

**LIGHTS OUT II: SHOULD EPA TAKE A STEP BACK
TO FULLY CONSIDER UTILITY MACT'S IMPACT
ON JOB CREATION**

HEARING

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LIGHTS OUT II: SHOULD EPA TAKE A STEP BACK TO FULLY CONSIDER UTILITY MACT'S IMPACT ON JOB CREATION

Tuesday, November 1, 2011

HOUSE OF REPRESENTATIVES,
COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM,
Washington, D.C.

The committee met, pursuant to call, at 1:03 p.m., in 2154, Rayburn House Office Building, Hon. Darrell E. Issa [chairman of the committee] presiding.

Present: Representatives Issa, Lankford, Amash, Gowdy, Cummings, Towns, Norton, Kucinich, and Connolly.

Staff Present: Ali Ahmad, Communications Advisor; Kurt Bardella, Senior Policy Advisor; Robert Borden, General Counsel; Molly Boyd, Parliamentarian; Lawrence Brady, Staff Director; Joseph A. Brazauskas, Counsel; John Cuaderes, Deputy Staff Director; Linda Good, Chief Clerk; Ryan M. Hambleton, Professional Staff Member; Christopher Hixon, Deputy Chief Counsel, Oversight; Ryan Little, Professional Staff Member; Justin LoFranco, Deputy Director of Digital Strategy; Mark D. Marin, Director of Oversight; Kristina M. Moore, Senior Counsel; Jeff Solsby, Senior Communications Advisor; Rebecca Watkins, Press Secretary; Nadia A. Zahran, Staff Assistant; Beverly Fraser Britton, Minority Counsel; Claire Coleman, Minority Counsel; Kevin Corbin, Minority Deputy Clerk; Lucinda Lessley, Minority Policy Director Steven Rangel, Minority Senior Counsel; Dave Rapallo, Minority Staff Director; and Ellen Zeng, Minority Counsel.

Chairman ISSA. The committee will come to order.

The Oversight Committee exists to secure two fundamental principles. First, Americans have a right to know that the money Washington takes from them is well spent. And second, Americans deserve an efficient, effective government that works for them. Our duty on the Oversight and Government Reform Committee is to protect these rights. Our solemn responsibility is to hold government accountable to taxpayers because taxpayers have a right to know what they get from their government. We will work tirelessly in partnership with citizen watchdogs to deliver the facts to the American people and bring genuine reform to the Federal bureaucracy. This is the mission of the Oversight and Government Reform Committee.

Today, a debate is unfolding in America that comes down to two fundamental questions about how much government do we need in our lives. From this side of Capitol Hill all the way to Pennsylvania

Avenue, there are hearings every day and listening sessions every day about the creation of jobs.

Today, we are going to listen about whether or not a tsunami of regulations, some well intended, some expedited, some perhaps in conflict with each other, are creating an environment in which the economic downturn will be prolonged. On one hand, the Obama administration has been stubborn in its determination to issue costly regulations and paid little regard to the impact these mandates will have on the broader economy. On the other hand, the administration has admitted that there are at least 500 regulations that need to be withdrawn. They have talked in terms of duplicate regulations. They have talked in terms of relieving regulatory burdens on job creators. So much so that the Gallup Poll of job creators, of entrepreneurs, considers the number one impediment to job creation to be, in fact, regulatory excess.

Today, we are going to hear about Utility MACT, the Environmental Protection Agency—EPA's—proposed issue of this rule, which is clearly by its own terms an \$11 billion rule, but in fact by most of the people on both sides of the aisle who are looking at the high end of what it could cost being ten times that, or more. Anything which causes the price of energy and its availability to suddenly change will disrupt markets, will change the balance of cost effectiveness here in America, because after all, if you increase the price of an essential fuel like electricity, you will by definition increase the cost of doing business, and particularly for manufacturing jobs, which often depend on a high volume of electricity in order to create efficiencies to offset advantages Third World countries have in less expensive labor.

Whether you're in Florida or—as our first witness today, Virginia—whether you're a donor of the fuel of greatest choice, that being coal; or in fact you're a recipient of that to power your power plants, you know that in fact the grid depends, at least 51 percent, on reliable power that today comes from coal.

We applaud the EPA for continuing a tradition to try to find ways to continually clean up all of our energy sources, to reduce particulates, and particularly to set a standard for reducing mercury. We have no objections to the attempt to, on an ongoing basis, increase the reliability of our power plants to deliver clean energy. At the same time, 24 Attorneys General, both Democrats and Republicans, have requested the EPA to postpone issuance of its rule for 1 year.

Today, we will hear from one of those Attorney Generals, along with the EPA and a think-tank individual, giving three different views from three different perspectives. This is not the last hearing we will have on the speed with which we can make air and water cleaner and the cost that it will have.

In no case do we want anyone to misunderstand. If this rule does not take place, air and water will be as clean tomorrow as it is today. If this rule takes place a year from now and it is different and better, it will only increase the cleanliness and the reliability that comes with good clean energy here in America.

The goal today is to hear: Is this the right time, is this the right speed, is the science ready, and most importantly, what will be the impact to the various States?

Chairman ISSA. With that, I would like to recognize the ranking member for his opening statement.

Mr. CUMMINGS. Mr. Chairman, I'd yield to the gentleman from Virginia, Mr. Connolly.

Mr. CONNOLLY. I thank the ranking member.

It's a shame that the committee majority shows so little interest in legislation that might promote technological innovation and improve management of Federal information technology. Instead, we are conducting another partisan hearing that isn't really related to our committee's primary jurisdiction.

Now the committee is holding a hearing to attack commonsense EPA limits on mercury, arsenic, dioxin, and other pollution. Consider the pressing technology related topics in which this committee has not held a hearing: cloud computing, data consolidation; an update to FISMA; implementation of the Chief Information Office's 25-point plan; or improvements to the acquisition workforce. We have not held hearings on filling the gaping holes in our acquisition workforce or about how to improve training for acquisition personnel. We have held markups and legislation to create new unfunded mandates and private sector relations—the DATA Act—but not on legislation to streamline or expedite data center consolidation or the shift to cloud-based data storage and processing.

The Republican leadership of this committee has abandoned the most important issues in Federal technology and management issues, which are of vital importance to one of the most important job-creating sectors of our economy—technology. Instead of focusing on these important topics, the committee majority has decided to attack limits on mercury and other toxic pollution.

The EPA is updating standards to regulate toxic mercury pollution because the courts found that a prior rule issued under the Bush administration on behalf of the polluters violated law. Under the Obama administration, the EPA actually is trying to do its job and reduce toxic pollution, as Congress directed in 1990. As the EPA attempts to administer the Clean Air Act, it is worth recalling that the Clean Air Act used to have bipartisan support. It was signed into law by a Republican President 40 years ago and strengthened substantially by a Republican President in 1990.

By any empirical measure, the Clean Air Act is a wild success. It saves 160,000 lives annually by preventing deaths that would otherwise be caused by air pollution. Major regulations implemented in the Clean Air Act have saved far more money than they have cost to be implemented.

Since the Clean Air Act was passed, the U.S. economy has grown by 200 percent and we have fostered a vibrant, new, clean-energy industry that creates jobs without creating diseases associated with fossil fuel production. The regulation this committee majority is attacking today is typical of the Clean Air Act regulations that will save lives and money. According to CRS, the Utility MACT rule would save 6,800 to 17,000 lives per year, with a net savings of at least \$48 billion.

The Republicans claim to be concerned that this lifesaving public health standard will threaten the reliability of electricity supply. Once again, we are presented with a false chase: in this case, a false choice between electricity and clear air. Those of us that have

been outside today breathe cleaner air right here in the Nation's Capitol as a direct result of the Clean Air Act. And yes, there are far more cars on the road and kilowatts of electricity being produced than when Congress passed the Clean Air Act in 1970.

The primary Republican witness, Virginia's Attorney General Ken Cuccinelli, has used his office to focus on narrow ideological issues that in my view squander taxpayer investment. He subpoenaed, for example, former UVA Professor Michael Mann in 2010 because he believed that Mann's well-regarded climate research might qualify as fraud under Virginia law. Not surprisingly, a circuit court disagreed. Now, Attorney General Cuccinelli is appealing to the Virginia Supreme Court.

The witch hunt has drawn condemnation from 800 Virginia scientists, the conservative Richmond Times Dispatch and almost every other major newspaper in the Commonwealth, the American Association of the Advancement of Science, and so many others. It is appalling that taxpayer money would be squandered in a vain attempt to discredit a single climate scientist.

In addition, litigating against his own State's premier university, founded by Thomas Jefferson, he filed a lawsuit against the Federal Government for the EPA's finding that greenhouse gas pollution poses a danger to human health and welfare. Unfortunately, as a caricature for the modern Republican Party, Attorney General Cuccinelli has fulfilled the predictions of the Washington Post's editorial board, suggesting that given his bizarre ideas, he would very likely become an embarrassment to the Commonwealth.

I regret that we are holding this hearing instead of going into other topics that I think would be more productive and would in fact create jobs.

With that, I yield back.

Chairman ISSA. I thank the gentleman.

Chairman ISSA. Members will have 6 days to submit opening statements and extraneous material for the record.

We will now recognize our first witness, the distinguished Attorney General of the Commonwealth of Virginia, the Honorable Ken Cuccinelli. Pursuant to the committee rules, all witnesses here will be sworn in. Would you please rise to take the oath.

Do you solemnly swear or affirm the testimony you are about to give will be the truth, the whole truth, and nothing but the truth?

Let the record indicate the witness answered in the affirmative.

Chairman ISSA. I am going to take a point of privilege, very briefly. I appreciate your being here today. I'm going to regret that there were some levels of the previous opening statement that may have seemed personal, and I apologize to the extent that you were offended. We appreciate your being here. We recognize you're one of many Attorney Generals that is involved in this. And I think on an overall committee basis, I would say that we are very pleased to have you here as a representative and hope that you will take the spirit of the full committee without any questions that you may have from other opening statements.

With that, you're recognized.

STATEMENT OF HON. KENNETH CUCCINELLI, II

Mr. CUCCINELLI. Thank you, Mr. Chairman. Chairman Issa, Ranking Member Cummings, members of the committee, I am Ken Cuccinelli, Attorney General for the Commonwealth of Virginia. I want to thank you for the invitation to speak about the MACT rule today. One of my duties as Attorney General, as is common among Attorneys General, is to serve as the attorney for utility customers in my State, advocating for fair rates for customers when electric utilities seek rate increases from the commission that approves them.

As you know, public utilities that have their rates set by State commissions are entitled under the U.S. Constitution to recover from customers the necessary expenses they incur to provide utilities. That includes expenses to comply with Federal laws and regulations. That means every time new environmental regulations are placed on electric utilities, it is actually the customers that I represent who pay the cost. This isn't to say that environmental regulations should automatically be rejected because they impose some costs, but it does mean the EPA should follow the proper procedures to ensure the alleged benefits of the regulation outweigh the real-world cost.

Unfortunately, the EPA hasn't been following normal procedures. In its regulatory impact analysis for the MACT rule, the EPA conceded that the result would increase electricity prices and would cost jobs in certain sectors. Yet the EPA admitted that it did not have sufficient information to quantify those losses. In fact, the rule will have a huge economic impact on this Nation. First, it will increase electricity prices over the course of the next 5 to 10 years of between 10 and 35 percent. That will vary, depending on where you are and what the conditions particularly of your generation and transmission are in your region. That can be a financial debt blow for businesses struggling to meet payroll and families on fixed incomes.

Second, retrofitting power plants to meet the standards will, as you all know, be prohibitively expensive. So there's no question that certain plants will close and the Nation's electricity supply will decrease, leading to upward pressure on prices and likely brownouts and possibly blackouts in strained periods of use. The EPA even concedes that at least 10 gigawatts of electricity will be lost from the Nation's power grid. Of course, FERC's initial analysis says over 80. That is a pretty dramatic difference between the EPA and the people who you would expect to know better.

Third, while the EPA says it can't quantify the number, it acknowledges that jobs will be lost. Their estimates are 180,000 jobs per year between 2013 and 2020.

For Virginia, the situation is even bleaker than for the rest of the Nation, though not Mr. Connolly's part of Virginia, which is where I live. A majority of the electricity for southside and southwest Virginia is generated from coal. Since the MACT rule will significantly increase prices for electricity produced from coal, the poorest part of my State will face the largest price increases, including part of Appalachia, one of the poorest parts of America.

But it gets even worse. The most important industry in southwest Virginia is coal mining. These regulations make coal more ex-

pensive and less desirable to use, which means the economy of southwest Virginia—again, including Appalachia—will be devastated by the destruction of the coal industry and the jobs lost along with it.

Whatever you think of the benefits of the MACT rule, a decision about whether it's prudent policy simply can't be made without considering these other impacts—and not just for Virginia, but for the entire country. What's even worse is that for regulation this important, the EPA set just 104 days, recently extended to 134, to review the more than 960,000 public comments on the impact of the rule, if you compare this to other significant rules where the EPA has set review periods of more than a year, with less comments. This abbreviated review period occurred because groups that support the EPA's position sued the EPA and then, in a very friendly settlement, the EPA agreed to the short review period.

This kind of gaming of the system is an affront to proper procedure and the rule of law and it really should concern people across the spectrum. This obvious attempt to rush the rule through was so outrageous that, as you noted, Mr. Chairman, I, along with 23 other Republican and Democrat States attorney general, the Governor of Iowa, and the Territory of Guam, filed an amicus brief asking the court not to approve the consent decree's short time period. Given these major economic issues, it's not good enough for the EPA to say that it lacks sufficient information to quantify the negative effects of its regulations. It needs to collect that information before imposing the rule, to make sure the benefits in fact outweigh the costs. If the EPA needs more time, then it should take it, instead of gaming the system by entering into a consent decree that shortens the time for review.

Thank you again for the opportunity to address these issues.

Chairman ISSA. Thank you.

[Prepared statement of Mr. Cuccinelli follows:]

TESTIMONY OF KENNETH T. CUCCINELLI, II
ATTORNEY GENERAL OF VIRGINIA
to the U.S. House of Representatives
Committee on Oversight and Government Reform
November 1, 2011

Chairman Issa, Ranking Member Cummings, and members of the committee, I am Ken Cuccinelli, and I serve as attorney general for the Commonwealth of Virginia. I want to thank the committee for its kind invitation to speak about the MACT rule, the process by which it is being pursued, and the effects it has on real people.

One of my statutory duties as attorney general is to serve as consumer counsel in ratemaking proceedings before the Virginia State Corporation Commission, the body that sets the rates that utilities charge customers in Virginia. This means I represent the interests of citizens and businesses that use electricity when there is a rate proceeding before the commission. In fact, my office recently completed rate hearings related to the two largest electric utilities in Virginia—Appalachian Power, an AEP operating company, which serves most of southwest Virginia; and Dominion Virginia Power, which serves a significant portion of the rest of the state. In short, when electric utilities seek increases in rates charged to customers, I am the customers' lawyer, advocating for fair rates.

As I am sure you recognize, public utilities that are subject to having their rates set by state commissions like Virginia's SCC are entitled under the United States Constitution to recover the costs they are required to incur in the course of serving their customers, plus a reasonable rate of return. This means that, if the necessary expenses of providing electricity go up, utilities are entitled as a matter of constitutional law to recover those expenses from their customers. By definition, expenses to comply with federal environmental laws and regulations are necessary and prudent expenses for an electric utility to incur.

Thus, every time new environmental regulations are placed on electric utilities, customers pay for them directly. The burden is not borne by the companies directly, but by their customers to whom the costs are passed on by law—whether those customers are small businesses that are barely making payroll and may be forced to close, families who can barely make their mortgage payments, or single mothers just getting by. If they use electricity, they are the ones who pay directly for these regulations. So when the EPA imposes things like the MACT rule, it has a direct and substantial effect on the lives of ordinary people.

This is not to say that environmental regulations are inherently bad or that they should automatically be rejected because they impose some costs. However, it does mean that both the agency that imposes the regulation and this committee should make sure that the agency follows the proper procedures to make certain that the alleged benefits of the regulation outweigh the real world costs. Unfortunately, the EPA has recently been

pushing through regulations without following normal procedures and without making such assessments. The MACT rule is just one such example.

In its Regulatory Impact Analysis related to the rule, EPA noted its belief that the MACT rule will create new jobs to ensure compliance with the new regulations. But it also conceded that the rule would increase electric prices and would harm at least certain sectors of the job market. Yet EPA made no attempt to quantify existing jobs that will be lost. The EPA stated:

Industries that use electricity will face higher electricity prices as a result of the toxics rule, reduce output, and demand less labor. **We do not currently have sufficient information to quantify these as potential employment gains or losses.**

Because there is no dispute that the MACT rule will increase electricity prices, there is also no question that, nationwide, it will close some businesses and further strain families that are just surviving at the margin.

However, for at least a part of my state, Virginia, the situation is even bleaker. The MACT rule, while raising electricity prices generally, directly increases prices for electricity produced by coal. As I noted before, Appalachian Power supplies a significant portion of the electricity in southwest Virginia, and a majority of its power supply is generated from coal. So the poorest citizens of my state will face the largest electric price increases because of the MACT rule.

However, the problem is even worse than that. One of the major industries in Southwest Virginia is coal mining. To the extent that these regulations and others like them make coal more expensive and less desirable to use, the economy of southwest Virginia will not simply be worsened by increased energy prices, but will be devastated by the destruction of a major industry and the jobs that go along with it. These factors are certain to worsen an already bad economic situation – likely on a geometric progression – creating an economic death spiral.

Whatever one thinks the benefits of the MACT rule are, a decision of whether it is prudent policy simply cannot be made without considering these impacts on the electricity customers and the economies like those in southwest Virginia and throughout the United States. Yet, as conceded in its own Regulatory Impact Analysis, the EPA states affirmatively that it seeks to impose the rule despite not having “**sufficient information to quantify**” the potential negative effects of the MACT rule.

Given EPA’s admission of having insufficient information, you may wonder how we got here. I suggest that this should be a red flag for everyone involved in House oversight, whether you agree with the MACT rule or not. For a regulation of this import, there has been a relatively short review period set by EPA—104 days to review and contemplate the more than 960,000 public comments regarding the impact of the rule. This is in stark

contrast to other significant rules in which the EPA has set review periods of more than a year.

How was such a small review period set? It occurred because of a practice that should make every member of this committee uneasy: Groups that support the position that EPA wishes to take sued the EPA and then, in a friendly settlement, EPA agreed to the short review period. Even if you fully support the MACT rule, this gaming of the system should bother you as an affront to proper procedure and the rule of law. No rule that is truly worthy needs these types of tricks to pass muster. Even if you agree with the MACT rule, some day, the shoe will be on the other foot, and you will be right to decry the abuse of the process. So this body should make sure that the process is not abused like this to gain a particular result.

This obvious attempt to get done through a consent decree something which apparently could not have been justified following normal procedures was so outrageous that I, along with 23 other states attorneys general, as well as the governor of Iowa and the territory of Guam, filed an amicus brief in the district court asking the court to not approve the consent decree's short time period.

The fact that half of the states in the union, represented by elected Republicans and Democrats alike, filed an amicus brief in a district court proceeding is extremely unusual. Generally, we wait until the court of appeals or Supreme Court level to get involved. This tells you how significant this rule is and what an affront to normal process the consent decree is.

In response, the EPA added 30 days to the review period. This was an attempt to lessen public pressure, but it was not a serious response to the significant problem.

Once again, I wish to state that I am not here to criticize all environmental regulation or the concepts of clean air and clean water. As a father of seven children who have to live on this earth for the better part of this century, I care that they live in a world of clean air and clean water. However, it is incumbent on the EPA, and on Congress when it delegates its power to the EPA, to make certain that the proposed benefits of a rule outweigh the costs. Here, we have a rule that everyone agrees will do at least three things:

- First, it will increase electricity prices. Estimates are that prices will increase between 10 and 35 percent. For business struggling to meet payroll or families on fixed incomes, a 10 percent increase – let alone a 35 percent increase – in a monthly electric bill is a financial death blow.
- Second, it will lessen electricity supplies nationwide. Because retrofitting plants to meet the standards will be prohibitively expensive, there is no question that certain plants will close and that the nation's available electricity supply will decrease. The EPA concedes that at least 10 gigawatts of electricity will be removed from the nation's power grid, while other estimates place the figure at

more than 80 gigawatts. That will place more upward pressure on prices and likely cause brownouts and blackouts at periods of peak demand.

- Third, the rule will create massive job losses. While the EPA says it cannot quantify the number of lost jobs, it acknowledges that jobs will be lost. There are estimates of 180,000 jobs lost per year for each year between 2013 and 2020. Of particular interest to me are estimates that 20,000 coal jobs will be lost, causing states in the Appalachian coal region to lose approximately 50,000 jobs each due to ripple effects. Southwest Virginia simply cannot afford the loss of 50,000 jobs.

Given these real world issues, it is not good enough for EPA to say it lacks sufficient information to quantify these negative effects. It needs to collect the information before imposing the rule to make sure the benefits outweigh the costs. If it needs more time, it should take it and not game the system by entering into a consent decree that shortens the ordinary time for review while maintaining it does not have sufficient information on critical issues.

Thank you again for the opportunity to address these issues.

States involved in the amicus brief in the district court, which asked the court to not approve the consent decree's short time period: MICHIGAN, ALABAMA, ALASKA, ARIZONA, ARKANSAS, COLORADO, FLORIDA, GEORGIA, INDIANA, KANSAS, COMMONWEALTH OF KENTUCKY, LOUISIANA, MISSISSIPPI, NEBRASKA, NORTH DAKOTA, OKLAHOMA, SOUTH CAROLINA, SOUTH DAKOTA, TENNESSEE, TEXAS, UTAH, COMMONWEALTH OF VIRGINIA, WEST VIRGINIA, AND WYOMING. ALSO TERRY E. BRANSTAD, GOVERNOR OF THE STATE OF IOWA, ON BEHALF OF THE PEOPLE OF IOWA; AND THE TERRITORY OF GUAM.

Chairman ISSA. And even though I didn't limit you to 5 minutes, you were perfectly prepared to deliver for 5 minutes.

I will now recognize myself for 5 minutes.

The chart up there, I think you are probably familiar with it, Attorney General. It is a little deceiving, though, for anyone watching it here. That large blue line represents that nearly million comments. The two others—I'll read them because they look like they're not there, but there's actually lines there—represent 214 comments; in the case of the middle one, for which there was 344 days of intervening period to evaluate; and then in the case of Casper, 3,907, in which there were 278.

Is there any logical reason from your experience both as an attorney and as a representative of your State, that you wouldn't have, for nearly a million, at least as much time as you had for 214 comments?

Mr. CUCCINELLI. No, not a logical reason. No.

Chairman ISSA. Then what do you think the reason is?

Mr. CUCCINELLI. Well, it's hard to escape that this is being crammed forward. And I understand there's policy goals. But given the impact—and I would venture to guess, having not read all 960,000 comments—

Chairman ISSA. I'm sure no one has yet.

Mr. CUCCINELLI. I'm sure that, even combined, no team has; that they probably relate primarily not to mercury, even though that's where this all begins because of the massive impact across the economy and across the industries that are affected.

Chairman ISSA. I'm going to put up another piece on this. This one baffled me a little bit. Perhaps you could help explain it. When we're looking at health-related items in this new standard, if I read correctly, that little sliver of red there, that's the mercury that's going to be affected. All of the blue area represents particulates. Is that your understanding of basically what we're dealing with here?

Mr. CUCCINELLI. My understanding is that nearly all—and that's consistent with this graph—of any alleged health benefits are going to come from the non-mercury elements of this rule.

Chairman ISSA. So most of the technology that has to be developed and implemented almost overnight and most of the cost is going to come from, if you will, the comparatively not harmless—but particulate—not in fact mercury, as so many people are alleging.

Mr. CUCCINELLI. That's correct. The technology necessary to achieve the mercury benefits, if left to stand alone, is a lot simpler and cheaper to utilize than what's necessary for the whole package. I'm sure that's no surprise. But it also would cut dramatically, though it hasn't been quantified, into the shutdowns of plants.

Chairman ISSA. Let me ask one more question because you've looked at the regulatory impact much more than anyone on the dais has. My understanding is that EPA's mandate to regulate particulates comes under NAAQS, a whole different discipline.

Mr. CUCCINELLI. Right.

Chairman ISSA. Doesn't it appear here as though they're combining 99 point-some percent of this bill's effect under a section and a review process that isn't appropriate?

