further stated that, by 2010, activated carbon injection (ACI) with a fabric filter "has the potential to achieve 90% Hg reduction" on any rank of coal, and could be installed within 1-2 years of signing a contract to do so. Since the white paper was written, there have been reports that a European firm, Donau Carbon, has begun offering commercial guarantees for mercury removal from coal-fired power plants using ACI technology and ICAC has secured new contracts for mercury-specific controls.

Comment 20: The commentator states that if the technologies are not proven that can meet DEP's required reductions at the deadline stipulated by the proposed rule, power plant operators will have few options – none of them in Pennsylvania's best interests:

- Invest in unproven control technology and absorb the inevitable forced outage costs
- Curtail output
- Change fuels to lower mercury coals or to natural gas
- Shut down

Response: The Department does not believe that any of the options listed above will actually need to be considered by the owners and operators of EGUs in order to meet the mercury reduction requirements of the final-form regulation. The Department's assessment of available mercury control and mercury removal technologies exists today in order to meet the emission standards in § 123.205 and the emission limitation in § 123.207 for Phase 1 and 2 timeframes. A decision to switch fuels will not be determined due to the cost of mercury specific controls. Fuel switching is actually a greater likelihood under CAMR because partial control could be achieved through fuel switching to a lower mercury-containing fuel and the remainder from purchasing allowances.

The Department has determined that a control technology combination of cold side-ESP and FGD would result in at least 80% control efficiency of mercury emissions from coal-fired power plants in Pennsylvania. Moreover, a control technology combination of cold side-ESP, FGD, and SCR would result in at least 90% control efficiency of mercury emissions from coal-fired power plants in Pennsylvania. Because of this determination, the Department has selected the 80 and 90% control efficiencies as requirements for the Pennsylvania-specific mercury regulation. In addition, the Department has selected the Phase 1 and Phase 2 compliance dates of 2010 and 2015, because they coincide with the deadlines under CAIR.

New PCF EGUs operate at approximately 35% efficiency and must achieve at least 90% control efficiency, which results in an output-based mercury emission standard of 0.011 lbHg/GWh. Existing PCF EGUs operate at approximately 32% efficiency and must achieve at least 80% control efficiency for Phase 1 for an output-based mercury emission standard of 0.024 lbHg/GWh. The existing PCF EGUs must achieve at least 90% control efficiency for Phase 2 to result in an output-based mercury emission standard of 0.012 lbHg/GWh.

Injection of dry sorbents, such as powdered activated carbon (PAC), has been used for control of mercury emissions from waste combustors since 1994 and has been tested at numerous utility units in the United States. Testing has primarily focused on removal of mercury from the flue gas of low rank (lignite and sub-bituminous coals) coals, since this is more difficult than mercury removal from flue gas of bituminous coal fired units. Mercury removal greater than 90% across the emission control system was generally possible.

Activated carbon injection (ACI) systems have been sold for installation on 21 coal-fired utility boilers in the US. Seven of these units use ACI enhanced with bromine. The Institute of Clean Air Companies (ICAC) lists these sales. Moreover, a Congressional Research Service Report dated April 15, 2005, stated that EPA's own Office of Research and Development (ORD), in a white paper posted on the EPA website March 2, 2004, appears to conclude that technology is more available and more effective than is maintained in the agency's CAMR rulemaking. EPA's ORD found that fabric filters, a relatively simple technology that is currently installed on more than 12% of power plants, achieve a 90% reduction in mercury emissions at bituminous coal plants and a 72% reduction at sub-bituminous plants. The addition of a scrubber increased the emission reduction to 98% at bituminous plants, according to ORD. The white paper further stated that, by 2010, activated carbon injection (ACI) with a fabric filter "has the potential to achieve 90% Hg reduction" on any rank of coal, and could be installed within 1-2 years of signing a contract to do so.

In addition to the availability of many different mercury control options along with the mercury control co-benefits from CAIR controls, the owners and operators of EGUs will have numerous compliance options including credit for coal pre-cleaning. The Department's "Decision Document"

Comment 21: The commentator states that PA can trade allowances or trade jobs to other states. DEP's rule would trade jobs to other states. A cap-and-trade program will help keep jobs here. (We ask if DEP has done an economic impact analysis on this regulation that includes job loss and gain, impact on electricity markets and the cost to electricity customers and to make copies of these studies available.)

For the record, the United Mine Workers of America, International Brotherhood of Electrical Worker's and the PA Conference of the Teamsters are opposed to the DEP rule as written because of the concern about the loss of jobs. The Pennsylvania Coal Association) is opposed to the rule because it encourages the use of out-of-state coal. Several statewide business organizations are also opposing the rule due to concerns over jobs and impacts on electricity prices.

Response: The Department disagrees. It would cost far more for a utility to shut down a plant in Pennsylvania and open a brand new one in another state than it would to install mercury control equipment. Plus, even with CAMR, EGU owners and operators would still have to purchase allowances to offset their mercury emissions. This would increase operating costs similar to how installing control equipment would increase costs.