Mr. CUCCINELLI. Absolutely. None of this is beyond EPA's reach through more explicit authority that they have elsewhere in the Act. And yet it has been put in—I know there's often in legislation there's sort of catch-all phrases—and whatever else you think might be unhealthy kind of language. But when what gets crammed in there, along with the mercury, is explicitly addressed somewhere else, it seems highly inappropriate to address it this way.

Chairman ISSA. A couple of quick followups. One of the ranking members from Virginia mentioned the 160,000 lives that the Clean Air Act saves each year, by EPA figures. Many of the estimates appear that at least 280,000 jobs will be lost as a result of this legislation in its current form. How does that impact your State of Virginia?

Mr. CUCCINELLI. Well, again, I'd point to Virginia will be affected differently in different parts of the Commonwealth. If you go to Martinsville, where we have over 20 percent unemployment, there's a lot of lost manufacturing there from the NAFTA era that we are rather hopeful if we can get an economic uptick and keep stable and relatively cost-effective energy prices, will become a manufacturing area again. This forecloses or makes it much more difficult for that to happen in that poor swath of Virginia where unemployment is particularly high. I already mentioned what happens in southwest Virginia, which is not a rich area either.

Chairman ISSA. You're known for clean coal, but this would still be coal that would be offset.

Mr. CUCCINELLI. Yes.

Chairman ISSA. Back to manufacturing. I wanted to focus on this because I'm a former manufacturer myself. The nature of American manufacturing, as I understand it, is we take affordable energy and we leverage it to compete against less expensive labor in Third World countries. And this essentially would take your maybe 2-cent a kilowatt an hour power and increase it by maybe three or four times. It's a huge increase if your base fuel is coal and it becomes natural gas. Isn't that correct?

Mr. CUCCINELLI. It certainly is. I can't speak to the exact degrees of increase, but there's no question the state we're in, it's much more marginal for us to become economics competitive. Anything close to the types of change that you've described takes us—makes us uncompetitive with large swaths of the world.

Chairman ISSA. Thank you. My time is more than expired. I yield to the ranking member.

Mr. CUMMINGS. Thank you very much.

Mr. Attorney General, it is good for you to be here. I would like to put into the record—have entered a joint statement from the Attorney General of the State of Maryland, my State, Doug Gansler, and Robert M. Summers, the secretary of the Maryland Department of Environment. The statement asserts that Maryland has successfully implemented a law that required major reduction in mercury emissions from coal-burning power plants. Maryland power plants have already reduced mercury emissions by 88 percent without affecting reliability. And in doing so, has created jobs in Maryland.

I ask that that be a part of the record.

Chairman ISSA. Without objection, so ordered.

Mr. CUMMINGS. Thank you, Mr. Chairman.

Mr. Attorney General, it's been documented that exposure to toxic pollution from power plants, such as hydraulic acid, the mercury, arsenic, and other metals, causes a wide variety of health conditions. These include asthma, which I suffer from, and other respiratory ailments, developmental disorders, neurological damage, birth defects, cancer, and death. Do you disagree with any of those findings?

Mr. CUCCINELLI. I'm really not in a position to give you a medical assessment. I'm just here to talk about the legal side.

Mr. CUMMINGS. I understand that. But you are sworn to protect the people of your great State, are you not?

Mr. CUCCINELLI. Sure am.

Mr. CUMMINGS. I would think you would take into consideration anything that might cause deaths, particularly from all of these different things. That's why I asked you. I'm not trying to take you out of your purview.

Mr. CUCCINELLI. We certainly take those into consideration, always looking for a balance.

Mr. CUMMINGS. Sure. It has also been reported that among industrial sources in the United States, coal and oil-fired power plants emit the most toxic air pollution and accounted for nearly 50 percent of all pollutants in 2009. Do you disagree with that?

Mr. CUCCINELLI. I'm not in a position to disagree. I would note that we have some co-located among our utilities, oil and coal. One thing we'd love to have seen, because we use the oil very infrequently—only when we have peak demand—if those had been excluded from this rule, that's one way they might have provided more flexibility for peak demand while still achieving many of the pollution reduction goals that they've set here. But there was no exception made for that.

Mr. CUMMINGS. It has been estimated that the proposed air toxic rule would save up to 53,000 lives by 2016. Have you heard that? Are you familiar with that?

Mr. CUCCINELLI. I've have heard that, yes.

Mr. CUMMINGS. Do you have any reason to disagree with that estimate?

Mr. CUCCINELLI. It strikes me as quite optimistic, yes. But I don't—it's such a large number, but I haven't done any independent research on that, no.

Mr. CUMMINGS. Mr. Attorney General, I understand that you asked a Federal judge—and you testified to this—to delay the final Air Toxic Rule for 1 year, making many of the same arguments you made here today. Was that in the form of a brief?

Mr. CUCCINELLI. It was, yes.

Mr. CUMMINGS. And are you aware that the Air Toxic Rules have been legally required by the Clean Air Act since 1990, 21 years ago?

Mr. CUCCINELLI. I am aware of that, yes.

Mr. CUMMINGS. I'd like to enter into the record the order of the judge denying this request. The same arguments we are hearing today have failed legal scrutiny, and Congress shouldn't give them but so much weight. I would ask they be admitted in the record.

Chairman ISSA. Without objection, though I would note that it went hand-in-hand with the 30-day extension and may not be germane 30 days from now.

Mr. CUMMINGS. I understand.

These are basically the same arguments. Is that right?

Mr. CUCCINELLI. That same judge told the EPA that if they need more time, they could come back and she'd grant it. So it is not, from our perspective, a closed question.

Mr. CUMMINGS. I understand.

With that, I yield back.

Chairman ISSA. I thank the gentleman.

We now go to the gentleman from the coal-producing alternate capitol, Cleveland, Ohio, Mr. Kucinich.

Mr. KUCINICH. Happy birthday, Mr. Chairman.

Chairman ISSA. Thanks, Dennis.

Mr. KUCINICH. Mr. Attorney General, welcome to this committee.

As Attorney General, isn't part of your responsibility to protect the residents of Virginia and not put them at greater risk for illness or even premature death due to air pollution?

Mr. CUCCINELLI. Certainly protecting the people of Virginia is an important part of my job, yes.

Mr. KUCINICH. Is it your responsibility to protect the people of Virginia from air pollution-related illnesses that could cause premature death?

Mr. CUCCINELLI. Part of what we do in my office is enforce environmental laws. And we are aggressive about doing that. So, yes.

Mr. KUCINICH. How many prosecutions have you had of environmental polluters since you've been in office?

Mr. CUCCINELLI. Ordinarily, the way those are resolved is with joint decrees that involve the EPA. I don't know how many. I know that we have had a regular flow of them.

Mr. KUCINICH. Have you recommended prosecution for polluters; and how many have you recommended? Can you be quite specific?

Mr. CUCCINELLI. We have resolved all of them with consent decrees, meaning those who are defendants—

Mr. KUCINICH. "We," meaning who, Mr. Attorney General?

Mr. CUCCINELLI. Inevitably, it is our Department of Environmental Quality which we typically are negotiating on behalf of, and the EPA, with polluters—

Mr. KUCINICH. Have you ever been involved personally in any of the negotiations related to resolving pollution—complaints over air pollution?

Mr. CUCCINELLI. My personal involvement has related to approving those resolutions negotiated by the attorneys in my office and with the EPA and with the defendants in question.

Mr. KUCINICH. And do you know what the outcome of those have been? Have they been consent agreements on behalf of communities that have had complaints about pollution?

Mr. CUCCINELLI. Yes, that's exactly how they've been resolved, with typically fines and requirements going forward, enforced by court order, for additional care to be taken, specific steps to be taken.

Mr. KUCINICH. So your office has been instrumental, you're saying, in causing polluters to be fined.

Mr. CUCCINELLI. Yes.

Mr. KUCINICH. Do you have any information you can present to this committee right now about specific cases?

Mr. CUCCINELLI. I did not bring specific cases.

Mr. KUCINICH. But you could produce—will you produce—for this committee a list of such cases?

Mr. CUCCINELLI. I'd be glad to.

Mr. KUCINICH. Could you tell members of this committee—and I was particularly interested in some of the equations you were talking about. You said that clean air standards—I'll paraphrase it—that they can cost jobs. Is that your position?

Mr. CUCCINELLI. Sure.

Mr. KUCINICH. What kind of jobs do they cost? Can you be specific as to the types of occupations?

Mr. CUCCINELLI. For starters, the most obvious is, since we are a coal State, southwest Virginia and the coal industry is affected, and unlike, say, the part of Virginia where I am from, northern Virginia, which has a fairly diverse economy, there's not an economic alternative in southwest Virginia. So there is that challenge, which is the most overt. Then comes the industries and businesses reliant on energy as a major component of their costs. Certainly, any manufacturing that would take place which we have in Virginia, primarily though not at all exclusively, in the southern part of Virginia and up the western part of the State, though again it is scattered, those would be—

Mr. KUCINICH. Thank you. You're saying that they cost jobs, by definition, in the coal industry. That's your position.

Mr. CUCCINELLI. Sure. I assume that's—

Mr. KUCINICH. Is it possible if you don't have clean air standards, that it could also create health problems for people?

Mr. CUCCINELLI. Sure. That's the tradeoff here. That's the tradeoff.

Mr. KUCINICH. Now, is dirty air good for poor people?

Mr. CUCCINELLI. Dirty air is not good for anybody.

Mr. KUCINICH. Because there would be less poor people if the air is dirty; or is it good for poor people because there will be less poor people if there is dirty air?

Mr. CUCCINELLI. Dirty air isn't good for anybody. Jobs are good for everybody.

Mr. KUCINICH. Can you tell me—if you're looking at job calculations—about the jobs that are created by poor air standards? Can you think of jobs that are created by poor air standards?

Mr. CUCCINELLI. The comparison that we are looking at—and it isn't our own, we are sort of swallowing all the studies, or as many of them being done—is compared to where we are now versus what is proposed. We are not suggesting anything ought to be undone, though I do think it would be far more appropriate for EPA to decouple some of the elements of the rule they're now proceeding on.

Mr. KUCINICH. Thank you, Mr. Chairman. I just wondered if the gentleman was including in his advocacy the jobs that are created for undertakers when people don't survive as a result of poor air standards.

Mr. CUCCINELLI. No.

Chairman ISSA. The gentleman may respond, if you would like.

Mr. CUCCINELLI. Sarcastically, or in general?

Chairman ISSA. You're the witness.

Mr. CUCCINELLI. No. We're trying to look at this in the aggregate. As I said, the one overt industry that can really be addressed from a Virginia standpoint is the coal industry and the spinoffs there. After that, it becomes the energy costs associated with the gradual rise in costs as those are incorporated through the utilities. Because the utilities pay none of this. It is the ratepayers who pay for all of this.

Mr. KUCINICH. Mr. Chairman, I appreciate you giving the gentleman a chance to respond, because he talked about the aggregate, which is what we've been talking about, because we're saying that 17,000 lives a year are on the line with respect to these regulations.

Thank you, Mr. Chairman.

Chairman ISSA. I thank you both.

We now recognize the gentleman from Virginia, Mr. Connolly, for 5 minutes.

Mr. CONNOLLY. Thank you, Mr. Chairman. And welcome, again, Mr. Attorney General.

The National Capital Region, including northern Virginia, is classified as a non-attainment region in terms of air pollution. Do you know what percentage of that air pollution is migrating pollution from coal-fired power plants?

Mr. CUCCINELLI. I do not.

Mr. CONNOLLY. Would it surprise you to learn that about a third of the air pollution in this region is attributed to those migrating pollution sources from coal-fired power plants not in this region?

Mr. CUCCINELLI. Well, I certainly wouldn't expect everything we deal with in region to have started here. I grant you that. But the specific numbers, I can't really suggest.

Mr. CONNOLLY. But certainly as the Attorney General of Virginia, representing, as you point out, all of Virginia, you can understand some of the anxiety and concern in the northern part of the State with respect to pollution caused by coal-fired power plants.

Mr. CUCCINELLI. I don't think that concern is quarantined to northern Virginia. I think it's shared across Virginia.

Mr. CONNOLLY. A point well taken.

Mr. CUCCINELLI. What is additionally shared is just a desire for balance to be achieved as we gradually try to keep our air cleaner and improve the standard of living in this country.

Mr. CONNOLLY. Mr. Attorney General, the proposition here is that, should this regulation go into effect, it would have devastating effects both on sources of electricity and on jobs. In 1990, with the Clean Air Act amendments, similar arguments were made. Do you know what happened to the price of electricity in the Commonwealth of Virginia?

Mr. CUCCINELLI. Not in 1990, no.

Mr. CONNOLLY. No. In the intervening 21 years, did it go up or down?

Mr. CUCCINELLI. I can speak to you back to the last decade or so but I can't go back to 1990.

Mr. CONNOLLY. Would it surprise you to learn that actually electricity rates in the Commonwealth of Virginia in that time period have actually fallen by 35.6 percent?

Mr. CUCCINELLI. It would not entirely surprise me.

Mr. CONNOLLY. Well, does that not call into question perhaps, then, the claims that in this particular case, that won't work and in fact electricity rates are going to go up? Given the experience we've had in the last 21 years, why should we put credence in such an argument?

Mr. CUCCINELLI. Certainly it would be a lot easier to analyze that argument if there were more than 134 days to look at 960,000 comments, presumably not all of which are substantive, but if you just compare them to other rules. You all had your own here from this committee. I would look at some others, like the chemical recovery combustion was 2½ years; reciprocating internal combustion engine, a year and a half. For cement, the Portland cement manufacturing. We're looking at 4½ months to consider the very questions you all are lobbing this way with assumed answers.

Mr. CONNOLLY. Mr. Cuccinelli, unfortunately, my time is limited. Certainly, the Clean Air Act amendments of 1990 were far more sweeping than what's in front of us now. What happened to electricity rates, for example, in other States with coal-fired power plants—and I'll list them: West Virginia, North Carolina, Pennsylvania, Ohio, Kentucky, and Alabama. Are their electricity rates in the intervening 21 years since that sweeping set of amendments, are they higher or lower relative to 1990?

Mr. CUCCINELLI. I don't study other States' electricity, specifically. I study the national and compare it to Virginia, unless something borders Virginia and we have a rate case where that's relevant.

Mr. CONNOLLY. Would it surprise you to learn they're also cheaper?

Mr. CUCCINELLI. No, I wouldn't be surprised either way, not knowing it.

Mr. CONNOLLY. Mr. Cuccinelli, correct me if I'm wrong, I was under the impression that, for example, under the Health Care Reform Act, the Affordable Care Act, you were an advocate for nullification. You supported legislation in the General Assembly of Virginia that made universal mandates illegal under the Commonwealth of Virginia. Is that not correct?

Mr. CUCCINELLI. "Nullification" is an incorrect term and it suggests you don't know history. "Nullification" is when a State says we're not going to obey your Federal law. That isn't what happened in Virginia. The General Assembly on a bipartisan basis passed a law. Two weeks later, the President signed PPACA, and those two were in conflict. As our constitutional structure provides, we went to court to resolve the disputes of authority related to those two laws. That is not "nullification," Congressman.

Chairman ISSA. If the gentleman would suspend.

Attorney General Cuccinelli, you can answer any question you choose to answer. However, you're only bound to answer questions that are within the germaneness of the subject for which you were brought here.

You may continue.

Mr. CONNOLLY. Mr. Chairman, if I may—The purpose of my question was not to focus on health care. I wanted to give the opportunity to the Attorney General to explain his position, because my question has to do with whether—you don't like "nullification." I'll call it preemption. Does the Commonwealth of Virginia have a similar preemption right, if you don't want to use the word "nullification," with respect to this regulation, in your view as the Attorney General of Virginia?

Mr. CUCCINELLI. I think the commerce clause very clearly gives the Congress, and therefore the Federal Government, the broad power to address something like pollution across State lines. Whereas, if you compare that to the health care example, ordering a particular individual to go buy a product; not regulating them once they're in commerce, but ordering them into commerce, is a completely different comparison. I have no constitutional complaints with what is going on in terms of the exercise of Federal authority here. My concerns are policy concerns and legal process concerns.

Mr. CONNOLLY. So you see the two as different.

Mr. CUCCINELLI. Oh, absolutely. We put those processes in place to protect not only the rights but to achieve the best policy outcomes. And I know, regardless of the opinions here, everyone would like to achieve the best possible outcomes for this country. I think that we are more likely to do that if we actually take a legitimate amount of time to consider the material that is now before us that is simply it is not humanly possible to consider all the comments that are now before us on this rule in the incredibly short time frame.

Mr. CONNOLLY. Thank you, Mr. Attorney General.

Chairman ISSA. I'd now ask unanimous consent that we be able to place in the record the details of the 1990 Clean Air Act, showing a 5-year period for rulemaking exception. Additionally, I'd ask unanimous consent that the statement by the Unions for Jobs and the Environment—these are all union organizations combining—that says EPA data implied that no coal unit in the United States meets all the proposed new sources, HAPS standards, regardless of the type of coal consumed or the effectiveness of its pollution control devices.

Again, that's Unions for Jobs and the Environment public comments.

[The information follows:]

Background

Our members traditionally support U.S. EPA regulations for the installation of pollution controls at new and existing powerplants. Several UJAE members are directly involved in the construction, maintenance and operation of electric generation facilities, while others are involved in the supply and transportation of coal for electric generation.

UJAE members recognize that the proposed MATS rule, restricting emissions of mercury and other hazardous air pollutants (“HAPS”) from new and existing fossil-fueled electric utility generating units, will have both positive and negative economic and job impacts affecting its members and their communities. On one hand, tens of thousands of job-years would be generated for the fabrication, construction, installation and operation of pollution control facilities. On the other hand, a potentially much larger number of permanent jobs may be lost in the mining, electric utility, and transport sectors if large numbers of coal-fired generating plants were closed in response to the rule. We regard this risk as real and substantial.

Overview of Comments

The purpose of these comments is to suggest improvements to the proposed rule that would reduce its net adverse impacts on employment by reducing the risk of widespread, near-term closures of existing coal-based generating units. We also urge EPA to provide a basis for the construction of well-controlled new coal units. EPA data imply that no coal unit in the United States meets all of the proposed new source HAPS standards, regardless of the type of coal consumed or the effectiveness of its pollution control devices. Eliminating this *de facto* new source prohibition, and increasing the flexibility of the rule’s provisions for existing sources, including the time provided for compliance, are key to reducing the net adverse job impacts of the rule.

UJAE appreciates the numerous innovations that EPA has incorporated in the MATS rule, including the use of alternative compliance standards and an expanded 131 unit sample for calculating emission rate floors for acid gases, particulate matter (“PM”) and trace metals.

The issue of overarching importance to UJAE members is the time allowed for compliance with MATS. The 36-month statutory compliance period provided by Section 112 of the Clean Air Act (“CAA”) is utterly inadequate for designing,

financing, permitting, and constructing the multitude of retrofit pollution controls needed to comply with the rule. EPA's proposal offers the potential for case-by-case one-year extensions of the compliance period. However, a case-by-case approach does not provide adequate certainty for investment planning because it invites administrative delays and potential litigation. An expedited pathway for obtaining one-year extensions could mitigate these concerns.

We recommend that EPA provide an across-the-board one-year extension for compliance as it has done in other Section 112 rulemakings such as the Marine MACT rule. The Marine MACT rule affected only 20 marine terminals. Together, the MATS and Industrial Boiler MACT rules will affect more than 2,000 coal-fired boilers. Ultimately, we believe that an extended five year timetable for compliance will be needed to reduce the number of utility generating units closed while increasing the number of pollution control retrofits. A five year compliance timeframe would help to reduce adverse impacts on the workers and communities subject to sudden plant closures.

We further suggest that EPA seek a 6- to 12-month delay in the promulgation of the final rule. This is among the most technically complex rules ever developed by EPA, and the agency will receive hundreds of suggested revisions to the proposed rule in this comment period. Properly digesting and analyzing these comments, and formulating revisions to the proposed rule, will require more than a few months. Recent experience with the Industrial Boiler MACT rule underscores the importance of providing adequate time to consider and respond to comments in complex Section 112 rulemakings.

UJAE disagrees with EPA's analyses that MATS would produce a modest net negative or net positive impact on employment,ⁱ and that the rule would induce only 10 Gigawatts (GW) of coal-based capacity to close.ⁱⁱ The balance of evidence from studies undertaken subsequent to the proposal suggests that 35 to 60 GW of coal capacity will close. The average retirement estimate from a group of recent studies is 44 GW. EPA's optimistic assumptions on the widespread application of dry sorbent injection technology may have contributed to the agency's low estimate of coal plant retirements.

Our preliminary analysis (February 2010) of "units at risk" screened the DOE/NETL database for unscrubbed units smaller than 400 MW and more than 40 years old. Some 56 GW of capacity at 433 units met these criteria. This estimate, together with independent studies released subsequent to the proposal, implies a much larger risk of permanent job loss than EPA's Regulatory Impact Analysis ("RIA.") We note that

EPA's job impact analysis did not attempt to estimate the "multiplier" effects of job losses in sectors such as coal mining and electric generation, and did not consider the adverse employment effects of higher electric rates.ⁱⁱⁱ

We offer specific recommendations for revising the proposed PM limit for existing sources based on an analysis of EPA's sample group of 131 units. When we removed units that do not employ scrubbers or sorbent injection – precisely the kinds of technologies that will be required to meet the proposed existing source limits for mercury, acid gases and particulate matter – the resulting PM emission rate of the sampled units is more than twice EPA's estimate. The downward bias of EPA's sample group should be corrected.

UJAE also recommends revision of the approach that EPA employs to set new source emissions. EPA's methodology creates a "FrankenPlant" of emission limits drawn from units with disparate coal supply and technology configurations. An alternative approach should be developed that sets a suite of emission limits based on the best performing units for different coals and emission control technologies consistent with current CAA permitting requirements. Alternatively, the new source emission limits should be subcategorized by various coal types to ensure that all coals are able to meet applicable HAPS. Setting a single new source MACT limit for a specific emission, based on data from a single best-performing unit, disenfranchises huge segments of the U.S. coal reserve base with different chemical characteristics for mercury, chlorine, sulfur, ash and other factors.

We are concerned that the proposed alternative SO₂ standard for units unable to meet the acid gas standard for HCL may not be achievable even at well-controlled units burning higher-sulfur coals. The majority of coals produced in Ohio, Indiana and Illinois would not meet the proposed alternative SO₂ limit at units achieving 95% SO₂ control. Data provided by EPA indicate, for example, that Ohio may lose one-third of its coal production due to switching to lower-sulfur coals.^{iv} We recommend that EPA develop an alternative SO₂ standard that takes fuel sulfur content into account through subcategorization. Alternatively, EPA should consider subcategorizing the HCL standard based on coal chemistry (e.g., Cl or S) to ensure that well-controlled units equipped with scrubbers and SCRs can meet the HCL standard.

In addition, EPA needs to take into account the impact of the parallel Boiler MACT rule, now under reconsideration, on the supply and demand for retrofit labor, equipment, parts and supplies. More than 900 industrial coal boilers are affected by Boiler MACT, and many of these units will be competing with utilities for retrofits

during approximately the same time period. The combined demands on equipment suppliers of these two rules should be assessed to determine the feasibility of accomplishing compliance within 3 to 5 year timeframes.

UJAE notes that more than 99% of the public health benefits that EPA claims would result from the MATS rule are “co-benefits” from the reduction of PM_{2.5} and other non-toxic emissions. Benefits from the rule’s mercury reductions are minimal, on the order of \$0.5 to \$1.5 million net present value, reflecting the rule’s very modest impact on mercury deposition.^v EPA’s RIA projects that the rule will reduce mercury deposition by 1% in the continental U.S.^{vi}

We defer detailed comment on the rule’s public health benefits to experts in health and risk sciences. We are concerned, however, that the agency’s “per ton” health benefits methodology “does not fully reflect local variability in population density, meteorology, exposure, baseline health incidence rates, or other local factors that might lead to an over-estimate or under-estimate of the actual benefits of controlling SO₂,”^{vii} does not attempt to speciate PM based on chemical toxicity;^{viii} and counts criteria pollutant benefits from PM and SO₂ reductions that likely will result in any event due to compliance with other provisions of the Clean Air Act, including the 2010 1-hour SO₂ National Ambient Air Quality Standard (“NAAQS”) and pending revisions to the PM_{2.5} standards. We also disagree in principle with the calculation of premature deaths and other health impacts at exposure levels below the primary NAAQS.^{ix} The CAA requires EPA to establish primary NAAQS at levels to protect even sensitive members of the population from any adverse health effects from air pollution with an adequate margin of safety and without regard to cost. If adverse health effects are observed at levels below the primary NAAQS, the CAA provides a regular process for reviewing and revising the standards.

Comments on New Source HAPS

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

Indeed, the proposed limits for new sources, based on single-unit observations, are so stringent that only a handful of units in the Information Collection Request (“ICR”) database could meet the proposed new source limits:

Units in the ICR Data Base Meeting Proposed New Source HAPS

HAPS new source standard	No. of units meeting standards
Lignite hg beyond the floor	3
Hg, PM and HCl floors combined	0
Bituminous/subbituminous Hg floor	17
PM floor	18
HCl floor	14

Source: U.S. EPA (see Attachment 1).

The extent of nominal noncompliance with the proposed new source limits is overwhelming, despite the inclusion within the ICR database of more than 100 extremely “well-controlled units,” including some 40 units equipped with activated carbon injection for mercury control, 65 bituminous units equipped with wet scrubbers, and dozens of units equipped with fabric filters for PM control.

The rule’s effective prohibition against the construction of well-controlled new coal generating units reflects the “FrankenPlant” nature of EPA’s methodology to set new source HAPS. For each emission limit, EPA selected the best performing unit from its ICR database, regardless of the type of coal burned, pollution control configuration, or boiler type or size. EPA’s summary of its new source MACT limit analysis appears in the table below, prior to the agency’s revision of the mercury limits to correct a statistical error:

SUMMARY OF MACT FLOOR RESULTS FOR COAL-BASED NEW SOURCES			
Subcategory	PM	HCl	Mercury
Coal-fired unit designed for coal \geq 8,300 Btu/lb.			
Avg. of top performer	0.03 lb/MWh	0.2 lb/GWh	0.00001 lb/GWh.
99% UPL of top performer (test runs)	0.050 lb/MWh	0.30 lb/GWh	0.000010 lb/GWh.
Coal-fired unit designed for coal < 8,300 Btu/lb.			
Avg. of top performer	0.03 lb/MWh	0.2 lb/GWh	0.02 lb/GWh.
99% UPL of top performer (test runs)	0.050 lb/MWh	0.30 lb/GWh	0.040 lb/GWh.

Source: 76 FR 24976, 26058 (May 3, 2011, footnotes omitted.)

EPA has indicated^x that the proposed new source PM limit of 0.05 lbs/MWh is based on test data from the Dunkirk plant (Unit #1) in New York, a facility that is equipped with a fabric filter and sorbent injection. This 75 MW unit could not be permitted under prevailing Best Available Control Technology (“BACT”) requirements for the control of SO₂ and NO_x emissions. Meeting these standards typically would require a wet or dry flue gas scrubber for SO₂ control, selective catalytic reduction (“SCR”) for NO_x control, and a baghouse or fabric filter for PM control. Additional controls for mercury such as activated carbon injection technology (“ACI”) also may be required to meet the mercury limit proposed in this rule.

The mercury limit for new sources was developed from the Nucla circulating fluidized bed plant in Colorado.^{xi} This facility is the world's first utility-sized power plant to employ atmospheric circulating fluidized-bed combustion. It burns a high-quality Colorado bituminous coal that ranks 9th lowest in mercury content among the coals supplied to 200 units in the ICR November 2010 database. This 100 MW unit employs SNCR for NO_x control and is equipped with a fabric filter for PM control. It lacks a scrubber or other technologies for SO₂ control, but achieves 70% SO₂ control through its circulating fluid bed technology. This unit, despite its innovative features, could not be permitted today as a NSPS/BACT source. It is not representative of the kinds of boiler designs or emission control technology configurations needed to comply with current CAA permitting requirements, or with the range of U.S. coal types likely to be employed in new baseload generating units.

We urge EPA to resolve the “FrankenPlant” problem in its proposed new source HAPS by providing a suite of HAPS limits reflecting differences in coal chemistry among bituminous, subbituminous and lignite coals, and the types of emission controls typically needed to comply with NSPS and BACT requirements for criteria air pollutants. These data are readily available in the ICR database.

The table below illustrates one possible approach for specifying HAPS limits appropriate for different input coal varieties and emission control configurations:

Illustrative Subcategorization of New Source HAPS

Coal/controls	PM	HCL	Mercury
BIT WFGD SCR FF	Plant A	Plant A	Plant A
BIT DFGD/SD SCR FF	Plant B	Plant B	Plant B
SUB WFGD SCR FF ACI	Plant C	Plant C	Plant C
SUB DFGD/SD SCR FF ACI	Plant D	Plant D	Plant D
LIG DFGD FF ACI	Plant E	Plant E	Plant E

Notes: BIT – Bituminous; SUB – Subbituminous; LIG – Lignite; WFGD – Wet scrubber; DFGD – Dry Scrubber; SD – Spray Dryer; SCR – Selective Catalytic Reduction; FF – Fabric Filter or Baghouse; ACI – Activated Carbon Injection.

In the alternative, EPA could set individual new source HAPS based on coal input characteristics, using several different coal types representative of the U.S. coal reserve base, coupled with recent BACT permitting decisions, to help ensure that all types of coal can be used in well-controlled new units.

PM Limits for Existing Sources

EPA's sample of 131 units used to determine the non-mercury PM MACT floor for existing units is inappropriate, and the resulting limit of 0.05 lb MWh is flawed. The ICR sample included a large number of units lacking scrubbers or other SO₂ controls that add particulate matter to the flue gas stream, and that must be removed by PM collection devices such as baghouses or electrostatic precipitators ("ESPs.")

We used EPA's ICR database of 200+ coal units to calculate "Top-130" emission rates for the best-performing units, ranked by filterable PM in lbs/mmbtu. The attached spreadsheet (Attachment 2) calculates average emission rates and standard deviations for the top-130 units similar to the approach EPA applied to these data. Variability is not taken into account through UPL calculations.

The analysis next removed from the ICR sample all units not controlled for either SO₂ or mercury (e.g., wet or dry scrubbers, spray dryers, sorbent injection, or ACI). This created a new data set of 124 "controlled" units that is more representative of control technology configurations required by the proposed MACT limits for acid gases, metals, mercury, etc. The units removed from the sample are typically equipped only with ESPs or fabric filters, and do not have additional particulate

loadings to their PM removal devices caused by scrubbers, sorbent injection, or other controls needed to meet proposed MACT emission standards.

As a separate check on the results, the emission rates for 26 units equipped with spray dryers were calculated. These are among the best performing units for acid gases and other hazardous air pollutants in the EPA ICR database.

The tables in Attachment 2 provide detailed results for the sample groups. The filterable PM and condensable PM_{2.5} emission rates for the three samples are as follows:

Average PM Emission Rates in Lbs/MMBTU of Alternative ICR Samples

	Top-130	Controlled-124	26 Spray Dryers
Filterable PM	0.0046	0.0108	0.0105
Diff vs Top-130	n.a.	2.35x	2.28x
Condensable PM _{2.5}	0.0122	0.0134	0.0142
Diff vs Top-130	n.a.	1.10x	1.16x

The “Top-130” unit ICR sample is not representative of the technology configurations needed to comply with the proposed MATS rule. It includes many units without SO₂ or mercury controls, with relatively low PM emission rates. This tends to bias the sample average emission rate downwards, relative to an alternative sample group of units equipped with a variety of controls needed to meet MACT standards. The average emission rate of filterable PM for the “Controlled-124” units is more than twice as great as the Top-130. Their average condensable PM_{2.5} emission rate is marginally higher than the Top-130.

The results obtained for the sample of 26 units equipped with spray dryers are very close to the findings for the “Controlled-124” unit sample, illustrating the downward bias of the Top-130 sample.

This analysis suggests the need for more refined data analysis of the ICR dataset, including recalculation of allowable PM limits taking control technology configurations and variability into account through UPL calculations. MACT emission floors for the “top-131” existing sources should be based upon the best performing units equipped with control technologies similar to those needed for compliance with MACT (e.g., scrubbers, spray dryers or sorbent injection.)

HCL Limits and the Alternative SO₂ Standard

EPA is proposing an acid gas standard of 0.002 lb HCL per mmbtu, or 200 lbs/TBTU, for existing coal-based generating units. In the alternative, the agency proposes an SO₂ emission rate standard of 0.20 lbs SO₂/mmbtu. We agree in principle that an alternative SO₂ standard should be available to units unable to achieve the HCL limit.

UJAE is concerned that many well-controlled plants equipped with flue gas scrubbers may not be able to meet either of the proposed acid gas standards. Data provided by EPA (Attachment 1) indicate that a substantial number of both eastern and western scrubbed plants will be able to meet the proposed standards. However, many well-controlled units in the ICR database do not meet the proposed HCL limits. The table below illustrates the characteristics of several of these units:

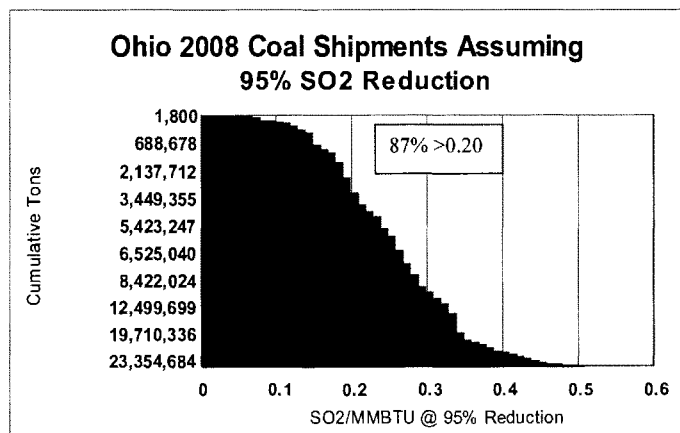
Well-controlled Units Not Meeting HCL Floor of 0.002 lb/mmbtu

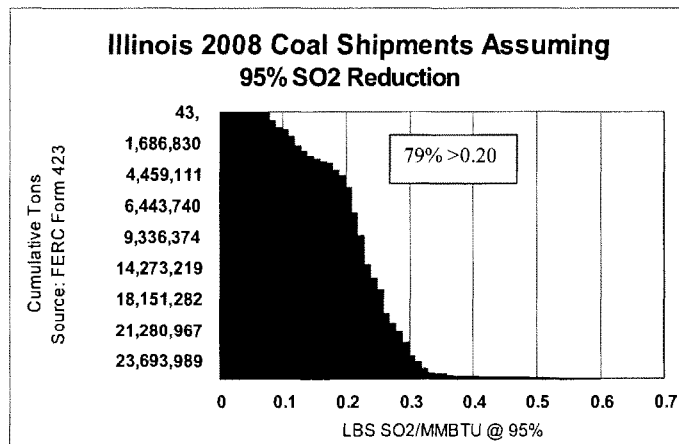
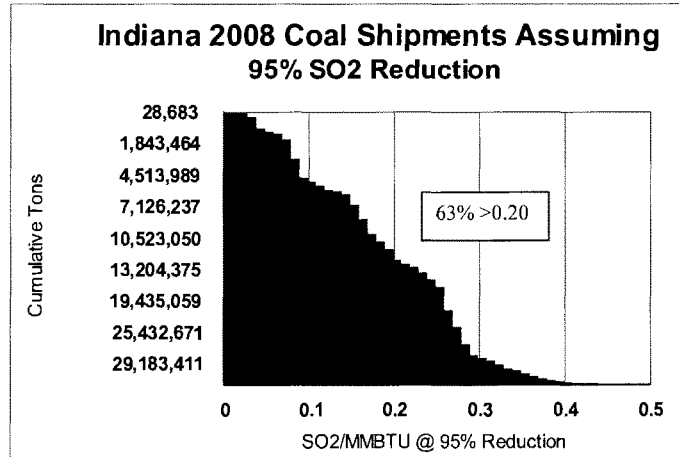
Unit	State	Fuel	Controls	SO ₂ emissions
Big Bend 01	FL	BIT	FGD, ESP	n.a.
Cogentrix 1	VA	BIT	SD, FF	0.72 lb/mmbtu
Reid Gardner 1	NV	BIT	Venturi, FF	0.06 lb/mmbtu
Asheville 1	NC	BIT	NEW BW, SCR, ESP	0.05 lb/mmbtu
Arapahoe 4	CO	SUB	DSI, FF	0.38 lb/mmbtu
Big Bend 2	FL	BIT	FGD, SCR, ESP	n.a.
Gavin 1	OH	BIT	FGD, SCR, ESP	0.27 lb/mmbtu
Gavin 2	OH	BIT	FGD, SCR, ESP	0.29 lb/mmbtu
Mitchell 2	WV	BIT	FGD, SCR, ESP	0.07 lb/mmbtu
Mitchell 1	WV	BIT	FGD, SCR, ESP	0.06 lb/mmbtu
Sioux	MO	SUB/BIT	FGD, SNCR, ESP	n.a.
James River 1	VA	BIT	SD, FF	0.49 lb/mmbtu
James River 2	VA	BIT	SD, FF	0.49 lb/mmbtu
Cedar Bay 1	FL	BIT	DFGD, SNCR, FF	0.13 lb/mmbtu
Cedar Bay 2	FL	BIT	DFGD, SNCR, FF	n.a.
Culley Config2	IN	SUB	FGD, FF	n.a.
Culley Config3	IN	SUB	FGD, SCR, FF	n.a.

Source: Derived from EPA ICR Database (November 2010) and Responses to Labor Questions (Attachment 1, Plants Meeting Existing Source HCL Standard, June 2011.)

Several of these units are able to meet the alternative SO₂ standard of 0.20 lb SO₂/mmbtu. However, the higher-sulfur coals supplied to scrubbed plants in the eastern U.S. may not be able to achieve such an emission rate even with an assumed 95% SO₂ removal rate (for comparison, EPA is proposing a new source NSPS of 97% SO₂ removal in this rulemaking, based on its analysis of the best-performing units.)

Our assessment of FERC Form 423 coal delivery data for 2008 (Attachment 3), indicates that 125 million tons, or 12% of total coal deliveries to utilities in 2005, would not meet the alternative SO₂ standard at units equipped with 95%-removal scrubbers. The impacts on individual Midwestern states could be particularly severe, as illustrated by the charts below. These show the percentage of 2008 coal deliveries from mines in Ohio, Indiana and Illinois that would exceed the 0.20 lb SO₂ alternative standard at well-controlled units.





In view of these results, UJAE recommends that EPA consider subcategorizing the alternative SO₂ standard to reflect sulfur content. For example, a standard could be set for units burning higher-sulfur coals with sulfur contents such as 2.0% and higher, with a lower standard for units consuming lower-sulfur coal.

Alternatively, EPA could consider subcategorizing the HCl standard based on coal chemistry (e.g., Cl or S) to ensure that well-controlled units equipped with scrubbers and SCRs are able to meet the HCl standard.

Mercury Limit for Existing Sources

EPA revised the mercury limits for both new and existing sources subsequent to the March 16 proposal, correcting errors in the statistical evaluation of MACT floor limits. The mercury limit for existing sources burning coals >8,300 BU/lb. was revised from 1.0 lb./TBTU to a level of 1.2 lb./TBTU. The corrected standard is based on an analysis of the performance of some 40 units in the ICR database, nearly all equipped with ACI technology for mercury control.

EPA's mercury analysis using the top-12% of its ICR sample departs from the "top 131" units used to determine the HCl and PM limits, and omits many units burning bituminous coals with wet scrubbers and SCRs. This combination of fuels and technologies is widely recognized as highly effective for mercury control. EPA should reanalyze the existing source mercury floor using the top-131 performing units in the ICR database. Virtually all of these units are equipped with controls that remove mercury, ranging from fuel pre-treatment to scrubbers and baghouses.

Preliminary Assessment of "Units at Risk"

The coal units most vulnerable to premature retirement due to MATS are older (e.g., >40 years) and smaller (e.g., <400 MW) units that are cycling or "load-following" units. The additional capital and O&M costs associated with scrubbers or sorbent injection and baghouses would tend to knock many of these units off the dispatch curve – meaning they would not run frequently enough to recoup the costs of controls. Combined cycle natural gas units, where available, likely would pick up their share of generation. Credit Suisse estimates that additional natural gas demand created by coal unit shutdowns could reach 5 to 10 Billion Cubic Feet per day by 2017.^{xii}

A preliminary assessment of coal "units at risk" and related potential job losses is contained in Attachment 4, based on data sorted from the 2007 DOE/NETL Coal Plant Data Base, updated for information on recent scrubber retrofits and retirements. The units included in the screening are more than 40 years old and between 25 MW and 400 MW, without installed or planned scrubbers.

A total of 433 units with 56 Gigawatts of capacity are included in the screening results. The average unit size is 135 MW, with an average age of 52 years. For comparison, the average age of the 9.9 GW of units retired in EPA's analysis is 51 years, with an average capacity of 109 MW.^{xiii} The coal consumed by these 433 units, 133 million tons in 2005, represented 13% of U.S. utility coal consumption in that year.

The inclusion of any unit in this screening analysis is not intended to imply that the unit would close as a consequence of MATS. Many smaller units may be viable retrofit candidates. By the same token, some larger units may be closed in response to the rule due to site constraints, cost, or other considerations. We also recognize that several units included in the 2007 NETL database may be subject to consent decrees or retirement announcements that are not reflected in this preliminary assessment.

The 2005 generation from these units provided a substantial share of total electric generation in several regions (using a 2009 state generation baseline): 18% in the East North Central region, 14% in the West North Central, and 12% in the South Atlantic. In several states, these units supplied 20% or more of total generation.

Job Loss Estimates

The potential job losses associated with the closure of large numbers of older and smaller coal units could be significant, amounting to more than 50,000 direct jobs in the coal, utility and rail industries, with a total job loss including indirect jobs of 251,300. The table below summarizes estimated direct job losses in the utility, coal and rail sectors by region based on the 2005 electric generation of affected units. Indirect job losses are estimated using Department of Commerce RIMS II multiplier data for the electric, gas and water utility industries, specific to each state.

These estimates do not account for short-term job gains for emission control fabrication and construction, or for related permanent job increases for control operation. They do not consider jobs associated with the construction and operation of alternative generation. They are intended to provide an order-of-magnitude estimate of the potential gross permanent job displacements resulting from widespread retirements of smaller and older coal power plants.

**Potential Job Losses Due to Closure of Coal “Units at Risk,”
25-400 MW, >40 years old w/o existing or planned scrubbers**

	No. of units	Direct jobs	Total jobs
New England	11	1,975	6,552
Middle Atlantic	34	2,564	13,101
E. No. Central	146	17,605	82,873
W. No. Central	74	6,868	29,880
So. Atlantic	98	14,324	63,304
E. So. Central	55	9,141	46,570
Mountain	15	1,675	9,010
Total U.S.	433	54,151	251,291

Source: See Attachment 4.

The estimates of potential plant closures presented here are generally consistent with other analyses developed subsequent to the announcement of the proposed rule on March 16, 2011. The table below summarizes recent projections of generating capacity closures anticipated as a result of EPA rulemakings:

Recent Projections of Coal Capacity Closures Due to EPA Rules

Source	Rules	Capacity retired (GW)	Timeframe
FBR Capital Markets (4/13/11)	MATS	35-50+GW (depends on DSI use)	2015
Credit Suisse* (4/11)	MATS/TR	~60 GW (base case)	2015-17
Bipartisan Policy Ctr. (6/13/11)	MATS/TR/ 316(b)	15-18 GW net	2015
NERA/ACCCE (6/11)	MATS/TR	48 GW net of 5 GW BAU	2016
AEP** (4/11)	MATS/TR	~54 GW	2015
Average***		~44 GW	

* Credit Suisse estimates from April 26, 2011, EIA Energy Conference.

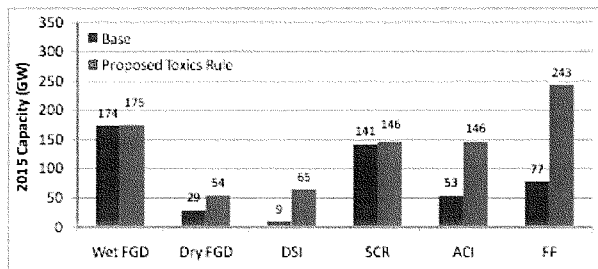
** AEP estimates from April 26, 2011 EIA Energy Conference (“almost all unscrubbed small units will retire by 2015”).

*** Based on midpoint where values are expressed in a range.

EPA Overestimates Reliance on Dry Sorbent Injection And Underestimates Unit Retirements

The Regulatory Impact Analysis (“RIA”) for the proposed MATS rule indicates that EPA expects dry sorbent injection (“DSI”) to play a prominent role in utility compliance with the proposed acid gas standards. As shown in the chart below from the MATS RIA, DSI installations increase from 9 GW in the base case to 65 GW in the Toxics Rule case. Major increases also are projected for activated carbon injection (“ACI”) for mercury control and for fabric filters to control PM emissions. Only 1 GW of wet scrubbers is projected to be added, along with 25 GW of dry scrubbers.

Figure 8-6. Retrofit Pollution Control Installations on Coal-fired Capacity (by Technology) with the Base Case and with the Proposed Toxics Rule, 2015 (GW)



Note: The difference between controlled capacity in the base case and under the proposed Toxics Rule may not necessarily equal new retrofit construction, since controlled capacity above reflects incremental operation of dispatchable controls in 2015. For this reason, and due to rounding, numbers in the text above may not reflect the increments displayed in this figure. See IPM Documentation for more information on dispatchable controls.

Source: Integrated Planning Model run by EPA, 2011.

EPA’s estimates of the annualized capital and fixed and variable O&M associated with the installation of these controls is summarized in the RIA table below.

Table 8-6. Capital, FOM, and VOM Costs by Control Technology for the Proposed Toxics Rule (millions of 2007\$)

	Dry FGD + FF	DSI	FF	ACI	FGD Upgrade	Waste Coal FGD	Total
Capital	1,421	428	1,092	1,498	669	94	5,201
FOM	252	71	41	48	0	20	431
VOM	377	1,241	105	627	0	66	2,416
2015 Annual Capital+FOM+VOM	2,050	1,740	1,238	2,173	669	179	8,048

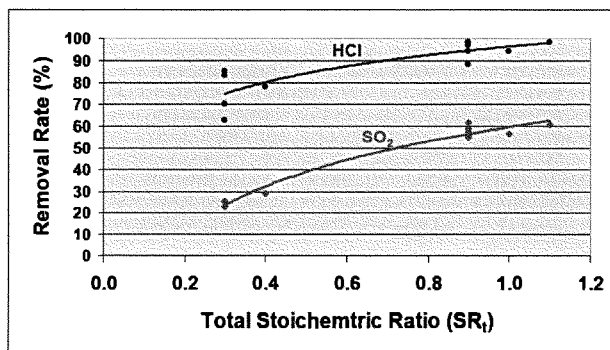
Source: Integrated Planning Model run by EPA, 2011.

The largest annualized cost increase in 2015 is for mercury controls (ACI), followed by dry scrubbers plus fabric filters. The costs of DSI are concentrated in variable O&M for sorbent, with relatively modest capital costs.

DSI is predominantly applicable to smaller units burning low-sulfur subbituminous coals. We believe that many utilities may view DSI as effective for reducing HCL, but at best as a short-term solution for achieving further SO₂ reductions. In comparison to EPA's projection of 56 GW of incremental DSI retrofits, the Bipartisan Policy Center's analysis using the ICF Integrated Planning Model – the same model that EPA employed - projected 20-25 GW of DSI retrofits.^{xiv}

DSI is capable of high levels of SO₂ removal under certain operating conditions. However, observed operational performance of systems using sodium bicarbonate indicate SO₂ removal rates in the range of 20% to 60%, well below the >90% SO₂ removal typically associated with wet scrubbers. Data from a leading DSI vendor, summarized in the chart below, show the removal rates for HCL and SO₂ at increasing bicarbonate flow rates in the range of 75%-95% for HCL and 20% to 60% for SO₂. DSI technology appears to be highly effective in removing acid gases, but less effective in removing SO₂ that will come under increasing regulatory pressures due to the 2010 1-hour SO₂ standard and pending EPA NAAQS revisions.

HCL and SO₂ Reductions with Sodium Bicarbonate



Source: Y. Kong and M. Atwell, *HCl and SO₂ Mitigation with Dry Injection of Trona or Sodium Bicarbonate*, Electric Power 2011, May 10-12, 2011, Rosemont, IL, slide 13.