The Pennsylvania-specific mercury rule has a number of provisions that would not disadvantage any coal-type. For instance, coal washing may be used to reduce the mercury content of coal for which power plants owners and operators will receive credit. For example, a Department analysis showed the average "as received" mercury content is 26.73 lbHg/Tbtu. The average "as washed" mercury content is 12.93 lbHg/Tbtu, which results in an average removal of 51.6%.

The Pennsylvania rule is fuel-neutral. All new and existing units regardless of fuel-type are subject to the same mercury emission standards. This is not the case with CAMR which reserves the most stringent emission standards for bituminous burning coal-fired power plants and waste coal power plants. Also under CAMR existing units that burn bituminous coal are given fewer allowances under CAMR's cap-and-trade scheme than units that burn lignite and subbituminous coals. As a result, units that burn bituminous coal must make greater reductions than units that burn lignite and subbituminous coals.

The Department anticipates the vast majority of the mercury reductions in Pennsylvania will be achieved through the installation of CAIR controls, which more easily removes mercury from bituminous coal as opposed to sub-bituminous coal because of the higher chlorine content of the former. Furthermore, affected EGUS may now demonstrate compliance through system-wide demonstration. Consequently, the Department does not anticipate any disruption to the Pennsylvania coal industry because of a Pennsylvania specific mercury rule.

Comment 22: The commentator states that the ability of electric generators to recover their investments in advanced air pollution controls by selling their excess credits to others is critical in Pennsylvania's competitive market for electricity and to the price of electricity, because, unlike operators in many other states, Pennsylvania generators cannot recover their investments in air pollution controls through captive ratepayers.

Because Pennsylvania generators would face the uncertainty of not being able to recover their capital investments, the lending community would be extremely reluctant to take the substantial risk to provide the funds needed to install the air pollution controls on any but the largest most competitive plants, leading to still more premature retirements of generating capacity. (We ask how plant operators will fund the installation of mercury controls under DEP's rule if funds are not available from the financial markets for this purpose or if the financial markets impose premiums to cover their risk? We further ask DEP to explain how Pennsylvania electric

generators will remain competitive in the PJM market, and retain power plant and support jobs, when DEP deliberately and unnecessarily imposes emission reduction requirements that are more stringent than those of our most important competitor states, and then prevents plant owners' ability to redress this competitive disadvantage, or even recover their costs, by disallowing participation in the federal cap-and-trade program.)

Response: The owner or operator of each unit should design their compliance program to safely meet their annual emissions cap. Then, in the event that they happen to exceed their limit, the Department will make available excess allowances to the owner or operator of that unit. Since owners and operators of one unit cannot be certain if another unit will over-control each unit must strive to meet not only the emission limit requirements but also the annual limit. The rule was designed in this manner.

The owners and operators of each unit will know well in advance how many allowances they will be allotted on an annual basis. If the unit reduces its mercury emissions to below this annual cap they will be assured of meeting the annual allowance limit. Since each unit will have to meet the Phase 1 and Phase 2 emission limits they could possibly need a small incremental additional amount of control to meet their cap.

Additionally, the Pennsylvania-specific final-form regulation would require an 80% reduction of mercury present in the coal fired in EGUs on a 12-month rolling average by 2010, and 90% reduction of mercury present in the coal fired in EGUs on a 12-month rolling average by 2015. After Phase 1 of the program, it is anticipated that the Pennsylvania-specific regulation would achieve a 29% greater reduction than CAMR. This would amount to 1.263 tons (2,526 lbs) of mercury emissions as opposed to 1.779 tons (3,558 lbs) of mercury emissions under the CAMR cap. After Phase 2, it is anticipated that the Pennsylvania rule would achieve a 39% greater reduction than CAMR. This would mean that Pennsylvania would achieve its cap of 0.702 tons (1404 lbs) by 2015 rather than exceeding it by 0.451 tons (902 lbs).

The Pennsylvania-specific mercury rule contains a number of provisions that would not disadvantage Pennsylvania utilities or the Pennsylvania coal industry. For instance, coal washing may be used to reduce the mercury content of coal for which the owners and operators of the power plants may receive credit. The Pennsylvania rule is fuel-neutral. The Department anticipates the vast majority of the mercury reductions in Pennsylvania will to be achieved through the installation of CAIR controls. Furthermore, the owners and operators of affected EGUS may now demonstrate compliance through a system-wide compliance demonstration, provided for in the final-form regulation in newly added subsection (r) of § 123.207. The Department also does not anticipate that fuel switching would be necessary to comply with a State-specific mercury rule. Consequently, the Department does not anticipate any disruption to the Pennsylvania coal industry because of a Pennsylvania-specific mercury rule.

With regard to the competitive disadvantage comment, the Department has already replied to the mercury control cost in response to comment #15 submitted on behalf of the Electric Power Generation Association. The cost information given shows that at even the highest possible individual unit mercury control cost, the potential increase in electricity generation cost is negligible and will not be a factor in competition.

Appendix B-3:

**Comment and Response document on Section 111(d) State
Plan for existing designated EGUs**