Independent analysts believe that DSI is likely to be employed at smaller units by unregulated merchant generators, with regulated utilities more likely to install scrubbers.^{xv}

The industry planning process for retrofits considers more than the requirements to comply with MATS. Additional emission controls “beyond MACT” may well be needed to address requirements under future revisions of the ozone and PM2.5 NAAQS, as well as the 2010 1-hour ozone standard. These could entail retrofit scrubbers and SCRs to achieve high levels of SO₂ and NO_x control, with substantial capital and operating costs. Indeed, EPA has indicated that it intends to revise the proposed Clean Air Interstate Rule for SO₂ and NO_x in response to future revisions of the NAAQS:

Ongoing reviews of the ozone and PM2.5 NAAQS could result in revised NAAQS. To address any new NAAQS, EPA would propose interstate transport determinations in future notices. Such proposals could require greater emissions reductions from states covered by this proposal and/or require reductions from states not covered by this proposal.^{xvi}

When MATS is modeled in isolation, rather than in the context of the array of regulatory requirements facing the electric generation industry, model output may differ markedly from business decisions based on a broader view of regulatory requirements. For example, many of the smaller units that EPA projects to retrofit DSI to reduce SO₂ and acid gases also may be faced with additional NO_x control requirements to meet pending revisions of the primary ozone NAAQS. The addition of capital and operating requirements for SCR technology could force these units off the dispatch curve. Similarly, scrubbers may be needed to comply with future revision of the primary PM2.5 standards. Industry retirement decisions made in response to MATS will consider these and other pending CAA requirements.

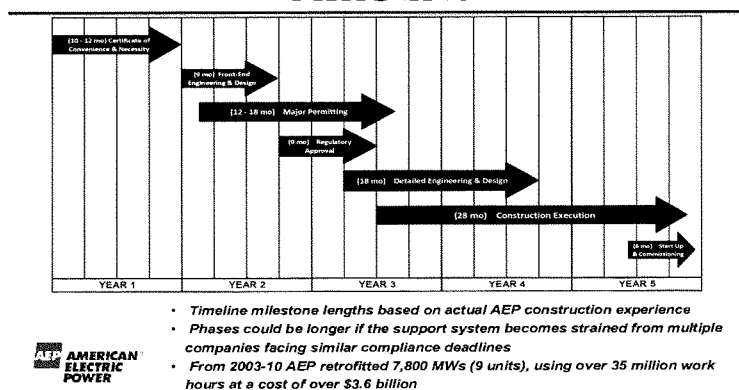
The Three-Year Compliance Window Must Be Extended

The issue of overarching importance to UAE members is the time allowed for compliance with MATS. The 36-month statutory compliance period provided by Section 112 of the Clean Air Act is utterly inadequate for designing, financing, permitting, and constructing the multitude of retrofit pollution controls needed to comply with the rule. EPA’s proposal offers the potential for case-by-case one-year extensions of the compliance period, but a case-by-case approach does not provide adequate certainty for investment planning or assurance against reliability impacts in

states with large numbers of affected units that will retire or require outages to retrofit controls. A case-by-case approach also may invite administrative delays and litigation. An expedited permitting pathway could help to mitigate these concerns.

The chart below summarizes a major electric utility's actual construction experience in retrofitting FGD technology on its coal-based generating plants. Overall, five years are needed to complete a retrofit project, including processes for permitting and other regulatory approvals. Only the final 28 months is dedicated to actual construction of the pollution controls. A similar time line would apply to projects involving multiple installations of "smaller" controls such as DSI and ACI, and to the major engineering and construction requirements for replacing ESPs with fabric filters.

Typical AEP FGD Retrofit Timeline



Source: American Electric Power, Inc., "Cost and Economic Impacts of Pending EPA Regulations," EIA Energy Conference, April 2011.

In addition, EPA needs to take into account the impact of the parallel Boiler MACT rule^{xvii}, now under reconsideration, on the supply and demand for retrofit labor, equipment, parts and supplies. More than 900 industrial coal boilers are affected by Boiler MACT, and many of these units will be competing with utilities for retrofits during approximately the same time period. The combined demands on equipment suppliers of these two rules – together affecting more than 2,000 large coal-fueled

boilers - should be assessed to determine the feasibility of accomplishing compliance within 3 to 5 year timeframes.

We recommend that EPA provide an across-the-board one-year extension for compliance as it has done in other Section 112 rulemakings such as the Marine MACT rule, which involved only 20 sources subject to MACT.^{xviii} We believe that an extended timetable for compliance, to 5 years, is needed to reduce the number of units closed while increasing the number of pollution control retrofits. A 5-year compliance timeframe, which would entail use of the Act's provisions for a Presidential exemption, would reduce adverse impacts on the workers and communities otherwise subject to sudden plant closures, and allow for more effective management of the risks of potential reliability problems in specific regions.

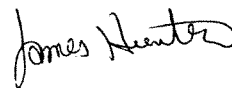
Finally, we suggest that EPA seek a 6- to 12-month delay in the promulgation of the final MATS rule. This is among the most technically complex rules ever developed by EPA, and the agency will receive hundreds of suggested revisions to the proposed rule in this comment period. Properly digesting and analyzing these comments, and formulating revisions to the proposed rule, will require more than a few months. Recent experience with the Boiler MACT rule for industrial sources underscores the importance of providing sufficient time to consider and respond to comments in complex Section 112 rulemakings.

Respectfully submitted,



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¹ See, U.S. EPA, *Final Regulatory Impact Analysis of the Utility Toxics Rule*, March 16, 2011, at Table 9-7 (electric sector recurring job impacts of -17,000 to +35,000 jobs, with a midpoint of 9,000 jobs that is “not statistically different from zero”; the EPA environmental sector approach estimates 30,870 job-years for one-time construction during the “three to four year period leading up to the compliance date.” *Id.*, at 9.6.

¹¹ *Id.*, at 14.

¹² See, US EPA, *Technical Support Document, Employment Estimates of Direct Labor in Response to the Proposed Toxics Rule in 2015* (March 2011) at 3.

¹³ See Attachment I, Coal Production Summary, data for “Other Northern Appalachia.” This category includes a small amount of coal production in Maryland, but primarily represents Ohio production.

¹⁴ U.S. EPA, *Final Regulatory Impact Analysis of the Utility Toxics Rule*, *supra*, at Table 5-8.

¹⁵ *Id.*, at 3-90.

¹⁶ *Id.*, at 19: “PM_{2.5} mortality benefits represent a substantial proportion of total monetized benefits (over 90%), and these estimates have following key assumptions and uncertainties.

The PM_{2.5}-related benefits of the alternative scenarios were derived through a benefit per-ton approach, which does not fully reflect local variability in population density, meteorology, exposure, baseline health incidence rates, or other local factors that might lead to an over-estimate or under-estimate of the actual benefits of controlling SO₂.

We assume that all fine particles, regardless of their chemical composition, are equally potent in causing premature mortality. This is an important assumption, because PM_{2.5} produced via transported precursors emitted from EGUs may differ significantly from direct PM_{2.5} released from diesel engines and other industrial sources, but no clear scientific grounds exist for supporting differential effects estimates by particle type.

We assume that the health impact function for fine particles is linear within the range of ambient concentrations under consideration. Thus, the estimates include health benefits from reducing fine particles in areas with varied concentrations of PM_{2.5}, including both regions that are in attainment with fine particle standard and those that do not meet the standard down to the lowest modeled concentrations. ...”

¹⁷ *Id.*

¹⁸ The RIA notes that some 55% of the estimated PM-related mortality benefits occur at ambient levels between 7.5 and 10 µg/m³, well below the 15 µg/m³ annual PM_{2.5} standard, and below the 11-13 µg/m³ levels under consideration for the next revision of the primary PM_{2.5} annual standard: “The avoided PM-related impacts we estimate in this analysis occur predominantly among populations exposed at or above the lowest measured air quality level (LML) of each epidemiological study, increasing our confidence in the PM mortality analysis. Approximately 30% of the avoided impacts occur at or above an annual mean PM_{2.5} level of 10 µg/m³ (the LML of the Laden et al. 2006 study); about 85% occur at or above an annual mean PM_{2.5} level of 7.5 µg/m³ (the LML of the Pope et al. 2002 study). As we model mortality impacts among populations exposed to levels of PM_{2.5} that are successively lower than the LML of each study our confidence in the results diminishes. However, the analysis below confirms that the great majority of the impacts occur at or above each study’s LML.” *Id.*, at 55. See also, U.S. EPA, *Policy Assessment for the Review of the Particulate Matter National Ambient Air Quality Standards (April 2011)* at ES-1: “Taking into account both evidence-based and risk-based considerations, staff concludes that consideration should be given to revising the current annual PM_{2.5} standard level of 15 µg/m³ to a

level within the range of 13 to 11 µg/m³. Staff further concludes that the evidence most strongly supports consideration of an alternative annual standard level in the range of 12 to 11 µg/m³.” (footnotes omitted.)

^x Peter Tsirigotis, U.S. EPA, at EPA/Labor meeting, May 4, 2011.

^{xi} See, revised mercury data at <http://www.epa.gov/ttn/atw/utility/utilitypg.html>.

^{xii} D. Eggers, Credit Suisse, “Implications of EPA Policy,” EIA Energy Conference, April 26, 2011, at slide 15.

^{xiii} U.S. EPA, Final Regulatory Impact Analysis of the Utility Toxics Rule, *supra*, at 234.

^{xiv} Bipartisan Policy Center, *Environmental Regulation and Electric System Reliability* (June 2011) at 24.

^{xv} UBS Investment Research, *A Closer Look at EPA’s HAP MACT Regs* (April 26, 2011).

^{xvi} 75 FR 45210 (August 2, 2010) at 45213.

^{xvii} 76 FR 15608 (March 21, 2011); FRB Capital Markets, *Coal Retirements—Is DSI the Magic Bullet for Coal Generators?* (April 13, 2011).

^{xviii} 60 FR 48388 (September 19, 1995) “Owners or operators of marine tank vessel loading operations subject only to the requirements promulgated under section 112(d) of the Act (MACT standards) are required to install the control technology needed to comply with the standards within 4 years from September 19, 1995.” *Id.*, at 48390. In its findings extending the compliance date to 4 years, EPA noted that only 20 sources were affected by the marine terminal unloading MACT rule: “The Agency agrees with the commenters that many MACT sources would probably require 1-year waivers if there was a 3-year compliance date for MACT sources in the final rule. The Agency notes that these sources are typically smaller than the sources regulated under RACT, and would not be as likely to have in-house staff capable of assisting in the design and installation of control technology. Therefore, the Agency believes that the sources controlled under section 112 that are not controlled under section 183(f) should automatically receive a waiver of 1 year that will allow a total of four years from September 19, 1995 to comply with the MACT emission reduction requirements. The Agency believes that this total of 4 years is sufficient time for the estimated 20 sources presently uncontrolled to design and install control technologies sufficient to meet the MACT standards. The Agency believes that the staggered compliance schedule (i.e., 3 years for RACT terminals and 4 years for MACT terminals) coupled with the reduced number of terminals required to control emissions under the final rule should alleviate commenters’ concerns about the scarcity of qualified installation consultants and vendors.” *Id.*, at 48392.

6/1/2011

Attachment 1
19 PAGES

Source: EPA response to union questions, June 2, 2011

Number of units meeting the current MACT floors:

Units meeting	"Lignite" Hg beyond-the-floor	Respective Hg + PM + HCl floor	"Bituminous/subbituminous" Hg floor	PM floor	HCl floor
Existing source	3	39	151	161	180
New source*	3	0	17**	18	14

* Units meeting new-source floor on a lb/MWh or lb/GWh basis based on 2010 ICR data

** Corrected by US EPA staff, July 8, 2011.

Current MACT floors:

MACT floor	"Lignite" Hg beyond-the-floor	"Bituminous/subbituminous" Hg floor	PM floor	HCl floor
Existing source	4 lb/TBtu	1.20 lb/TBtu	0.03 lb/MMBtu	0.002 lb/MMBtu
New source	0.04 lb/GWh (4 lb/TBtu)	0.0002 lb/GWh (0.0185 lb/TBtu)	0.05 lb/MWh (0.02 lb/MMBtu)	0.3 lb/GWh (0.00005 lb/MMBtu)

Source: EPA, June 2, 2011, response to union questions

Existing sources
Bituminous/subbituminous -- Hg
All coals -- PM, HCl

Emissions	Duffin meeting existing source Hg limit 1.2 lb/1000lb		Emissions	
	State	Unit	State	Unit
340001 Spruance Genco, LLC	PA	GEN2	COAL - Bituminous	2.03E-06 DFGD, FF
340001 Spruance Genco, LLC	PA	GEN3	COAL - Bituminous	4.69E-06 DFGD, FF
340001 Spruance Genco, LLC	PA	GEN4	COAL - Bituminous	5.33E-06 FBC, SMC, FF
340001 Spruance Genco, LLC	PA	GEN5	COAL - Bituminous	5.33E-06 SCL, DFGD, FF
340001 Spruance Genco, LLC	PA	GEN6	COAL - Bituminous	6.03E-06 FBC, SMC, FF
340001 Spruance Genco, LLC	PA	GEN7	COAL - Bituminous	6.48E-06 SCL, FCL, DFGD, FF
340001 Spruance Genco, LLC	PA	GEN8	COAL - Bituminous	7.04E-06 DFGD, FF
340001 Spruance Genco, LLC	PA	GEN9	COAL - Bituminous	8.15E-06 SCL, DFGD, FF
340001 Spruance Genco, LLC	PA	GEN10	COAL - Bituminous	8.54E-06 SCL, DFGD, FF
340001 Spruance Genco, LLC	PA	GEN11	COAL - Bituminous	1.04E-06 FBC, SMC, FF
340001 Spruance Genco, LLC	PA	GEN12	COAL - Bituminous	1.04E-06 SCL, DFGD, FF
340001 Spruance Genco, LLC	PA	GEN13	COAL - Bituminous	1.17E-06 FBC, SMC, FF
340001 Spruance Genco, LLC	PA	GEN14	COAL - Bituminous	1.17E-06 DFGD, FF
340001 Spruance Genco, LLC	PA	GEN15	COAL - Bituminous	1.25E-06 FBC, FF, DFGD
340001 Spruance Genco, LLC	PA	GEN16	COAL - Bituminous	1.30E-06 FCL, SMC, FF
340001 Spruance Genco, LLC	PA	GEN17	COAL - Bituminous	1.40E-06 FBC, SMC, FF
340001 Spruance Genco, LLC	PA	GEN18	COAL - Bituminous	1.50E-06 SCL, DFGD, FF
340001 Spruance Genco, LLC	PA	GEN19	COAL - Bituminous	1.50E-06 FBC, DFGD, SMC, FF
340001 Spruance Genco, LLC	PA	GEN20	COAL - Bituminous	1.50E-06 FF, DFGD
340001 Spruance Genco, LLC	PA	GEN21	COAL - Bituminous	1.00E-06 SCL, DFGD, FF
340001 Spruance Genco, LLC	PA	GEN22	COAL - Bituminous	2.02E-06 FF, DFGD
340001 Spruance Genco, LLC	PA	GEN23	COAL - Bituminous	2.02E-06 FF, DFGD
340001 Spruance Genco, LLC	PA	GEN24	COAL - Bituminous	2.22E-06 FBC, DFGD, SMC, FF
340001 Spruance Genco, LLC	PA	GEN25	COAL - Bituminous	2.34E-06 FBC, SMC, FF
340001 Spruance Genco, LLC	PA	GEN26	COAL - Bituminous	2.45E-06 DFGD, SMC, FF
340001 Spruance Genco, LLC	PA	GEN27	COAL - Bituminous	2.74E-06 FF, DFGD
340001 Spruance Genco, LLC	PA	GEN28	COAL - Bituminous	2.81E-06 DFGD, FF
340001 Spruance Genco, LLC	PA	GEN29	COAL - Bituminous	2.94E-06 SMC, FCL, DFGD, DFGD

4822 Martin Drake	CO Unit 7 - Coal	coal - subbituminous	3.11E-08 FF, WFGD
4823 Cherokee	CO Unit 4	coal - bituminous	3.17E-08 DFGD, FF
110546 Chambers Cogeneration LP	RI Unit 2	coal - subbituminous	3.38E-08 SCR, DFGD, FF
24551 San Juan	NM Unit 4	coal - subbituminous	3.43E-08 AQ, FF, WFGD
30874 Solutia Gas Generating Company LP	PA Gas 1	coal refuse (brown or black)	3.51E-08 FBC, SCR, FF, DFGD
4821 Martin Drake	CO Unit 5 - Coal	coal - subbituminous	3.79E-08 FF, WFGD
30776 Panther Creek Energy Facility	PA 461	coal refuse (brown or black)	4.13E-08 FBC, SCR, FF
34076 Panther Creek Energy Facility	PA 462	coal refuse (brown or black)	4.13E-08 FBC, SCR, FF
3280 Canadya Steam	SC C&W23	coal - bituminous	4.34E-08 FF, WFGD
4771 Villmont	CO Unit 5	coal - bituminous	4.39E-08 DFGD, FF
3307 McKinstry	SC MCW402	coal - bituminous	4.53E-08 FF, WFGD
10775 Hopewell	VA 1 & 2	coal - bituminous	4.59E-08 SCR, MC, DFGD, FF
24551 San Juan	NM Unit 3	coal - subbituminous	4.68E-08 AQ, FF, WFGD
2523 Clover	VA Unit 2	coal - bituminous	4.87E-08 SCR, FF, WFGD
24495 PACS Marine Generating Station	NJ MCW131P1051 Coal	coal - bituminous	5.91E-08 ESP, SCR, AQ, FF
Solutia River Creek Project	PA 464E	fuel - bituminous	6.10E-08 FBC, SCR, FF
34551 San Juan	NM Unit 2	coal - subbituminous	6.10E-08 AQ, FF, WFGD
46521 Craig	CO C2	coal - subbituminous	6.79E-08 FF, WFGD
72301 Cape	SC COW61	coal - bituminous	7.05E-08 SCR, DFGD, FF
8041 Hill Spawick Station	NY Unit 03	coal - bituminous	7.20E-08 FBC, SCR, DFGD, FF
41642 Valley	W WAP-44	coal - bituminous	7.34E-08 FF, WFGD
56468 Elmwood Generating Station	W F923-B1	coal - bituminous	7.53E-08 SCR, FF, WFGD, WESP
3207 McKinstry	SC MCW401	coal - bituminous	8.82E-08 FF, WFGD
24495 PACS Marine Generating Station	NJ MCW132P1051 Coal	coal - bituminous	8.94E-08 ESP, SCR, AQ, FF
568 Bridgeport Station	CT BR52M13051 Coal	coal - bituminous	9.01E-08 ESP, AQ, FF
6021 Craig	CO C1	coal - subbituminous	1.15E-07 FF, WFGD
9453 Sullivan	IL 3A	coal - bituminous	1.16E-07 SCR, FF, WFGD, WESP
2384 Deepwater	NJ Coal-Firing	coal - bituminous	1.17E-07 D8, SCR, FF
948 Bridgeport Station	CT BR52M13051-A2	coal - subbituminous	1.22E-07 ESP, AQ, FF
13007 MacKenzie Power Station	VA Unit 1 & 2	coal - bituminous	1.25E-07 DFGD, FF
51007 MacKenzie Power Station	VA Unit 1 & 2	coal - bituminous	1.25E-07 DFGD, FF
2712 Hubbard Steam Electric Plant	NC Res. Op. 1b	coal - bituminous	1.29E-07 SCR, ESP, WFGD
34551 San Juan	NM Unit 1	coal - subbituminous	1.31E-07 AQ, FF, WFGD
4823 ACS Serrano LLC	NY 605	coal - subbituminous	1.32E-07 SCR, D8, ESP, WFGD
LTV Coals	SC C3	coal - bituminous	1.56E-07 SCR, ESP, WFGD

27172	Rudolph Steam Electric Plant	NC	Permit No. 26	coal - subbituminous	1.51E-07 SCR, ESP, WFGD
891	Hanna	IL	Boiler 3	coal - bituminous	1.69E-07 ESP, SCR, ACl, DFGD, FF
891	Hennepin Power Station	IL	001	coal - subbituminous	1.67E-07 ESP, ACl, FF
891	Hennepin Power Station	IL	002	coal - subbituminous	1.67E-07 ESP, ACl, FF
101777	James River Cogeneration Co	VA	UNIT 2	coal - bituminous	1.79E-07 DFGD, FF
6941	A. J. Sparrows Station	NY	Unit 04	coal - bituminous	1.71E-07 FBC, 294R, DFGD, FF
1613	Somerset Station	MA	Unit 3	coal - bituminous	1.75E-07 SCR, ESP
952	Ryan dam Shores	MD	002	coal - bituminous	1.85E-07 SCR, ESP, ACl, DCl, FF, WFGD
8219	Paw D Noxon	CO	Unit 1	coal - subbituminous	2.56E-07 FF
101443	Forster Wheeler Wb Central Cogen	PA	SG-103	coal refuse (calor or gub)	2.34E-07 FBC, FF
3775	Clarks River	VA	CR-1	coal - bituminous	2.37E-07 294R, ESP
130	Cross	SC	C3	coal - bituminous	2.39E-07 SCR, ESP, WFGD
525	Hampden	CT	Unit 2	coal - bituminous	2.45E-07 DFGD, FF
101641	Camilla Cogen	GA	001	coal refuse (calor or gub)	2.69E-07 FBC, 294R, FF
130	Cross	SC	C4	coal - bituminous	2.77E-07 SCR, ESP, WFGD
101774	Southampton Power Station	VA	Unit 1 & 2	coal - bituminous	2.80E-07 FBC, DFGD, FF
101641	Camilla Cogen	GA	002	coal refuse (calor or gub)	2.85E-07 FBC, 294R, FF
4137	A. B. Brown Generating Station	IN	1-Corby	coal - subbituminous	3.10E-07 SCR, FF, WFGD
2277	Shelburn Station	ME	U2	coal - subbituminous	3.11E-07 FF
2425	AUS Canada, LLC	NY	Unit 1	coal - bituminous	3.37E-07 SCR, ESP, WFGD
525	Hampden	CT	Unit 2	coal - bituminous	3.45E-07 DFGD, FF
883	Waukegan	IL	Waukegan	coal - subbituminous	3.69E-07 ACl, ESP
963	Dallman	IL	31	coal - bituminous	3.71E-07 SCR, ESP, WFGD
963	Dallman	IL	31	coal - bituminous	3.74E-07 SCR, ESP, WFGD
887	Wentwell	MD	001	coal - bituminous	3.97E-07 ESP, ACl, FF
887	Wentwell	MD	002	coal - bituminous	3.97E-07 ESP, ACl, FF
3625	Salem Harbor	MA	Unit 1	coal - bituminous	3.96E-07 294R, ESP
1019	Hydro Creek	VA	Unit 3	coal - subbituminous	4.15E-07 ESP
708	Hammersel	GA	Unit 1	coal - bituminous	4.25E-07 ESP, WFGD
708	Hammersel	GA	Unit 2	coal - bituminous	4.25E-07 ESP, WFGD
708	Hammersel	GA	Unit 3	coal - bituminous	4.25E-07 ESP, WFGD
708	Hammersel	GA	Unit 4	coal - bituminous	4.25E-07 SCR, ESP, WFGD
482	Marble Fork	CO	Unit 5 - Coal	coal - subbituminous, bit	4.53E-07 FF
47	Colbert	AL	4	coal - subbituminous, bit	4.84E-07 ESP

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Company	Product	Year	Price	Volume	Revenue	Profit	Margin
General Motors	Corvette	2000	\$40,000	1,000	\$40,000,000	\$10,000,000	25%
General Motors	Corvette	2001	\$42,000	1,100	\$46,200,000	\$11,550,000	25%
General Motors	Corvette	2002	\$44,000	1,200	\$52,800,000	\$13,200,000	25%
General Motors	Corvette	2003	\$46,000	1,300	\$60,000,000	\$15,000,000	25%
General Motors	Corvette	2004	\$48,000	1,400	\$67,200,000	\$16,800,000	25%
General Motors	Corvette	2005	\$50,000	1,500	\$75,000,000	\$18,750,000	25%
General Motors	Corvette	2006	\$52,000	1,600	\$83,200,000	\$20,800,000	25%
General Motors	Corvette	2007	\$54,000	1,700	\$91,800,000	\$22,950,000	25%
General Motors	Corvette	2008	\$56,000	1,800	\$100,800,000	\$25,200,000	25%
General Motors	Corvette	2009	\$58,000	1,900	\$110,200,000	\$27,540,000	25%
General Motors	Corvette	2010	\$60,000	2,000	\$120,000,000	\$30,000,000	25%
General Motors	Corvette	2011	\$62,000	2,100	\$130,200,000	\$32,550,000	25%
General Motors	Corvette	2012	\$64,000	2,200	\$140,800,000	\$35,200,000	25%
General Motors	Corvette	2013	\$66,000	2,300	\$151,800,000	\$37,950,000	25%
General Motors	Corvette	2014	\$68,000	2,400	\$163,200,000	\$40,800,000	25%
General Motors	Corvette	2015	\$70,000	2,500	\$175,000,000	\$43,750,000	25%
General Motors	Corvette	2016	\$72,000	2,600	\$187,200,000	\$46,800,000	25%
General Motors	Corvette	2017	\$74,000	2,700	\$198,000,000	\$49,500,000	25%
General Motors	Corvette	2018	\$76,000	2,800	\$212,800,000	\$53,440,000	25%
General Motors	Corvette	2019	\$78,000	2,900	\$226,200,000	\$57,030,000	25%
General Motors	Corvette	2020	\$80,000	3,000	\$240,000,000	\$60,000,000	25%
General Motors	Corvette	2021	\$82,000	3,100	\$254,200,000	\$63,550,000	25%
General Motors	Corvette	2022	\$84,000	3,200	\$268,800,000	\$67,200,000	25%
General Motors	Corvette	2023	\$86,000	3,300	\$283,800,000	\$70,950,000	25%
General Motors	Corvette	2024	\$88,000	3,400	\$299,200,000	\$74,800,000	25%
General Motors	Corvette	2025	\$90,000	3,500	\$315,000,000	\$78,750,000	25%
General Motors	Corvette	2026	\$92,000	3,600	\$331,200,000	\$82,800,000	25%
General Motors	Corvette	2027	\$94,000	3,700	\$347,800,000	\$86,950,000	25%
General Motors	Corvette	2028	\$96,000	3,800	\$364,800,000	\$91,200,000	25%
General Motors	Corvette	2029	\$98,000	3,900	\$382,200,000	\$95,550,000	25%
General Motors	Corvette	2030	\$100,000	4,000	\$400,000,000	\$100,000,000	25%

10774 Southampton Power Station	VA	Unit 1 & 2	bituminous	7.78E-05 MC, DFGD, FF
708 Hammond	GA	Unit 2	bituminous	7.88E-05 ESP, WFGD
708 Hammond	GA	Unit 3	bituminous	7.88E-05 ESP, WFGD
708 Hammond	GA	Unit 1	bituminous	7.88E-05 ESP, WFGD
708 Hammond	GA	Unit 4	bituminous	7.88E-05 SCR, ESP, WFGD
113 Cholla	AZ	003	bituminous	8.03E-05 FF, WFGD
113 Cholla	AZ	004	bituminous	8.52E-05 FF, WFGD
4941 Navajo Generating Station	AZ	003	bituminous	9.38E-05 ESP, WFGD
6170 Pleasant Prairie	WI	PPPB2	subbituminous	9.44E-05 SCR, ESP, WFGD
68029 AES Puerto Rico Cogeneration Facility	PR	Unit 2	bituminous	9.60E-05 FBC, SCR, DFGD, ESP
2451 San Juan	NM	Unit 3	subbituminous	9.60E-05 ACI, FF, WFGD
6170 Pleasant Prairie	WI	PPPB1	subbituminous	9.68E-05 SCR, ESP, WFGD
963 Dallman	IL	34	bituminous	9.70E-05 SCR, FF, WFGD, WESP
68029 AES Puerto Rico Cogeneration Facility	PR	Unit 1	bituminous	1.02E-04 FBC, SNCR, DFGD, ESP
1082 Walter Scott Jr. Energy Center	IA	3	bituminous	1.10E-04 DFGD, FF
2917 Hamilton	OH	Unit 9	bituminous	1.10E-04 ESP, DFGD, FF
2451 San Juan	NM	Unit 1	subbituminous	1.11E-04 ACI, FF, WFGD
2451 San Juan	NM	Unit 4	subbituminous	1.18E-04 ACI, FF, WFGD
6041 H.L. Spurluck Station	KY	Unit 04	bituminous	1.18E-04 FBC, SNCR, DFGD, FF
703 Bowen	GA	Unit 4	bituminous	1.19E-04 SCR, ESP, WFGD
6180 Oak Grove	TX	0G1	lignite	1.20E-04 SCR, ACI, FF, WFGD
2451 San Juan	NM	Unit 2	subbituminous	1.24E-04 ACI, FF, WFGD
3179 Hatfield's Ferry Power Station	PA	001	bituminous	1.31E-04 ESP, WFGD
525 Hayden	CO	Unit 2	bituminous	1.43E-04 DFGD, FF
2828 Cardinal	OH	CD-U1	bituminous	1.43E-04 SCR, DSI, ESP, WFGD
55749 Hardin Generator Project	MT	PC1	bituminous	1.46E-04 SCR, ACI, DFGD, FF
7504 Neil Simpson II	WY	NS2Cfg	subbituminous	1.47E-04 DFGD, ESP
55479 Wygen 1	WY	WYG1C1g	subbituminous	1.54E-04 SCR, DFGD, FF
6288 Healy	AK	1	subbituminous	1.54E-04 FF
703 Bowen	GA	Unit 2	bituminous	1.56E-04 SCR, ESP, WFGD
60 Whelan Energy Center Unit 1 (WECL)	NE	1	subbituminous	1.62E-04 ESP
994 AES Petersburg	IN	2ss	bituminous	1.62E-04 SCR, ESP, WFGD
728 Yates	GA	Y1BR	bituminous	1.63E-04 ESP, WFGD
2840 Conesville	OH	CV-4	bituminous	1.63E-04 SCR, ESP, DSI, WFGD
994 AES Petersburg	IN	1s	bituminous	1.76E-04 ESP, WFGD
1356 Ghent	KY	GH1	bituminous	1.80E-04 SCR, DSI, ESP, WFGD
9935 John E. Amos	WV	AM-2	bituminous	1.83E-04 SCR, ESP, WFGD
2828 Cardinal	OH	CD-U2	bituminous	1.85E-04 SCR, DSI, ESP, WFGD
469 Cherokee	CO	Unit 2	bituminous	1.86E-04 DFGD, FF
6664 Louisa	IA	101	subbituminous	1.91E-04 DFGD, FF

6139 Welsh	TX	WE-1	subbituminous	1.94E-04 ESP
477 Valmont	CO	Unit 5	bituminous	2.11E-04 DFGD, FF
6264 Mountaineer	WV	Mt-1	bituminous	2.14E-04 SCR, DSI, ESP, WFGD
465 Arapahoe	CO	Unit 3	subbituminous	2.18E-04 DSI, FF
525 Hayden	CO	Unit 1	bituminous	2.18E-04 DFGD, FF
6052 Wansley	GA	Unit 2	bituminous	2.21E-04 SCR, ESP, WFGD
6639 R D Green	KY	2	bituminous, Petroleum coke	2.23E-04 ESP, WFGD
469 Cherokee	CO	Unit 1	bituminous	2.25E-04 DSI, FF
130 Cross	SC	C4	bituminous	2.29E-04 SCR, ESP, WFGD
469 Cherokee	CO	Unit 4	bituminous	2.37E-04 DFGD, FF
130 Cross	SC	C1	bituminous	2.44E-04 SCR, ESP, WFGD
703 Bowen	GA	Unit 3	bituminous	2.50E-04 SCR, ESP, WFGD
1382 HMP&L Station Two Henderson	KY	1	bituminous	2.52E-04 SCR, ESP, WFGD
6113 Gibson	IN	4	bituminous	2.61E-04 SCR, DSI, ESP, WFGD
628 Crystal River Power Plant	FL	CyR_Cfg_5c		2.74E-04 SCR, ESP, WFGD
6096 Nebraska City	NE	NC2	bituminous	2.76E-04 SCR, ACI, DFGD, FF
2727 Marshall	NC	U4	bituminous	2.83E-04 SNCR, ESP, WFGD
3954 Mt. Storm	WV	Unit 3	bituminous	2.85E-04 SCR, ESP, WFGD
2727 Marshall	NC	U12007	bituminous	2.86E-04 SNCR, ESP, WFGD
2727 Marshall	NC	U22007	bituminous	2.86E-04 SNCR, ESP, WFGD
3118 Conemaugh	PA	CON-1	bituminous	2.88E-04 ESP, WFGD
2080 Montrose	MO	2	coal - subbituminous	3.00E-04 DSI, ESP
2080 Montrose	MO	1	coal - subbituminous	3.00E-04 DSI, ESP
2080 Montrose	MO	3	coal - subbituminous	3.00E-04 DSI, ESP
3149 PPL Montour	PA	U1	coal - bituminous	3.02E-04 ESP, SCR, WFGD
1382 HMP&L Station Two Henderson	KY	2	bituminous	3.05E-04 SCR, ESP, WFGD
469 Cherokee	CO	Unit 3	bituminous	3.05E-04 DFGD, FF
8223 Springerville	AZ	3	subbituminous	3.06E-04 SCR, DFGD, FF
6052 Wansley	GA	Unit 1	bituminous	3.11E-04 SCR, ESP, WFGD
3935 John E. Amos	WV	AM-3	bituminous	3.13E-04 SCR, ESP, WFGD
10071 Cogentrix Virginia Leasing Corporation	VA	GEN2	bituminous	3.15E-04 DFGD, FF
3399 Cumberland	TN	1	bituminous	3.17E-04 SCR, DSI, ESP, WFGD
2727 Marshall	NC	U3	bituminous	3.26E-04 SCR, ESP, WFGD
3118 Conemaugh	PA	CON-2	bituminous	3.33E-04 ESP, WFGD
3399 Cumberland	TN	2	bituminous	3.35E-04 SCR, DSI, ESP, WFGD
7213 Clover	VA	Unit 2	bituminous	3.38E-04 SNCR, FF, WFGD
3149 PPL Montour	PA	U2	coal - bituminous	3.57E-04 ESP, SCR, WFGD
2535 AES Cayuga, LLC	NY	Unit 1	bituminous	3.59E-04 SCR, ESP, WFGD
55076 Red Hills Generating Facility	MS	002	lignite	3.67E-04 FBC, FF

Lignite units -- existing sources

Source: EPA, June 2, 2011, response to union questions

Emissions
(lb/MMBtu)

Lignite units meeting existing source Hg limit 4 lb/1000 Btu					
Unit	State	Capacity (MW)	Operating	Year	Source
53071 Lignite Station	TX	504	Operating	1995	ACT, OGE, PF
53072 Lignite Station	TX	504	Operating	1995	ACT, OGE, PF
53073 Lignite Station	TX	504	Operating	1995	ACT, OGE, PF
Lignite units meeting existing source PM limit 0.03 lb/MMBtu					
Unit	State	Capacity (MW)	Operating	Year	Source
53071 Lignite Station	TX	504	Operating	1995	ACT, OGE, PF
53072 Lignite Station	TX	504	Operating	1995	ACT, OGE, PF
53073 Lignite Station	TX	504	Operating	1995	ACT, OGE, PF
Lignite units meeting existing source NOx limit 0.002 lb/MMBtu					
Unit	State	Capacity (MW)	Operating	Year	Source
53071 Lignite Station	TX	504	Operating	1995	ACT, OGE, PF
53072 Lignite Station	TX	504	Operating	1995	ACT, OGE, PF
53073 Lignite Station	TX	504	Operating	1995	ACT, OGE, PF

Source: EPA, June 2, 2011, response to union questions

New sources
Bituminous/subbituminous -- Hg
All coals -- PM, HCl

Units meeting new source triennial CEMS for HAPs, Dioxins, PCBs, PF										Emissions									
Units meeting new source triennial CEMS for HAPs, Dioxins, PCBs, PF										Emissions									
Units meeting new source triennial CEMS for HAPs, Dioxins, PCBs, PF										Emissions									
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Coal Production in the Base Case and the MAT Standard ^{1/}

Source: US EPA response to labor questions

		Coal Production (Million Tons)			
		2015		2020	
		Scenario		Scenario	
Basin	Supply Region	Base	MATS	Base	MATS
Central Appalachia		57	56	47	49
Dakota Lignite		31	23	31	23
East Interior-Illinois					
	<i>Illinois</i>	102	110	103	106
	<i>Indiana</i>	47	54	49	56
	<i>West Kentucky</i>	42	47	39	40
East Interior-Illinois Total		191	211	191	203
Gulf Lignite		46	31	57	34
Northern Appalachia					
	<i>Pennsylvania</i>	71	68	70	69
	<i>Northern West Virginia</i>	64	64	65	65
	<i>Other Northern App</i>	35	24	31	21
Northern Appalachia Total		171	156	165	155
Rocky Mountain		75	78	69	77
Southern Appalachia		9	9	9	9
Southwest		18	19	18	19
West Interior		0	0	0	0
Western Wyoming		4	5	4	5
Wyoming-Montana PRB		445	441	457	452
Grand Total		1,047	1,028	1,050	1,025

^{1/} Total US production excluding Alaska, including deliveries to all sectors. These values are greater than the coal production in Table 8-11 of the Regulatory Impact Analysis, which includes only estimated tons to the power. In 2015, for example, total deliveries to the power sector are 1006 million tons in the base and 987 million tons in the policy case, but the difference between the base and the policy is the same as in the table above (19 million tons).

ATTACHMENT 2 42 PAGES

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Preliminary Assessment of EPA Utility MACT PM Limits
For Existing Sources (Rev. June 10, 2011)

Methodology

This preliminary assessment used EPA's ICR database of ~200 coal units to calculate "Top-130" emission rates for the best-performing units, ranked by filterable PM in lbs/mmbtu. It calculates average emission rates and standard deviations for the top-130 units similar to the approach EPA applied to these data. Variability is not taken into account.

The analysis next removed from the ICR sample all units not controlled for either SO₂ or mercury (e.g., wet or dry scrubbers, spray dryers, sorbent injection, or ACI). This created a new data set of 124 "controlled" units that is more representative of control technology configurations required by the proposed MACT limits for acid gases, metals, mercury, etc. The units removed from the sample are mainly equipped only with ESPs or fabric filters, and do not have additional particulate loadings to their PM removal devices caused by scrubbers, sorbent injection, or other controls needed to meet proposed MACT emission standards.

As a separate check on the results, the emission rates for units equipped with spray dryers (most of these also are equipped with fabric filters) were calculated. These are among the best performing units for acid gases and other hazardous air pollutants in the EPA ICR database.

Summary of Results

The attached tables provide detailed results for the sample groups. The filterable PM and condensable PM_{2.5} emission rates for the three samples are as follows:

Average PM Emission Rates in Lbs/MMBTU of Alternative ICR Samples

	Top-130	Controlled-124	26 Spray Dryers
Filterable PM	0.0046	0.0108	0.0105
Diff vs Top-130	n.a.	2.35x	2.28x
Condensable PM _{2.5}	0.0122	0.0134	0.0142
Diff vs Top-130	n.a.	1.10x	1.16x

Preliminary Implications

The EPA Top-130 unit ICR sample is not representative of the technology configurations needed to comply with the proposed Utility Air Toxics rule. It includes many units without SO₂ or mercury controls, with relatively low PM emission rates. This tends to bias the sample average emission rate downwards, relative to an alternative sample group of units equipped with a variety of controls needed to meet MACT standards. The average emission rate of filterable PM for the “Controlled-124” units is more than twice as great as the Top-130. Their average condensable PM_{2.5} emission rate is marginally higher than the Top-130.

The results obtained for the sample of 26 units equipped with spray dryers are very close to the findings for the “Controlled-124” unit sample, confirming the downward bias of the Top-130 sample.

This preliminary analysis suggests the need for more refined data analysis of the ICR dataset, including recalculation of allowable PM limits taking control technology configurations and variability into account through UPL calculations. Future MACT emission limits for existing sources should be based upon the best performing units equipped with control technologies similar to those to be required for compliance with MACT.

Attachments – Supporting Tables

Metallic_coal

ORIS code	Plant Name	State	Unit	Unit Type	Mwe	Fuel	Filterable Particulate lb/MMBtu
50978	INDIANTOWN COGENERATION L.P.	FL	001	Conventional Boiler	361	bituminous	0.00162506
10566	Chambers Cogeneration LP	NJ	Boil 2	Conventional Boiler	285	bituminous	0.00152814
2294	Dunkirk Generating Plant	NY	1	Conventional Boiler	85	subbituminous	0.000244259
2277	Sheldon Station	NE	U2	Conventional Boiler	141	subbituminous	0.000455465
492	Marin Drake	CO	Unit 5 - Coal	Conventional Boiler	55	subbituminous	0.000468905
1626	Salem Harbor	MA	Unit 1	Conventional Boiler	81,419	bituminous	0.000490371
8223	Springerville	NJ	Boil 1	Conventional Boiler	285	bituminous	0.000516101
10043	Logan Generating Plant	AZ	3	Conventional Boiler	450	subbituminous	0.000562115
52071	Sandow Station	NJ	Unit1	Conventional Boiler	241.7	bituminous	0.000653965
2554	Dunkirk Generating Plant	TX	5A	Fluidized bed firing	282.35	lignite	0.000673405
8223	Springerville	NY	4	Conventional Boiler	195	subbituminous	0.000742216
6077	Gerald Genlleman	AZ	4	Conventional Boiler	450	bituminous	0.000754261
2408	PSEG Mercer Generating Station	NE	U2	Conventional Boiler	725	bituminous	0.000756343
2408	PSEG Mercer Generating Station	NJ	MERU1E1PT1OS1-Coal	Conventional Boiler	343	bituminous	0.000763959
468	Edgewater Station	NJ	MHSEMU13OS3-#2	Conventional Boiler	403	bituminous	0.000793608
55479	Wyden 1	CT	BHSEMU13OS3-#2	Conventional Boiler	91	subbituminous	0.000798921
7504	Nell Simpson II	WY	WYG1 Cfg	Conventional Boiler	88	subbituminous	0.000825448
2277	Sheldon Station	WY	U1	Conventional Boiler	128	subbituminous	0.000826161
52071	Sandow Station	TX	5B	Conventional Boiler	282.35	subbituminous	0.000836899
10673	AES Hawaii	TX	001	Fluidized bed firing	203	lignite	0.000867015
2079	Hawthorn	HI	001	Fluidized bed firing	594	bituminous	0.000869205
470	Comanche	MO	5A	Conventional Boiler	365	subbituminous	0.001102527
7242	Polk	CO	Unit 2	Conventional Boiler	544	subbituminous	0.001205914
2451	San Juan	FL	IGCC1	IGCC	567	Coal Gas	0.001255885
10073	AES Hawaii	FL	Unit 3	Conventional Boiler	544	subbituminous	0.001475368
3845	Tongue Point Creek	HI	001	Fluidized bed firing	203	bituminous	0.001533257
3845	Tongue Point Creek	HI	002	Fluidized bed firing	203	bituminous	0.001616724
6002	James H. Miller Jr.	WI	OCPP-B7	Conventional Boiler	567	subbituminous	0.001726932
6181	J T Daily	WA	BW23CONFIG	Conventional Boiler	723	subbituminous	0.001726932
2324	Reid Gardner	TX	1	Conventional Boiler	450	subbituminous	0.00191776
2712	Roxboro Steam Electric Plant	TX	2	Conventional Boiler	450	subbituminous	0.00191776
6181	J T Daily	TX	Unit 4	Conventional Boiler	111	subbituminous	0.001924418
4078	Weston	NC	Rox_Cfg_2c	Conventional Boiler	703	bituminous	0.00196321
6761	Rawhide	WI	W4	Conventional Boiler	574.5	subbituminous	0.002107112
10377	James River Cogeneration Co	CO	Rawhide U1	Conventional Boiler	305	subbituminous	0.002283997
4042	Valley	VA	UNIT2	Conventional Boiler	57.39	bituminous	0.002351625
7097	J K Spruce	WI	VAPR-B3	Conventional Boiler	144	subbituminous	0.002364752
7097	J K Spruce	WI	VAPR-B4	Conventional Boiler	144	subbituminous	0.002401932
2712	Roxboro Steam Electric Plant	TX	Unit 2	Conventional Boiler	434	bituminous	0.002546508
113	Cholla	NC	Rox_Cfg_1b	Conventional Boiler	590	bituminous	0.002720865
7213	Clover	AZ	003	Conventional Boiler	385	bituminous	0.00280266
2706	Ashavilla Steam Electric Plant	VA	Unit 1	Conventional Boiler	305	bituminous	0.00292396
980	Harding Street	NC	Ash_Cfg_1d	Conventional Boiler	431	bituminous	0.002967102
2451	San Juan	IN	70ss	Conventional Boiler	207	bituminous	0.003019083
641	Crist	FL	Unit 4	Conventional Boiler	463	subbituminous	0.003164283
			Unit 4	Conventional Boiler	544	subbituminous	0.003196089
			Unit 4	Conventional Boiler	82	subbituminous	0.003226408

Metallic_coal

641 Crist	FL	Unit 5	Conventional Boiler	82	bituminous	0.003228408
641 Crist	FL	Unit 6	Conventional Boiler	320	bituminous	0.003228408
641 Crist	FL	Unit 7	Conventional Boiler	500	bituminous	0.003228408
708 Hammond	GA	Unit 1	Conventional Boiler	115	bituminous	0.003250235
708 Hammond	GA	Unit 2	Conventional Boiler	115	bituminous	0.003250235
708 Hammond	GA	Unit 3	Conventional Boiler	115	bituminous	0.003250235
708 Hammond	GA	Unit 4	Conventional Boiler	520	bituminous	0.003250235
6016 Duck Creek	IL	001	Conventional Boiler	400	subbituminous	0.003267031
3845 TransAlta Centrialla Generation	WA	BW21CONFIG	Conventional Boiler	603	subbituminous	0.00327987
602 Brandon Shores	MD	002	Conventional Boiler	690	bituminous	0.003327548
2107 Sioux	MO	002	Conventional Boiler	524	bituminous	0.003347233
1082 Walker Scott Jr. Energy Center	IA	4	Conventional Boiler	850	subbituminous, bituminous	0.003376519
50951 Sunnyside Cogen Associates	UT	Config 1	Fluidized bed firing	60	bituminous	0.00355288
2706 Asheville Steam Electric Plant	NC	Ash_Cfg_2	Conventional Boiler	204	bituminous	0.00359456
7210 Cope	SC	COP001	Conventional Boiler	441	bituminous	0.00359456
113 Chota	AZ	004	Conventional Boiler	425	bituminous	0.00359456
6041 H.L. Spurluck Station	AZ	Unit 01	Conventional Boiler	344	bituminous	0.00359456
6046 Big Stone	SD	001	Conventional Boiler	495	subbituminous	0.003838891
2485 Cheyenne	SD	001	Conventional Boiler	370	subbituminous	0.00372646
6113 Gibson	NM	Unit 1	Conventional Boiler	661	bituminous	0.003765873
6077 Gerald Gentleman	IN	2-2007-FGDIN	Conventional Boiler	715	bituminous	0.003831711
525 Hayden	NE	U1	Conventional Boiler	202	bituminous	0.003844861
54144 Piney Creek Project	CO	Unit 1	Conventional Boiler	202	bituminous	0.003875147
642 Scholtz	PA	BRBR1	Fluidized bed firing	36	bituminous, syrfuel	0.003914725
492 Martin Drake	FL	Unit 1	Conventional Boiler	49	bituminous	0.004007074
2718 G G Allen	CO	Unit 7 - Coal	Conventional Boiler	141	subbituminous, bituminous	0.004089401
6021 Craig	NC	3-2009-FGDIN	Conventional Boiler	281.5	bituminous	0.004111389
6021 Craig	NC	4-2009-FGDIN	Conventional Boiler	297.3	bituminous	0.004111389
6021 Craig	NC	C1	Conventional Boiler	83.6	subbituminous	0.004138105
4072 Williams	NC	Unit 1	Conventional Boiler	137.9	subbituminous	0.004145432
3287 McMeekin	WI	8	Conventional Boiler	132	bituminous	0.004189705
6654 Louisa	SC	MCM002	Conventional Boiler	805	bituminous	0.004483634
6021 Craig	IA	101	Conventional Boiler	805	subbituminous	0.00451197
2451 San Juan	CO	C2	Conventional Boiler	456	subbituminous	0.004567804
10672 Cedar Bay Generating Company L.P.	NM	Unit 2	Conventional Boiler	370	subbituminous	0.004678915
1241 La Oygne	FL	CBB1	Fluidized bed firing	280	bituminous	0.005076287
10641 Cambria Cogen	KS	2	Conventional Boiler	685	subbituminous	0.0053594
4042 Valley	PA	001	Fluidized bed firing	49	coal refuse (culm or gob), bituminous	0.005402253
10075 Taconite Harbor Energy Center	WI	VAPP-B1	Conventional Boiler	144	bituminous	0.00544256
2837 Eastlake	MN	THEC2	Conventional Boiler	73.2	bituminous	0.005455765
1250 Lawrence Energy Center	OR	Unit 3	Conventional Boiler	144	bituminous	0.00547714
50224 TS Power Plant	WV	3	Conventional Boiler	58	subbituminous	0.005566536
892 Harney Power Station	NV	TSPower	Conventional Boiler	242	subbituminous	0.005606642
892 Harney Power Station	OH	Unit 1	Conventional Boiler	144	subbituminous, bituminous	0.005672501
6113 Gibson	IL	001	Conventional Boiler	75	subbituminous	0.005803682
10641 Cambria Cogen	IN	002	Conventional Boiler	234	subbituminous	0.005803682
888 Tanners Creek	PA	Unit 1	Conventional Boiler	661	bituminous	0.005864761
6041 H.L. Spurluck Station	IN	TC-4	Fluidized bed firing	49	coal refuse (culm or gob), bituminous	0.00598177
10672 Cedar Bay Generating Company L.P.	KY	Unit 04	Conventional Boiler	579.7	subbituminous, bituminous	0.006099502
	FL	CBA1	Fluidized bed firing	300	bituminous	0.00621273
				280	bituminous	0.006312691

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6041 H L Spurlock Station	KY	Unit 03	Fluidized bed firing	300	bituminous	0.006538349
4078 Weston	WI	W3	Conventional Boiler	385.6	subbituminous	0.006634459
3287 McMeekin	SC	MCM001	Conventional Boiler	135	bituminous	0.00664733
1532 Erickson Station	MI	001	Conventional Boiler	185	subbituminous	0.007150887
5076 PANTHER CREEK ENERGY FACILITY	PA	BC1	Fluidized bed firing	16.3	coal refuse (culm or gob)	0.007767388
50776 PANTHER CREEK ENERGY FACILITY	PA	BC2	Fluidized bed firing	46.3	coal refuse (culm or gob)	0.007767388
4042 Valley	WI	VAPP-B2	Conventional Boiler	144	bituminous	0.008431549
6180 Oak Grove	TX	OG1	Conventional Boiler	817	lignite	0.008431549
54081 Spruance Genco, LLC	VA	GEN2	Conventional Boiler	57.4	bituminous	0.009442147
6018 East Bend Station	KY	2	Conventional Boiler	650.72464	bituminous	0.009442147
50888 Northampton Generating Company, L.P.	PA	GEN1	Fluidized bed firing	121	coal refuse (culm or gob)	0.008801082
525 Haydlen	CO	Unit 2	Conventional Boiler	285	bituminous	0.009422582
10743 Morgantown Energy Facility	WV	Unit 1&2	Fluidized bed firing	116	bituminous	0.009102592
6017 Newton	IL	002	Conventional Boiler	620	subbituminous	0.009115777
2094 Staley	MO	1	Conventional Boiler	55	subbituminous, bituminous	0.00919947
2094 Staley	MO	2	Conventional Boiler	51	subbituminous, bituminous	0.00919947
10774 Southampton Power Station	VA	Unit 1 & 2	Conventional Boiler	138	subbituminous, bituminous	0.009355355
6139 Welsh	TX	WE-1	Conventional Boiler	559	subbituminous	0.009345366
6019 W H Zimmer	OH	1	Conventional Boiler	1408	bituminous	0.009397208
6096 Nebraska City	NE	NC2	Conventional Boiler	105	bituminous	0.009481134
981 Eagle Valley	IN	6	Conventional Boiler	81	bituminous	0.009495313
3942 Abright Power Station	WV	Unit_2	Conventional Boiler	202	bituminous	0.009957435
10576 AES Warrior Run Cogeneration Facility	MD	BLR1	Fluidized bed firing	797	bituminous	0.010695038
3149 PPL Montour	PA	U1	Conventional Boiler	585	bituminous	0.010702589
3130 Seward	PA	SEW-1	Fluidized bed firing	585	bituminous	0.010822056
3130 Seward	PA	SEW-2	Fluidized bed firing	585	bituminous	0.010822056
54081 Spruance Genco, LLC	VA	GEN1	Conventional Boiler	57.4	bituminous	0.010850449
54304 Seward Power Facility	VA	GEN2	Conventional Boiler	228	subbituminous	0.01095467
1710 Consumers Energy - J.H. Campbell	MI	JHC1-Conf	Conventional Boiler	274	subbituminous	0.01095467
1710 Consumers Energy - J.H. Campbell	MI	JHC2-Conf	Conventional Boiler	374	subbituminous, bituminous	0.01095467
1363 Carle Run	KY	CR5	Conventional Boiler	181	bituminous	0.011080275
1393 RS Nelson	LA	001	Conventional Boiler	580	bituminous	0.011265893
47 Colbert	AL	3	Conventional Boiler	200	subbituminous, bituminous	0.011365233
AVG TOP 130					AVG TOP 130	0.004636256
STD DEV					STD DEV	0.00325679
OTHER UNITS IN SAMPLE						
4041 South Oak Creek	WI	OCPP-B8	Conventional Boiler	656	subbituminous	0.011719148
3161 Edgemont Generating Station	PA	Unit_2	Conventional Boiler	139	bituminous	0.011953073
52749 Harbin Generating Project	MT	BCB1	Conventional Boiler	139	bituminous	0.012756899
10672 Cedar Bay Generating Company L.P.	FL	BCB1	Fluidized bed firing	280	bituminous	0.012756899
1385 Dale Station	KY	03	Conventional Boiler	80	bituminous	0.012871123
3131 Shawville	PA	SHAW3-1	Conventional Boiler	188	bituminous	0.01328293
3131 Shawville	PA	SHAW4-1	Conventional Boiler	188	bituminous	0.01328293
7030 Twin Oaks Power One	TX	U2	Fluidized bed firing	172	lignite	0.013838341
3280 Canadys Steam	SC	CAN003	Conventional Boiler	185	bituminous	0.014012014
1374 Elmer Smith Station	KY	Unit001	Conventional Boiler	444.5	bituminous, petroleum co	0.014672216
1374 Elmer Smith Station	KY	Unit002	Conventional Boiler	444.5	bituminous, petroleum co	0.014672216

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6085 R.M. Schahler	IN	R.M.0014	Conventional Boiler	468	subbituminous	0.015140052
55076 Red Hills Generating Facility	MS	001	Fluidized bed firing	250	lignite	0.015442676
55076 Red Hills Generating Facility	MS	002	Fluidized bed firing	250	lignite	0.015442676
3149 PPL Montour	PA	02	Conventional Boiler	712	bituminous	0.016581916
990 Harding Street	PA	01	Conventional Boiler	112	bituminous	0.016581916
1013 Covey Power Project	PA	01	Fluidized bed firing	131	coal refuse (culm or gob)	0.016939466
2165 James River Power Station	MO	A4801	Conventional Boiler	105	subbituminous	0.01765734
2828 Cardinal	OH	CD-U3	Conventional Boiler	650	bituminous	0.018160635
3098 Etanna Power Plant	PA	ELR1-2	Conventional Boiler	100	bituminous	0.018448245
3098 Etanna Power Plant	PA	ELR2-2	Conventional Boiler	100	bituminous	0.018448245
3098 Etanna Power Plant	PA	ELR3-2	Conventional Boiler	125	bituminous	0.018448245
3098 Etanna Power Plant	PA	ELR4-2	Conventional Boiler	185	bituminous	0.018448245
10151 Grant Town Power Plant	WV	GEN1	Fluidized bed firing	190	coal refuse (culm or gob)	0.018664623
2161 James River Power Station	MO	Unit_4_JRPS	Conventional Boiler	60	subbituminous	0.0194336
1010 Wabash River	IN	PG221FA	Conventional Boiler	292	Coal Gas	0.02
10076 Inconite Harbor Energy Center	IN	HEC1	Conventional Boiler	292	bituminous	0.020075926
60029 AES Puerto Rico Cogeneration Facility	PR	Unit_1	Fluidized bed firing	285	bituminous	0.020321693
34252 Raccoon Valley I	NC	Boiler_2	Conventional Boiler	50	bituminous	0.021313779
34253 Raccoon Valley I	NC	Boiler_2	Conventional Boiler	50	bituminous	0.021313779
10771 Hopewell	OH	UNIT3	Conventional Boiler	53.3	bituminous	0.021854637
564 Stanton Energy Center	VA	1 & 2	Conventional Boiler	136	bituminous	0.0223060152
47 Colbert	FL	2 coal	Conventional Boiler	468	bituminous	0.023446742
6076 Colstrip	MT	Unit3	Conventional Boiler	200	subbituminous, bituminous	0.024004814
887 Joppa Steam	IL	4	Conventional Boiler	805	subbituminous	0.024065709
10603 Ebensburg Power Company	PA	Unit3	Conventional Boiler	183.3	subbituminous	0.024655892
981 State Line	IN	EPC01	Fluidized bed firing	58	bituminous	0.024684028
3140 PPL Brunner Island	PA	Unit 3	Conventional Boiler	216	bituminous	0.024687482
3140 PPL Brunner Island	PA	U1	Conventional Boiler	330	bituminous	0.025167104
1363 Cape Fear Steam Electric Plant	NC	U2	Conventional Boiler	363	bituminous	0.025167104
2100 Cape Fear Steam Electric Plant	NC	C4	Conventional Boiler	168	bituminous	0.025676282
54091 Cape Fear Steam Electric Plant	NC	C4a_Cfg_5b	Conventional Boiler	153	bituminous	0.025676282
1255 Oquirro	VA	GEN4	Conventional Boiler	57.4	bituminous	0.026504195
884 Will County	KS	Unit 2	Conventional Boiler	119.8	bituminous	0.027134324
54035 Raccoon Valley I	IL	WC4CONFIG	Conventional Boiler	542	subbituminous	0.028343895
50974 Scrubgrass Generating Company L.P.	NC	Boiler 1	Conventional Boiler	182	subbituminous	0.028841612
897 Vermilion	PA	Gen 1	Fluidized bed firing	194	bituminous	0.028970961
897 Vermilion	PA	001	Conventional Boiler	72	coal refuse (culm or gob)	0.029396393
864 Maredosia	IL	002	Conventional Boiler	204	subbituminous	0.031405635
3179 Halford's Ferry Power Station	PA	005	Conventional Boiler	204	subbituminous	0.031405635
60029 AES Puerto Rico Cogeneration Facility	PR	Unit_1	Conventional Boiler	590	bituminous	0.031605706
2384 Merrimack Station	MA	001	Fluidized bed firing	235	bituminous	0.032347344
54003 Springdale	VA	Unit_2	Conventional Boiler	335	bituminous	0.033030444
34003 Springdale	VA	GEN3	Conventional Boiler	335	bituminous	0.033210443
2716 W.H. Weatherspoon Plant	NC	2	Conventional Boiler	57.4	bituminous	0.033210443
3251 HB Robinson / Darlington Electric Power Plant	TN	Wrea_Cfg_1	Conventional Boiler	300	subbituminous	0.03926215
527 Nucila	SC	Rob_Cfg_1	Conventional Boiler	106	bituminous	0.040281828
6639 R D Green	CO	001	Fluidized bed firing	187	bituminous	0.042421191
6147 Monticello	KY	2	Conventional Boiler	110	bituminous	0.043795008
2840 Conesville	TX	CV-3	Conventional Boiler	239	bituminous, petroleum co	0.046919378
883 Waukegan	OH	CV-3	Conventional Boiler	593	lignite	0.047417846
	IL	WK8CONFIG	Conventional Boiler	165	bituminous	0.04807183
			Conventional Boiler	393	subbituminous	0.051663935

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Filterable Particulate MW lb/MW	Filterable PM2.5 lb/MMBtu	Filterable PM2.5 MW lb/MW	PM2.5 Condensable Particulate lb/MMBtu	PM2.5 Condensable Particulate MW lb/MW	control_group_1
3.05414E-05	9.71748E-07	9.23164E-06	0.008125908	0.07706303	NOx control
0.002125556	0.000152814	0.002125556	0.002125556	0.12163218	NOx control
0.000791816	0.000054965	0.000791816	0.000054965	0.003780148	NOx control
0.000887592	0.000227005	0.000887592	0.000227005	0.094233688	PM control
0.004744906	0.001240514	0.012555588	0.006038436	0.026343276	PM control
0.00472851	0.000142716	0.001281459	0.002806714	0.719291821	NOx control
0.010286407	0.000516101	0.010286407	0.0078162559	0.11054002	NOx control
0.005135115	0.000215699	0.001902784	0.005419961	0.240410209	NOx control
0.006184321	0.000653965	0.006184321	0.0027252813	0.105340857	NOx control
0.002978337	9.3095E-05	0.0004128	0.011138346	0.107159895	NOx control
0.002076337	0.000252162	0.000744078	0.024004954	0.007617532	NOx control
0.00677085	0.000390372	0.003467854	0.002717992	0.26202393	NOx control
0.01180871	0.000433669	0.003467854	0.002929143	0.26202393	NOx control
0.007201508	0.001118907	0.006563023	0.0194958194	0.26202393	NOx control
0.007449344	0.001625872	0.010689712	0.00685479	0.26202393	NOx control
0.008418605	0.00182504	0.01258972	0.029530437	0.428502412	PM control
0.009331211	0.003767762	0.01142129	0.002808879	0.26202393	PM control
0.010402813	0.00053102	0.005648711	0.019628976	0.030565677	PM control
0.00966237	0.000263154	0.00058167	0.010035598	0.221572801	NOx control
0.0039441869	0.000402262	0.002889418	0.006027449	0.112602184	SO2 control
0.007156271	0.000732519	0.006884244	0.013012919	0.085381759	PM control
0.010361587	0.000468943	0.004352677	0.004710525	0.050844409	NOx control
0.011224531	0.003767762	0.004352677	0.00722569	0.034045729	NOx control
0.0139474754	0.002344671	0.001884155	0.012784113	0.072578	NOx control
0.0135212	0.0004671	0.001884155	0.006850892	Other control	Other control
0.0135212	0.001507717	0.014679463	0.00500892	0.030921508	Other control
0.01756403	0.000839563	0.007810396	0.005641818	0.044853012	Other control
0.016011502	0.000293711	0.002780911	0.007668909	0.094108683	PM control
0.01808196	0.000293711	0.002780911	0.007863842	0.0860374	PM control
0.018479355	0.001032086	0.009907247	0.005567745	0.071426501	NOx control
0.018251791	0.000306611	0.002520491	0.00567745	0.05286601	PM control
0.017352686	0.000247382	0.002143785	0.002404772	0.023077059	PM control
0.018792884	0.000247382	0.002143785	0.001459202	0.013732223	NOx control
0.034209133	0.00104575	0.008945174	0.004740533	0.03911411	NOx control
0.02247079	0.001205426	0.010943687	0.014167947	0.122777981	SO2 control
0.021922251	0.000168565	0.000168565	0.011770216	0.1176935	SO2 control
0.025018695	0.000168565	0.000168565	0.005818417	0.05298411	PM control
0.028943124	0.002664159	0.002631263	0.002631263	0.027099777	NOx control
0.031692212	0.027242652	0.00214605	0.00214605	0.02798999	PM control
0.032115411	0.046366225	0.009197023	0.005927409	0.020347178	NOx control
0.046366225	0.032758998	0.009197023	0.032007124	0.064209413	PM control
0.032758998	0.034342102	0.009197023	0.009197023	0.200981335	PM control
		0.0030674	0.059141028	0.097833068	NOx control
		0.00396251	0.00396251	0.866809415	NOx control
				0.031476159	Other control
				0.042364268	NOx control

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0.056656965	0.03793829	0.034640858	0.007464873	0.068106576	NOx control
0.060322399	0.000872982	0.00844764	0.008574467	0.077861961	PM control
0.052842635	0.000828726	0.006593935	0.181088637	1.440427133	PM control
	0.003035225		0.007601483		PM control
0.062652541	0.003132062	0.033317223	0.00152969	0.016272038	NOx control
0.068205709	0.003132062	0.025905207	0.00152969		NOx control
0.068579172	0.002200514		0.012427741	0.147937241	PM control
0.078555867		0.0465935762	0.002069817	0.08102862	NOx control
0.079079263	0.003342161		0.019626212	0.029068955	SO2 control
0.086313171	0.0013377635	0.013149603	0.015627155	0.177958312	Other control
0.090091028	0.000321631	0.00320897	0.014881918	0.152706545	NOx control
0.096828565	0.005097954	0.054229339	0.06137749	0.158305977	PM control
0.084814188	0.00582916	0.054235147	0.019463059	0.057106294	Other control
0.099262236	0.00378435	0.040820696	0.019463059	0.210327812	NOx control
	0.00378435		0.00367654		NOx control
	0.0011907	0.015389433		0.044370198	PM control
0.12289047	0.003865106	0.041327725	0.040803937		PM control
0.099411045			0.01513107	0.133778241	NOx control
0.083946169	0.002105176	0.018614707	0.031516959	0.256344571	PM control
0.077263078	0.002945759	0.023959458			PM control
0.121978581	0.011667973	0.144501321	0.013726578	0.138154804	NOx control
0.107643061	0.013584815	0.136727988	0.018108495	0.137635776	PM control
0.081346897			0.069973714	0.061073984	NOx control
0.094483782	0.003620754	0.031613955	0.006973714		NOx control
	0.003620754				SO2 control
0.183451505	0.002909893	0.034676522	0.012035569	0.106318914	NOx control
0.097484821	0.002793633	0.025001699	0.003016786	0.032030976	PM control
0.117865103	0.007991343	0.065007676	0.003016786		PM control
	0.007991343		0.012913343	0.138130062	PM control
0.119822241	0.001575379		0.01548301	0.170068422	PM control
0.124141299	0.003771844	0.017321194	0.018207151		PM control
0.045474907	0.00212343	0.019857824	0.012206896	0.120744938	
0.038232695	0.002402763	0.026022516	0.019493335	0.186378495	
0.11382457	0.008428131	0.092065264	0.002741402	0.026007085	PM control
0.153887989			0.0043955422	0.058628181	NOx control
0.123607218	0.001654098	0.0165119979	0.0695952054	0.0589976	NOx control
0.138515185	1.0881508	1.10438E+05			SO2 control
0.138232604	0.012700515	0.13311984	0.012799113	0.134100014	PM control
0.119853836	0.004427645	0.039950393	0.004833686	0.044517375	PM control
	0.004427645		0.004933686		PM control
0.12117552	0.003469345	0.030364807	0.018501389	0.161930027	PM control
0.128146577	0.0024134	0.022072042	0.011744737	0.107412915	PM control
0.146820362			0.026288852	0.261921315	NOx control
					NOx control

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0.185794231	0.011467024	0.139601331	0.0191773968	0.233651361	NOx control
0.148755231	0.001458397	0.014029148		PM control	PM control
0.148755231	0.001458397	0.014029148		PM control	PM control
0.125364716	0.009714651	0.0942038517	0.012554616	0.102725158	NOx control
0.185794231	0.009714651	0.017742851	0.041355467	0.401043365	NOx control
0.162754047	0.001858151	0.017742851	0.039311571	0.405600278	NOx control
0.182386609	0.022187313	0.229435424		PM control	PM control
0.19318323	0.009756532	0.19420075		PM control	PM control
0.195242674			0.007674071	0.081632707	NOx control
			0.007674071	NOx control	NOx control
0.249850261	0.001245314	0.016550699	0.007674071	NOx control	NOx control
0.186289046	0.014474237	0.138934942	0.006091205	0.081302501	NOx control
0.214010691	0.00471	0.050349934	0.026103212	0.250692813	PM control
0.185794231	0.009714651	0.132687678	0.013766667	0.14706653	
0.181100918	0.003640383	0.152687678	0.007198183	0.081994604	NOx control
0.203770113	0.009590659	0.092702854	0.019222158	0.378607758	NOx control
0.232478069	0.004140599	0.044048654	0.038417208	0.387387006	PM control
0.261050357	0.00283546	0.033206002	0.057096093	0.646845396	NOx control
0.255294364	0.00892534	0.095037563	0.002267748	NOx control	NOx control
0.223838542	0.016757672	0.168600366	0.020231776	0.214842733	PM control
0.248095492	0.005400264	0.073067866	0.0028883834	0.026800211	Other control
0.333795269	0.04215036	0.038564799	0.003618252	0.038403539	Other control
0.227353089				PM control	PM control
0.430331019			0.005444423	0.049816927	PM control
0.25237486	0.01164969	0.089548156	0.005557543	0.053718839	PM control
0.20430116	0.004485335	0.089855118	0.00557543	PM control	PM control
0.488953881	0.012747639	0.126391703	0.01553658	0.18257756	PM control
0.354044681	0.01499512	0.131878013	0.002022799	0.118923217	NOx control
0.284259837	0.003628621	0.028868274	0.005162607	0.09845108	S02 control
0.254250911	0.017353174	0.175114881	0.005354398	0.063873488	PM control
0.205653278	0.017353174	0.1148719653	0.009008996	0.05332574	Other control
0.317145884	0.017353174	0.1148719653	0.004387567	0.079231924	S02 control
0.313014154	0.011667317	0.1148719653	0.020619189	0.030684418	NOx control
0.294500749	0.002218252	0.019795165	0.020619189	0.212695606	PM control
0.301759432	0.002533279	0.048173944	0.004777393	PM control	PM control
0.678244272	0.002860156	0.026224144	0.001948275	0.514404038	NOx control
0.357771971	0.00640117	0.002967033	0.068550212	0.224874	NOx control
0.019609607	0.00640117	0.002967033	0.002181504	0.024146613	S02 control
0.392615275	0.0158928	0.14807232	0.010177592	0.092673986	PM control
0.506525589	0.007757405	0.089722162	0.061925012	0.028297466	PM control
0.471547882	0.052869572	0.562398554	0.073857003	0.683313144	PM control
0.504403977	0.008116492	0.096338956	0.003810182	0.04064394	NOx control
0.595954996	0.018488706	0.213782312	0.012588918	0.126520816	PM control
			0.03206923	0.341135513	NOx control
			0.01175282	0.135868222	Other control

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control_type_1	install_date_1	control_group_2	control_type_2	install_date_2
Selective Catalytic Reduction	12/1/1995	SO2 control	Spray dryer type	12/1/1995
Selective Catalytic Reduction	3/1/1994	SO2 control	Spray dryer type	3/1/1994
Selective Catalytic Reduction	2/1/2000	Other control	Dry sorbent injection	
Fabric Filter, pulse	5/1/1998			
Fabric Filter, reverse air	8/1/1993	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	7/1/1984
Selective Noncatalytic Reduction	3/1/1994	SO2 control	Spray dryer type	3/1/1984
Selective Catalytic Reduction	8/1/2006	SO2 control	Spray dryer type	8/1/2006
Selective Catalytic Reduction	9/1/1994	SO2 control	Spray dryer type	9/1/1994
Selective Noncatalytic Reduction	8/1/2009	Other control	Activated carbon injection	8/1/2009
Selective Noncatalytic Reduction		Other control	Dry sorbent injection	
Selective Catalytic Reduction	12/1/2009	SO2 control	Spray dryer type	12/1/2009
Fabric Filter, reverse air	5/1/2001			
Electrostatic precipitator, cold side, w/ flue gas conditioning	5/1/1994	NOx control	Selective Catalytic Reduction	6/1/2004
Electrostatic precipitator, cold side, w/ flue gas conditioning	5/1/1994	NOx control	Selective Catalytic Reduction	6/1/2004
Electrostatic precipitator, cold side, w/o flue gas conditioning	8/1/1998	Other control	Activated carbon injection	7/1/2008
Selective Catalytic Reduction	4/1/2003	SO2 control	Spray dryer type	4/1/2003
Circulating Dry Scrubber	9/1/1995	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	9/1/1995
Fabric Filter, pulse	12/1/1999			
Selective Noncatalytic Reduction	7/1/2009	Other control	Activated carbon injection	8/1/2008
Selective Noncatalytic Reduction		PM control	Other (specify): Bag House	5/1/2001
Selective Catalytic Reduction	5/1/2001	SO2 control	Spray dryer type	7/1/2008
Activated carbon injection		SO2 control	Spray dryer type	
Activated carbon injection	10/1/1996	PM control	Fabric Filter, pulse	3/1/2008
Activated carbon injection	4/1/2008	PM control	Other (specify): Bag House	
Selective Noncatalytic Reduction	7/1/1992			
Electrostatic precipitator, cold side, w/o flue gas conditioning	12/1/1971	SO2 control	Spray type	10/1/2001
Electrostatic precipitator, hot side, w/o flue gas conditioning	3/1/2003	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	3/1/1991
Selective Catalytic Reduction	5/1/2007			
Fabric Filter, reverse air	4/1/2006			
Fabric Filter, reverse air	12/1/2008	SO2 control	Venturi type	7/1/1976
Selective Catalytic Reduction	5/1/2005	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1974
Selective Catalytic Reduction	7/1/2008	Other control	Activated carbon injection	7/1/2008
Spray dryer type	4/1/1984	PM control	Fabric Filter, reverse air	4/1/1984
Spray dryer type	5/1/2008	SO2 control	Spray dryer type	5/1/2008
Fabric Filter, pulse	6/1/1995			
Selective Noncatalytic Reduction	3/1/2003	PM control	Fabric Filter, reverse air	5/1/2003
Electrostatic precipitator, cold side, w/o flue gas conditioning	7/1/1992	SO2 control	Spray type	12/1/1992
Fabric Filter, reverse air	5/1/2002	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1974
Other (specify): Bag House	1/1/2009	SO2 control	Other (specify): Wet FGD	1/1/2009
Fabric Filter, reverse air	5/1/2003	SO2 control	Spray type	5/1/2003
Selective Catalytic Reduction	8/1/4/2007	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/17/2005
Selective Catalytic Reduction	12/1/2005	PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	12/1/1978
Activated carbon injection	4/1/2008	PM control	Fabric Filter, pulse	10/1/2007
Selective Noncatalytic Reduction	4/1/2006	PM control	Electrostatic precipitator, hot side, w/o flue gas conditioning	3/1/2008

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Selective Noncatalytic Reduction	4/1/2006 PM control	Electrostatic precipitator, hot side, w/ flue gas conditioning	3/1/2008
Selective Noncatalytic Reduction	11/1/2005 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1994
Selective Catalytic Reduction	4/1/2005 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	4/1/2004
Electrostatic precipitator, cold side, w/ flue gas conditioning	2/1/1971 SO2 control	Spray type	5/1/2008
Electrostatic precipitator, cold side, w/ flue gas conditioning	4/1/1963 SO2 control	Spray type	5/1/2008
Selective Catalytic Reduction	12/1/1968 SO2 control	Electrostatic precipitator, cold side, w/ flue gas conditioning	5/1/2008
Selective Catalytic Reduction	6/1/2003 PM control	Other (specify): Cold Side ESP	12/1/1970
Electrostatic precipitator, hot side, w/o flue gas conditioning	1/1/1972 SO2 control	Spray type	3/1/2009
Other (specify): Burners Out of Service	PM control	Selective Catalytic Reduction	6/1/2002
Selective Catalytic Reduction	2/1/2007 Other control	Electrostatic precipitator, cold side, w/ flue gas conditioning	2/1/2007
Other (specify): CFB	1/1/1993 SO2 control	Activated carbon injection	1/1/1993
Selective Catalytic Reduction	6/14/2006 PM control	Other (specify): Limestone Sorbent Injection	5/1/1971
Selective Catalytic Reduction	1/1/2009 SO2 control	Electrostatic precipitator, cold side, w/o flue gas conditioning	4/1/1983
Other (specify): Bag House	1/1/2008 SO2 control	Other (specify): Dry Scrubber	1/1/2008
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/2003 NOx control	Other (specify): Wet FGD	5/1/2003
Fabric Filter, pulse	12/1/2001 PM control	Selective Catalytic Reduction	10/1/2008
Activated carbon injection	6/1/2009 PM control	Fabric Filter, pulse	6/1/2004
Selective Catalytic Reduction	12/1/2001 Other control	Other (specify): Soda Ash Injection for SO3 mitigation	12/1/1998
Fabric Filter, reverse air	12/1/2000 PM control	Fabric Filter, reverse air	11/1/1992
Spray dryer type	8/1/1998 PM control	Fabric Filter, pulse	6/1/2002
Selective Noncatalytic Reduction	11/1/1974	Electrostatic precipitator, cold side, w/ flue gas conditioning	2/1/1989
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/2005 PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	7/1/1960
Selective Noncatalytic Reduction	6/1/2006 PM control	Spray type	12/1/1964
Selective Noncatalytic Reduction	11/1/2003 SO2 control	Electrostatic precipitator, cold side, w/ flue gas conditioning	12/1/2007
Fabric Filter, pulse	11/1/1982	Fabric Filter, pulse	11/1/1979
Activated carbon injection	12/1/2007 PM control	Spray type	4/1/2008
Other (specify): Bag House	5/1/2004 SO2 control	Fabric Filter, pulse	1/1/1994
Circulating Dry Scrubber	6/1/2009 PM control	Selective Noncatalytic Reduction	
Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1994 NOx control	Other (specify): Fabric Filter	
Selective Noncatalytic Reduction	3/1/1977	Dry sorbent injection	1/1/2007
Fabric Filter, pulse	6/1/1994	Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1960
Selective Noncatalytic Reduction	1/1/2007 Other control	Activated carbon injection	3/1/2008
Electrostatic precipitator, cold side, w/o flue gas conditioning	10/1/1989 PM control	Activated carbon injection	12/1/2009
Selective Catalytic Reduction	9/1/1971 PM control	Activated carbon injection	6/1/2008
Electrostatic precipitator, cold side, w/o flue gas conditioning	8/1/1968 Other control	Other (specify): Soda Ash Injection for SO3 mitigation	6/1/2004
Other (specify): Cold Side ESP	8/1/1979	Other (specify): Fabric Filter	
Selective Catalytic Reduction	8/1/1972 Other control	Other (specify): Dry Lime Scrubber	4/1/2009
Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1974 Other control	Selective Noncatalytic Reduction	1/1/1994
Selective Noncatalytic Reduction	4/1/2005 Other control		
Electrostatic precipitator, cold side, w/o flue gas conditioning	11/1/1977		
Selective Noncatalytic Reduction	4/1/2009 SO2 control		
Circulating Dry Scrubber	1/1/1994 NOx control		

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Selective Noncatalytic Reduction Fabric Filter, pulse Other (specify): Baghouse	3/1/2005 SO2 control 5/1/2001 Other control 4/1/1993	Other (specify): Dry Lime Scrubber Activated carbon injection	3/1/2005
Selective Noncatalytic Reduction Other (specify): ESP	1/1/1998		
Selective Noncatalytic Reduction Fabric Filter, pulse	10/1/1998 PM control 10/1/1992 PM control 5/1/1994	Fabric Filter, pulse Fabric Filter, pulse	10/1/1992 10/1/1992
Selective Catalytic Reduction Spray dryer type	8/1/2009 Other control	Activated carbon injection	8/1/2009
Dry sorbent injection	5/1/1992 SO2 control	Spray dryer type	5/1/1992
Selective Noncatalytic Reduction Spray dryer type	1/1/2005 PM control 8/1/1985 PM control 6/1/1989 PM control 1/1/1992 PM control	Electrostatic precipitator, hot side, w/ flue gas conditioning Fabric Filter, pulse Fabric Filter, reverse air Fabric Filter, pulse	1/1/1981 8/1/1985 6/1/1989 1/1/1992
Other (specify): Flue gas conditioning	4/1/2001 Other control	Activated carbon injection	
Selective Noncatalytic Reduction	5/1/2008 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1990
Selective Noncatalytic Reduction	5/1/2008 PM control 1/1/2001 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1990 4/1/1993
Selective Catalytic Reduction Multiple cyclone	1/1/1992 PM control 3/1/1977	Multiple cyclone	1/1/1992
Electrostatic precipitator, hot side, w/o flue gas conditioning		Selective Catalytic Reduction	1/1/2004
Other (specify): Magnesium Hydroxide Injection	5/1/2009 Other control	Activated carbon injection	5/1/2009
Selective Catalytic Reduction	12/1/1971		
Electrostatic precipitator, cold side, w/o flue gas conditioning			
Electrostatic precipitator, cold side, w/o flue gas conditioning			
Selective Noncatalytic Reduction	PM control	Fabric Filter, pulse	5/1/2001
Selective Noncatalytic Reduction	5/1/2001 NOx control	Selective Catalytic Reduction	3/1/2004
Selective Noncatalytic Reduction	3/1/2004 PM control	Fabric Filter, pulse	3/1/2004
Selective Noncatalytic Reduction	5/1/1992 SO2 control	Spray dryer type	5/1/1992
Spray dryer type	1/1/1991	Spray dryer type	10/1/1996
Selective Catalytic Reduction	7/1/2001		
Electrostatic precipitator, cold side, w/o flue gas conditioning	12/1/1978		
Electrostatic precipitator, cold side, w/o flue gas conditioning		Spray type	5/1/1978
Other (specify): ESP	3/1/1966 SO2 control		
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1990		
Electrostatic precipitator, cold side, w/o flue gas conditioning			
Electrostatic precipitator, cold side, w/o flue gas conditioning			
Selective Noncatalytic Reduction	7/1/1991	Multiple cyclone	11/1/1960
Selective Noncatalytic Reduction	6/1/1990 PM control	Activated carbon injection	1/1/2010
Electrostatic precipitator, cold side, w/o flue gas conditioning	4/1/2006 Other control	Selective Noncatalytic Reduction	1/1/1994
Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1994 NOx control		
Electrostatic precipitator, cold side, w/o flue gas conditioning		Electrostatic precipitator, cold side, w/o flue gas conditioning	3/1/1977
Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1959 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	3/1/1977
Fabric Filter, reverse air	6/1/1960 PM control		
Other (specify): Baghouse	8/1/1990		
Selective Catalytic Reduction	7/1/1998		
Selective Noncatalytic Reduction	5/1/2004 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	12/1/1993
		Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1993

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Selective Catalytic Reduction Other (specify): Fabric Filter Baghouse	5/1/2004 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1990
Other (specify): Fabric Filter Baghouse	5/1/2002		
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/2000 NOx control		
Selective Noncatalytic Reduction	1/1/2001 PM control	Selective Catalytic Reduction	5/1/2000
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1999 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1999
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1997 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1996
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1970 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1964
Electrostatic precipitator, cold side, w/o flue gas conditioning	9/1/1977 NOx control	Selective Catalytic Reduction	1/1/2003
Selective Noncatalytic Reduction	7/1/2001 PM control	Other (specify): Mechanical Separator	6/1/1962
Selective Noncatalytic Reduction	7/1/2001 PM control	Other (specify): Mechanical Separator	3/1/1953
Selective Noncatalytic Reduction	7/1/2001 PM control	Other (specify): Mechanical Separator	11/1/1954
Selective Noncatalytic Reduction	7/1/2001 PM control	Other (specify): Mechanical Separator	11/1/1960
Selective Noncatalytic Reduction	5/1/2005 NOx control	Selective Noncatalytic Reduction	5/1/2005
Electrostatic precipitator, cold side, w/o flue gas conditioning	8/1/1976		
Selective Noncatalytic Reduction	1/1/2008 Other control	Dry solvent injection	1/1/2008
Selective Noncatalytic Reduction	SO2 control	Spray dryer type	
Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1995 SO2 control	Spray dryer type	6/1/1995
Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1972	Selective Noncatalytic Reduction	4/1/1992
Selective Noncatalytic Reduction	4/1/1962 NOx control	Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1986
Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1996 PM control		
Activated carbon injection	1/1/1991	Venturi type	1/1/1984
Activated carbon injection	12/1/2009 SO2 control	Electrostatic precipitator, cold side, w/ flue gas conditioning	1/1/1971
Fabric Filter, pulse	7/1/2009 PM control		
Fabric Filter, pulse	11/1/1990		
Fabric Filter, pulse	1/1/1999		
Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1965 SO2 control	Tray type	11/1/2009
Electrostatic precipitator, cold side, w/o flue gas conditioning	10/1/2009 SO2 control	Tray type	1/1/2009
Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1985 SO2 control	Tray type	12/1/1976
Selective Noncatalytic Reduction	5/1/2006 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	11/1/1973
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1992 SO2 control	Spray dryer type	5/1/1982
Activated carbon injection	5/1/1986		
Electrostatic precipitator, cold side, w/o flue gas conditioning	7/1/2009 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1963
Spray dryer type	5/1/1994 PM control	Fabric Filter, reverse air	5/1/1994
Selective Noncatalytic Reduction	6/1/1999 NOx control	Selective Noncatalytic Reduction	6/1/1999
Other (specify): Electrostatic Precipitator	6/1/1973 Other control	Activated carbon injection	5/1/2007
Other (specify): Electrostatic Precipitator	1/1/1974 Other control	Activated carbon injection	5/1/2007
Activated carbon injection	PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	
Other (specify): Cold Side ESP	1/1/1969 SO2 control	Other (specify): Flue Gas Desulfurization	6/1/2009
Selective Noncatalytic Reduction	SO2 control	Spray dryer type	
Selective Catalytic Reduction	5/1/1995 Other control	Activated carbon injection	
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1992 SO2 control	Spray dryer type	5/1/1982
Electrostatic precipitator, cold side, w/o flue gas conditioning	9/1/1978		
Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1976 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	4/1/1975
Electrostatic precipitator, cold side, w/o flue gas conditioning	7/1/1974		
Selective Noncatalytic Reduction	7/1/2006 PM control	Fabric Filter, shake and deflate	6/1/1987
Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1981 SO2 control	Spray type	1/1/1981
Selective Noncatalytic Reduction	11/1/2008 Other control	Activated carbon injection	2/1/2009
Activated carbon injection	1/1/1977		
Activated carbon injection	7/1/2008 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	7/1/1962

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Selective Noncatalytic Reduction	1/1/2009 PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	2/1/1975
Activated carbon injection	7/1/2009 PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	3/1/1966
Other (specify): Flue gas conditioning for opacity control	4/1/2006 PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	10/1/1974
Electrostatic precipitator, cold side, w/o flue gas conditioning			
Selective Catalytic Reduction	6/1/1972		
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/2003 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1992
Electrostatic precipitator, cold side, w/o flue gas conditioning	10/1/1993		
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1993		
Electrostatic precipitator, cold side, w/o flue gas conditioning	7/1/1995		
Selective Noncatalytic Reduction	2/1/2007 PM control	Electrostatic precipitator, hot side, w/o flue gas conditioning	1/1/1995
Other (specify): Cold Side ESP	11/1/1969		
Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1979		
Selective Catalytic Reduction	12/1/1995 SO2 control	Spray dryer type	12/1/1995
Selective Catalytic Reduction	3/1/1994 SO2 control	Spray dryer type	3/1/1994
Selective Catalytic Reduction	3/1/1994 SO2 control	Spray dryer type	3/1/1994
Selective Catalytic Reduction	8/1/2006 SO2 control	Spray dryer type	8/1/2006
Selective Catalytic Reduction	9/1/1994 SO2 control	Spray dryer type	9/1/1994
Selective Catalytic Reduction	12/1/2009 SO2 control	Spray dryer type	12/1/2009
Selective Catalytic Reduction	4/1/2003 SO2 control	Spray dryer type	4/1/2003
Selective Catalytic Reduction	5/1/2001 SO2 control	Spray dryer type	5/1/2001
Activated carbon injection		Spray dryer type	7/1/2008
Selective Catalytic Reduction	7/1/2008 SO2 control	Activated carbon injection	7/1/2008
Spray dryer type	5/1/1992 PM control	Spray dryer, reverse air	5/1/1992
Selective Catalytic Reduction	3/1/2008 Other control	Activated carbon injection	12/1/2008
Spray dryer type	3/1/1992 SO2 control	Activated carbon injection	3/1/2008
Other (specify): Flue gas conditioning	6/1/1999 PM control	Fabric Filter, reverse air	6/1/1999
Multiple cyclone	4/1/2001 Other control	Activated carbon injection	
Selective Catalytic Reduction	3/1/1992 PM control	Multiple cyclone	3/1/1992
Selective Catalytic Reduction	5/1/2009 Other control	Activated carbon injection	5/1/2009
Selective Noncatalytic Reduction	5/1/1992 SO2 control	Spray dryer type	5/1/1992
Selective Noncatalytic Reduction	10/1/1995 SO2 control	Spray dryer type	10/1/1995
Spray dryer type	6/1/1995 SO2 control	Spray dryer type	6/1/1995
Activated carbon injection	4/1/1992 NOx control	Selective Noncatalytic Reduction	4/1/1992
Spray dryer type	7/1/1992 SO2 control	Spray dryer type	7/1/1992
Other (specify): Flue gas conditioning	7/1/2001 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1992
Selective Noncatalytic Reduction	5/1/1994 PM control	Fabric Filter, reverse air	5/1/1994
Spray dryer type		Spray dryer type	
Selective Noncatalytic Reduction	5/1/1992 SO2 control	Spray dryer type	5/1/1992

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control_group_3	control_type_3	install_date_3	control_group_4	control_type_4
PM control PM control PM control PM control	Fabric Filter, pulse Fabric Filter, reverse air Other (specify): Fabric Filter	12/1/1995 5/1/1994 12/1/2009		
PM control PM control PM control SO2 control PM control PM control	Fabric Filter, reverse air Fabric Filter, pulse Fabric Filter, reverse air Circulating Dry Scrubber Other (specify): Fabric Filter Fabric Filter, pulse	3/1/1994 8/1/2006 9/1/1994 8/1/2009 PM control 5/1/2009 12/1/2009		Fabric Filter, pulse
Other control Other control PM control PM control	Activated carbon injection Activated carbon injection Fabric Filter, pulse Fabric Filter, pulse	1/1/2007 PM control 1/1/2007 PM control 1/1/2008 4/1/2003		Fabric Filter, pulse Fabric Filter, pulse
SO2 control	Circulating Dry Scrubber	7/1/2009 PM control		Fabric Filter, pulse
PM control PM control	Fabric Filter, pulse Fabric Filter, reverse air	5/1/2001 12/1/1991		
SO2 control	Spray type	5/1/1998		
SO2 control	Spray type	1/1/2010		
SO2 control SO2 control	Other (specify): New B&W Spray and Tray Design Spray dryer type	4/20/2007 7/1/2008 PM control		Fabric Filter, pulse
SO2 control	Spray dryer type	5/1/2008 PM control		Fabric Filter, pulse
SO2 control SO2 control	Spray type Other (specify): New B&W Spray and Tray Design	5/1/2003 12/1/2008		
SO2 control SO2 control SO2 control PM control	Other (specify): New B&W Spray and Tray Design Spray type Spray type Electrostatic precipitator, cold side, w/o flue gas conditioning	11/1/2005 12/1/2007 4/1/1998 1/1/1976 SO2 control		Spray type

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PM control SO2 control SO2 control	Electrostatic precipitator, cold side, w/o flue gas conditioning Spray type Spray type	1/1/1976 SO2 control 12/1/2009 12/1/2009	Spray type	
SO2 control SO2 control	Spray type Other (specify): Limestone scrubbant	5/1/2008 3/1/2009		
PM control SO2 control SO2 control PM control SO2 control PM control	Other (specify): Hot Side ESP Other (specify): Wet FGD Circulating Dry Scrubber Fabric Filter, pulse Other (specify): New B&W Spray and Tray Design Other (specify): Baghouse	Other control 2/1/2007 PM control 1/1/1993 5/15/2006 4/1/1993	Activated carbon injection Fabric Filter, pulse	
SO2 control	Other (specify): Wet Limestone Scrubber	4/1/2009 Other control	Wet electrostatic precipitator	
SO2 control PM control	Spray type Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1998 1/1/1991 SO2 control	Tray type	
SO2 control SD2 control	Spray type Spray type	5/1/2009 4/1/2009		
SO2 control PM control	Spray type Fabric Filter, pulse	5/1/1998 1/1/1994		
PM control	Other (specify): ESP conversion hot-side to cold-side	1/1/2007		
SO2 control	Spray dryer type	3/1/2008 PM control	Fabric Filter, pulse	
PM control PM control PM control	Other (specify): Baghouse/Fabric Filter Other (specify): Baghouse/Fabric Filter Electrostatic precipitator, cold side, w/o flue gas conditioning	10/1/2008 12/1/2008 1/1/1990 SO2 control	Tray type	
PM control PM control	Other (specify): Pulse Jet Fabric Filter Fabric Filter, pulse	4/1/2009 1/1/1994		

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PM control	Other (specify): Pulse Jet Fabric Filter	3/1/2005	
PM control PM control NOx control	Fabric Filter, pulse Fabric Filter, pulse Selective Catalytic Reduction	8/1/2009 SO2 control 5/1/1992 PM control 1/1/2002 SO2 control	Spray type Fabric Filter, pulse Spray type
PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning		
SO2 control	Spray dryer type	3/1/1992 SO2 control	Spray dryer type
Other control SO2 control	Dry sorbent injection Spray dryer type	5/1/2004 PM control 5/1/2009 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning Fabric Filter, pulse
SO2 control	Tray type	5/1/2009	
PM control PM control	Fabric Filter, pulse Fabric Filter, reverse air	5/1/1992 PM control 10/1/1995	Fabric Filter, pulse
PM control SO2 control PM control	Electrostatic precipitator, hot side, w/o flue gas conditioning Other (specify): Flue Gas Desulfurization Fabric Filter, pulse	11/1/1990 PM control 4/1/2006 PM control 1/1/1994	PM scrubber - Venturi Fabric Filter, pulse
SO2 control SO2 control	Spray type Spray type	11/1/1995 11/1/1995	

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SO2 control	Tray type		3/1/2006	
PM control PM control PM control PM control SO2 control	Electrostatic precipitator, cold side, w/o flue gas conditioning Electrostatic precipitator, cold side, w/o flue gas conditioning Electrostatic precipitator, cold side, w/o flue gas conditioning Electrostatic precipitator, cold side, w/o flue gas conditioning Circulating Dry Scrubber	6/1/1992 SO2 control 3/1/1993 SO2 control 11/1/1994 SO2 control 11/1/1990 SO2 control 7/1/1992 SO2 control	Venturi type Venturi type Venturi type Venturi type Circulating Dry Scrubber	
PM control PM control PM control	Other (specify): ESP conversion hot-side to cold-side Electrostatic precipitator, cold side, w/o flue gas conditioning Fabric Filter, pulse	1/1/2008 6/1/1995		
PM control SO2 control	Multiple cyclone Spray type	4/1/1992 PM control 6/1/1995	Multiple cyclone	
PM control	PM scrubber - Venturi	1/1/1984		
PM control	Fabric Filter, pulse	5/1/1992 PM control	Fabric Filter, pulse	
PM control PM control PM control	Fabric Filter, pulse Other (specify): Bag House Other (specify): Bag House	6/1/1993 PM control 5/1/2007 5/1/2007	Fabric Filter, pulse	
PM control PM control PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning Electrostatic precipitator, cold side, w/o flue gas conditioning Fabric Filter, pulse	11/1/1992 PM control 5/1/1992 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning Fabric Filter, pulse	
PM control	Fabric Filter, shake and deflate	12/1/1979 PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	

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PM control	Fabric Filter, pulse	12/1/1995	Fabric Filter, pulse
PM control	Fabric Filter, reverse air	3/1/1994	Fabric Filter, pulse
PM control	Fabric Filter, reverse air	8/1/1994	Fabric Filter, pulse
PM control	Fabric Filter, reverse air	8/1/2006	Fabric Filter, pulse
PM control	Fabric Filter, reverse air	9/1/1994	
PM control	Fabric Filter, pulse	12/1/2009	
PM control	Fabric Filter, pulse	4/1/2003	
PM control	Fabric Filter, pulse	5/1/2001	
PM control	Fabric Filter, reverse air	12/1/1991	
SO2 control	Spray dryer type	7/1/2008 PM control	Fabric Filter, pulse
SO2 control	Spray dryer type	5/1/2008 PM control	Fabric Filter, pulse
SO2 control	Spray dryer type	3/1/2008 PM control	Fabric Filter, pulse
PM control	Fabric Filter, pulse	5/1/1992 PM control	
PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning		
SO2 control	Spray dryer type	3/1/1992 SO2 control	Spray dryer type
SO2 control	Spray dryer type	5/1/2009 PM control	Fabric Filter, pulse
PM control	Fabric Filter, reverse air	5/1/1992 PM control	Fabric Filter, pulse
PM control	Fabric Filter, reverse air	10/1/1996	
PM control	Fabric Filter, pulse	6/1/1995	
PM control	Multiple cyclone	4/1/1992 PM control	Multiple cyclone
PM control	Fabric Filter, pulse	5/1/1992 PM control	Fabric Filter, pulse
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning		
PM control	Fabric Filter, pulse	5/1/1992 PM control	Fabric Filter, pulse

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install_date_4	control_group_5	control_type_5	install_date_5	control_group_6	control_type_6	install_date_6
						control_group_7
8/1/2009						
12/1/2008						
12/1/2008						
7/1/2009						
7/1/2008						
12/1/1987 PM control	Fabric Filter, pulsa		12/1/1987 PM control		Fabric Filter, pulse	12/1/1987
12/1/2009						

Other (specify): Fabric Filter 2/1/2010 SO2 control

2/1/2010 PM control

Other (specify): lime injection

Other control

2/1/2007

4/1/2009

5/1/2007

1/1/2008

10/1/2007

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8/1/2009
6/1/1992
1/1/1981

3/1/1992 PM control
3/1/1991 SO2 control
5/1/2009

Fabric Filter, pulse

3/1/1992 PM control
6/1/2004

Fabric Filter, pulse

3/1/1992

5/1/1992

12/1/1992 SO2 control
4/1/2006

Spray type

12/1/1992

5/1/1975 6/1/1975 6/1/1975 7/1/1992 PM control	Fabric Filter, pulse	7/1/1992 PM control	Fabric Filter, pulse	5/1/2005
4/1/1992 SO2 control	Spray dryer type	4/1/1992 SO2 control	Spray dryer type	4/1/1992 PM control
5/1/1992				
6/1/1993 SO2 control	Circulating Dry Scrubber	6/1/1993 SO2 control	Circulating Dry Scrubber	6/1/1993
5/1/1988 5/1/1992				
12/1/1975				

7/1/2008 12/1/1987 PM control 1/1/2008 5/1/1992	Fabric Filter, pulse	12/1/1987 PM control	Fabric Filter, pulse	12/1/1987
3/1/1992 PM control 5/1/2009 5/1/1992	Fabric Filter, pulse	3/1/1992 PM control	Fabric Filter, pulse	3/1/1992
4/1/1992 SO2 control 5/1/1992	Spray dryer type	4/1/1992 SO2 control	Spray dryer type	4/1/1992 PM control
5/1/1992				

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SORTED ON FILTERABLE P/LB MMBTU EXCLUDING UNITS WITH NO SO2 CONTROLS (F-GD, SPRAY DRYERS, ETC.) OR ACF FOR MERCURY

ORIS code	Plant Name	State	Unit	Unit Type	Mwe	Fuel	Filterable Particulate LB MMBTU
50976	INDIAN TOWN COGENERATION LP	FL	001	Conventional Boiler	361	bituminous	3.22162E-06
10668	Chambers Cogeneration LP	NJ	Boil 2	Conventional Boiler	285	bituminous	0.000152814
1626	Salem Harbor	NY	Unit 1	Conventional Boiler	81419	bituminous	0.000244259
10566	Chambers Cogeneration LP	MA	Boil 1	Conventional Boiler	285	bituminous	0.000516101
8223	Springville	NJ	3	Conventional Boiler	450	subbituminous	0.000582115
10043	Logan Generating Plant	AZ	Unit1	Conventional Boiler	241.7	bituminous	0.000655965
52071	Sandow Station	NJ	5A	Fluidized bed firing	282.35	lignite	0.000673405
2554	Dunkirk Generating Plant	TX	4	Conventional Boiler	195	subbituminous	0.000742216
8223	Springville	NY	4	Conventional Boiler	450	bituminous	0.000754284
9077	Gerald Gentlemen	AZ	U2	Conventional Boiler	750	bituminous	0.000754343
2406	REG Mercer Generating Station	NE	MERU2E2PT00S1-Coal	Conventional Boiler	343	bituminous	0.000763969
564	PSEB Generating Station	NJ	MERU2E1PT00S1-Coal	Conventional Boiler	343	bituminous	0.000792608
55479	Wyden 1	CT	BW21CONF00S3-W2	Conventional Boiler	9	subbituminous	0.000798921
7504	Neil Simpson II	WY	WG1C1G	Conventional Boiler	86	subbituminous	0.00080644
2277	Sheldon Station	WY	NS2C1G	Conventional Boiler	128	subbituminous	0.00082616
52071	Sandow Station	NE	5B	Fluidized bed firing	282.35	lignite	0.000836859
2079	Hawthorn	TX	5A	Conventional Boiler	594	subbituminous, bituminous	0.001102527
470	Comanche	MO	Unit 2	Conventional Boiler	365	subbituminous	0.001205914
7242	Pok	CO	IGCC1	IGCC	Coal Gas		0.001329488
2451	San Juan	FL	Unit 3	Conventional Boiler	544	subbituminous	0.001355686
3645	TransAlta Centrialla Generation	WA	BW22CONF1G	Conventional Boiler	567	subbituminous	0.001616724
2715	Red Changer	WA	Unit 1	Conventional Boiler	111	bituminous	0.001924418
4076	Western Steam Electric Plant	NC	Box_Cfg_2c	Conventional Boiler	703	bituminous	0.00198321
6761	Rawhide	WI	Rawhide101	Conventional Boiler	5135	subbituminous	0.002107112
10377	James River Cogeneration Co	CO	Rawhide101	Conventional Boiler	30	subbituminous	0.00220547
4042	Valley	VA	Unit2	Conventional Boiler	57.39	bituminous	0.002351656
7097	J K Spruce	WI	VAPP-B4	Conventional Boiler	144	bituminous	0.002401832
113	Cholla	TX	1	Conventional Boiler	590	bituminous	0.00272985
7213	Clover	AZ	003	Conventional Boiler	305	bituminous	0.00292396
2706	Ashville Steam Electric Plant	VA	Unit 1	Conventional Boiler	431	bituminous	0.002967102
990	Harding Street	NC	Ash_Cfg_1d	Conventional Boiler	207	bituminous	0.003019083
2451	San Juan	IN	705s	Conventional Boiler	463	bituminous	0.003164283
641	Crist	NM	Unit 4	Conventional Boiler	544	subbituminous	0.003196099
641	Crist	FL	Unit 4	Conventional Boiler	82	bituminous	0.003228408
641	Crist	FL	Unit 5	Conventional Boiler	285	bituminous	0.003228408
641	Crist	FL	Unit 6	Conventional Boiler	285	bituminous	0.003228408
708	Hammond	GA	Unit 1	Conventional Boiler	115	bituminous	0.003250235
708	Hammond	GA	Unit 2	Conventional Boiler	115	bituminous	0.003250235
708	Hammond	GA	Unit 3	Conventional Boiler	115	bituminous	0.003250235
708	Hammond	GA	Unit 4	Conventional Boiler	520	bituminous	0.003250235
3845	TransAlta Centrialla Generation	WA	BW21CONF1G	Conventional Boiler	603	subbituminous	0.00327987
602	Brandon Shores	WA	Unit 4	Conventional Boiler	803	subbituminous	0.00327987
2107	Sioux	MD	002	Conventional Boiler	690	bituminous	0.003327546
1062	Walter Scott Jr. Energy Center	MO	002	Conventional Boiler	524	subbituminous, bituminous	0.003347233
50951	Sunnyside Cogen Associates	IA	4	Conventional Boiler	850	subbituminous	0.003376519
		UT	Config 1	Fluidized bed firing	60	bituminous	0.003559268

Metallic_csa

3099 Elrama Power Plant	PA	ELR4-2	185 bituminous	0.018448245
10151 Grant Town Power Plant	WV	GEN1	190 coal refuse (culm or gob)	0.018664623
10075 Taconite Harbor Energy Center	MR	THEC1	83 bituminous	0.02078821
68029 AES Puerto Rico Cogeneration Facility	PR	Unit_1	295 bituminous	0.020521693
54759 Roanoke Valley II	NC	Unit_2	163 bituminous	0.016116175
17553 Roanoke Valley I	NC	Unit_3	163 bituminous	0.016116175
17553 Richard Grauch	VA	1X2	53.3 bituminous	0.021864637
10771 Stanton Energy Center	VA	2 coal	136 bituminous	0.023080152
564 Colstrip	MT	Unit3	468 bituminous	0.023446742
887 Joppa Steam	IL	1	805 subbituminous	0.024065709
3140 PPL Brunner Island	PA	U1	183.3 subbituminous	0.024655892
3140 PPL Brunner Island	PA	U2	330 bituminous	0.025516704
1363 Cane Run	KY	CR4	393 bituminous	0.025516704
54091 Spruance Genco, LLC	VA	GEN4	168 bituminous	0.025676282
884 Will County	IL	WC4CONFIG	57.4 bituminous	0.027134324
54036 Roanoke Valley I	NC	Boiler 1	542 subbituminous	0.028641672
50979 Scrubgrass Generating Company L.P.	PA	Unit 1	162 bituminous	0.028641672
887 Joppa Steam	IL	001	163 bituminous (culm or gob)	0.028641672
897 Vanhook	IL	002	72 subbituminous	0.029198303
864 Meredosia	IL	005	110 subbituminous	0.031405635
3179 Halford's Ferry Power Station	PA	001	204 subbituminous	0.031806706
68029 AES Puerto Rico Cogeneration Facility	PR	Unit_2	590 bituminous	0.032347344
2364 Merrimack Station	NH	mk2	255 bituminous	0.033002248
54091 Spruance Genco, LLC	VA	GEN3	337 bituminous	0.033210443
6639 R D Green	KY	2	57.4 bituminous	0.03566192
6147 Monticello	TX	2	239 bituminous, petroleum co	0.046919376
883 Waukegan	IL	WK6CONFIG	953 lignite	0.047417846
874 Joliet 9	IL	JOL5 CONFIG	363 subbituminous	0.051669335
			326 subbituminous	0.058706273
			AVG TOP 124	0.010844132
			ST DEV TOP 124	0.012096529
			DIFF VS TOP 130	2.357419935

Metallic_coal				
Filterable Particulate MW	Filterable PM2.5	Filterable PM2.5 MW	PM2.5 Condensible Particulate	PM2.5 Condensible Particulate MW
3.05414E-05	9.71748E-07	9.23164E-06	0.008125908	0.07706393
0.002123586	0.000162644	0.00235595	0.006749893	0.121633716
0.000494683	0.000494683	0.000757929	0.002476335	0.003780148
0.004473651	0.000142716	0.001281409	0.078162559	0.179291821
0.010266407	0.000516101	0.010266407	0.0065419861	0.11054002
0.005135115	0.000215699	0.001902764	0.02752813	0.240410209
0.006184321	0.000653965	0.006184321	0.011139346	0.105340867
0.002976337	9.3059E-05	0.0004128	0.024004854	0.107199865
0.002076337	0.000252162	0.000744078	0.002717992	0.007617552
0.00670065	0.000390372	0.003467654	0.002929143	0.02602093
0.011180871	0.000433869	0.006563023	0.019498194	0.299604729
0.007201508	0.001171907	0.01104977	0.046765637	0.428502412
0.007241344	0.00132697	0.012339712	0.025834571	0.059567191
0.005180105	0.001062504	0.01142125	0.00380670	0.036526877
0.009313211	0.00031211	0.00031211	0.019626978	0.221572601
0.010402813	0.00053102	0.005648711	0.010035598	0.112602184
0.009666237	0.000263164	0.001058167	0.08027449	0.085391759
0.003941669	0.000732519	0.006884244	0.013012919	0.050844409
0.010361597	0.000466943	0.004352677	0.007722669	0.072576
0.011224531	0.003767762		0.012784113	Other control
0.013944754			0.003007136	Other control
0.017756403			0.007696909	Other control
0.018479358	0.001032066	0.009907247	0.002404772	PM control
0.018251791			0.004262512	PM control
0.00306511	0.002507481	0.002507481	0.01436902	NOx control
0.019228894	0.000247382	0.002143785	0.014167947	NOx control
0.034209133			0.005818417	SO2 control
0.021922251	0.001205426	0.010943867	0.005818417	PM control
0.028943124			0.002831263	PM control
0.031662212			0.005527409	PM control
0.027242652			0.032007124	PM control
0.032115411			0.009197023	NOx control
0.046366225			0.0059141028	NOx control
0.032756998	0.001099917	0.016183192	0.0030674	Other control
0.034342102			0.003982551	NOx control
			0.003982551	NOx control
0.030362041			0.004270453	PM control
			0.004270453	PM control
			0.004270453	PM control
0.035881203			0.004270453	NOx control
			0.002850068	PM control
0.023453189	0.00036364	0.025473316	0.004026817	NOx control
0.028313833	0.000661088	0.005541623	0.015287171	NOx control
0.037961606	4.10037E-05	0.000438175	0.001684606	NOx control
			0.002623223	NOx control

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0.249850261	0.001246314	0.016550698	0.007674071	NOx control
0.229703725	0.013380343	0.152667678	0.006091205	NOx control
0.161100916	0.003940633	0.033954782	0.007198183	NOx control
0.055555556	0.000000000	0.042705714	0.042705714	NOx control
0.232678969	0.004140989	0.040496564	0.038417208	NOx control
0.261080357	0.002933546	0.033306002	0.057096093	PM control
			0.002267748	NOx control
0.2238338542			0.002883834	NOx control
0.248095492	0.016757672	0.168600366	0.003618252	Other control
0.430331019			0.005557543	Other control
			0.005557543	PM control
0.252237486			0.01730163	PM control
0.468953981	0.004486935	0.090655118	0.002022799	SO2 control
0.264253937	0.012747638	0.126391703	0.00535438	Other control
0.254253911	0.01498612	0.131976013	0.004006396	SO2 control
0.355353222	0.000000000	0.000000000	0.000000000	SO2 control
0.317745864	0.017353174	0.175114881	0.020619189	Other control
	0.017353174		0.020619189	PM control
0.313014154	0.011667317	0.114819663	0.004777393	Other control
			0.001949275	PM control
0.294504749	0.002218252	0.019795185	0.068850212	NOx control
0.301759432			0.057811121	NOx control
0.676244272	0.002533279	0.046179744	0.002181504	SO2 control
0.471547982			0.012568918	SO2 control
0.504405977	0.052868572	0.562398554	0.032068923	PM control
0.595954696	0.018488706	0.213782312	0.011758282	NOx control
0.605708662	0.016463593	0.170348973	0.004461683	Other control
0.113745483	0.004257858	0.042865375	0.013434891	0.141015769
0.14208244	0.007440497	0.076863478	0.015660784	0.16798978
			1.101220953	

Metallic_coal

control_type_1	Install_date_1	control_group_2	control_type_2	Install_date_2
Selective Catalytic Reduction	12/11/1995	SO2 control	Spray dryer type	12/11/1995
Selective Catalytic Reduction	3/11/1994	SO2 control	Spray dryer type	3/11/1994
Selective Catalytic Reduction	8/11/1993	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	8/11/1994
Selective Catalytic Reduction	3/11/1994	SO2 control	Spray dryer type	3/11/1994
Selective Catalytic Reduction	8/11/1994	SO2 control	Spray dryer type	8/11/1994
Selective Catalytic Reduction	9/11/1994	SO2 control	Spray dryer type	9/11/1994
Selective Noncatalytic Reduction	8/11/1994	SO2 control	Activated carbon injection	8/11/1994
Selective Noncatalytic Reduction	8/11/1994	Other control	Dry sorbent injection	8/11/1994
Selective Noncatalytic Reduction	12/11/1995	SO2 control	Spray dryer type	12/11/1995
Fabric Filter, reverse air	5/11/2001			
Electrostatic precipitator, cold side, w/ flue gas conditioning	8/11/1991	NOx control	Selective Catalytic Reduction	6/11/2004
Electrostatic precipitator, cold side, w/ flue gas conditioning	5/11/1994	NOx control	Selective Catalytic Reduction	7/11/2004
Electrostatic precipitator, cold side, w/ flue gas conditioning	4/11/1995	Other control	Activated carbon injection	4/11/1995
Electrostatic precipitator, cold side, w/ flue gas conditioning	4/11/2003	SO2 control	Spray dryer type	4/11/2003
Electrostatic precipitator, cold side, w/ flue gas conditioning	9/11/1995	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	9/11/1995
Circulating Dry Scrubber	12/11/1998			
Fabric Filter, pulse	7/11/2009	Other control	Activated carbon injection	8/11/2009
Selective Noncatalytic Reduction	5/11/2001	SO2 control	Spray dryer type	5/11/2001
Selective Catalytic Reduction	5/11/2001	SO2 control	Spray dryer type	7/11/2008
Activated carbon injection				
Other (specify): Syngas PM scrubbing				
Electrostatic precipitator, hot side, w/o flue gas conditioning	10/11/1996			
Electrostatic precipitator, hot side, w/o flue gas conditioning	4/11/2008	PM control	Fabric Filter, pulse	3/11/2008
Fabric Filter, pulse	12/11/1971	SO2 control	Spray type	10/11/2001
Selective Catalytic Reduction	12/11/2008	SO2 control	Venturi type	7/11/1976
Selective Catalytic Reduction	7/11/2005	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	7/11/1976
Selective Catalytic Reduction	7/11/2005	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	7/11/1976
Spray dryer type	4/11/1984	PM control	Fabric Filter, reverse air	7/11/2008
Spray dryer type	5/11/2008	SO2 control	Fabric Filter, reverse air	4/11/1994
Fabric Filter, pulse	6/11/1995		Spray dryer type	5/11/2008
Fabric Filter, reverse air	7/11/1992	SO2 control		
Other (specify): Bag House	1/11/2009	SO2 control	Spray type	12/11/1992
Fabric Filter, reverse air	5/11/2003	SO2 control	Other (specify): Wet FGD	1/11/2009
Selective Catalytic Reduction	6/11/2007	PM control	Spray type	5/11/2003
Selective Catalytic Reduction	12/11/2005	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	11/11/2005
Activated carbon injection	4/11/2006	PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	12/11/1978
Selective Noncatalytic Reduction	4/11/2006	PM control	Fabric Filter, pulse	10/11/2007
Selective Noncatalytic Reduction	1/11/2007	PM control	Electrostatic precipitator, hot side, w/o flue gas conditioning	3/11/2008
Selective Noncatalytic Reduction	4/11/2006	PM control	Electrostatic precipitator, hot side, w/ flue gas conditioning	3/11/2008
Electrostatic precipitator, cold side, w/ flue gas conditioning	11/11/1971	SO2 control	Electrostatic precipitator, cold side, w/o flue gas conditioning	1/11/1994
Electrostatic precipitator, cold side, w/ flue gas conditioning	2/11/1971	SO2 control	Spray type	5/11/2008
Electrostatic precipitator, cold side, w/ flue gas conditioning	4/11/1969	SO2 control	Spray type	5/11/2008
Electrostatic precipitator, cold side, w/ flue gas conditioning	12/11/1968	SO2 control	Spray type	5/11/2008
Electrostatic precipitator, hot side, w/o flue gas conditioning	5/11/2002	PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	12/11/1970
Electrostatic precipitator, cold side, w/ flue gas conditioning	1/11/1972	SO2 control	Spray type	6/11/2002
Selective Catalytic Reduction				
Other (specify): Burners Out of Service				
Other (specify): RRUSNCR	2/11/2007	Other control	Selective Catalytic Reduction	2/11/2007
Selective Catalytic Reduction	1/11/1993	PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	1/11/1993
Other (specify): OFB			Activated carbon injection	
			Other (specify): Limestone Sorbent Injection	

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Selective Catalytic Reduction	1/1/2009 SO2 control	Other (specify): Dry Scrubber	4/1/1993
Other (specify): Bag House	1/1/2008 SO2 control	Other (specify): Wet FGD	1/1/2008
Fabric Filter, pulse	12/1/2007		
Activated carbon injection	5/1/2009 PM control	Fabric Filter, pulse	10/1/2008
Selective Catalytic Reduction	5/1/2008 PM control	Other (specify): Soda Ash Injection for SO3 mitigation	6/1/2004
Spray dryer type	12/1/1998 PM control	Fabric Filter, reverse air	12/1/1998
Electrostatic precipitator, cold side, w/o flue gas conditioning	11/1/1974		
Fabric Filter, reverse air	11/1/1993		
Selective Noncatalytic Reduction	5/1/2005 PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	6/1/2002
Fabric Filter, pulse	11/1/2003 SO2 control	Spray type	7/1/1980
Activated carbon injection	PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	12/1/1984
Circulating Dry Scrubber	12/1/2007 PM control	Fabric Filter, pulse	12/1/2007
Fabric Filter, pulse	5/1/2004 SO2 control	Spray type	11/1/1979
Activated carbon injection	6/1/2009 PM control	Fabric Filter, pulse	4/1/2009
Circulating Dry Scrubber	1/1/1994 NOx control	Selective Noncatalytic Reduction	1/1/1994
Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/2007 Other control	Dry sorbent injection	1/1/2007
Selective Catalytic Reduction	6/1/1977		
Other (specify): Cold Side ESP	3/1/2008 Other control	Activated carbon injection	3/1/2008
Other (specify): Cold Side ESP	6/1/1972 Other control	Activated carbon injection	12/1/2008
Selective Catalytic Reduction	6/1/1974 Other control	Activated carbon injection	6/1/2009
Selective Noncatalytic Reduction	4/1/2005 Other control	Other (specify): Soda Ash Injection for SO3 mitigation	6/1/2004
Circulating Dry Scrubber	4/1/2009 SO2 control	Other (specify): Dry Lime Scrubber	4/1/2009
Selective Noncatalytic Reduction	1/1/1994 NOx control	Selective Noncatalytic Reduction	1/1/1994
Fabric Filter, pulse	3/1/2005 SO2 control	Other (specify): Dry Lime Scrubber	3/1/2005
Selective Catalytic Reduction	5/1/2001 Other control	Activated carbon injection	
Spray dryer type	8/1/2009 Other control	Activated carbon injection	8/1/2009
Dry sorbent injection	5/1/1992 SO2 control	Spray dryer type	5/1/1992
Other (specify): Flue gas conditioning	1/1/2008 PM control	Electrostatic precipitator, hot side, w/ flue gas conditioning	1/1/1981
Spray dryer type	6/1/1999 PM control	Fabric Filter, reverse air	6/1/1999
Selective Catalytic Reduction	4/1/2001 Other control	Activated carbon injection	4/1/1993
Multiple cyclone	1/1/2009 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	3/1/1992
Electrostatic precipitator, hot side, w/o flue gas conditioning	3/1/1977		
Other (specify): Magnesium Hydroxide Injection	NOx control	Selective Catalytic Reduction	1/1/2004
Selective Catalytic Reduction	5/1/2009 Other control	Activated carbon injection	5/1/2009
Selective Noncatalytic Reduction	PM control	Fabric Filter, pulse	
Spray dryer type	5/1/1992 SO2 control	Spray dryer type	5/1/1992
Electrostatic precipitator, cold side, w/o flue gas conditioning	10/1/1998 SO2 control	Spray dryer type	10/1/1996
Selective Catalytic Reduction	3/1/1998 SO2 control	Spray type	5/1/1978
Circulating Dry Scrubber	1/1/2008 PM control	Multiple cyclone	11/1/1980
Other (specify): Baghouse	4/1/2009 Other control	Activated carbon injection	1/1/2010
Selective Catalytic Reduction	1/1/1994 NOx control	Selective Noncatalytic Reduction	1/1/1994
Electrostatic precipitator, cold side, w/o flue gas conditioning	7/1/1998		
Other (specify): Fabric Filter Baghouse	5/1/2004 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	12/1/1993
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/2002		
Selective Noncatalytic Reduction	5/1/2000 NOx control	Selective Catalytic Reduction	5/1/2000
Selective Noncatalytic Reduction	12/1/2004 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	12/1/1975
Selective Noncatalytic Reduction	7/1/2001 PM control	Other (specify): Mechanical Separator	6/1/1952
Selective Noncatalytic Reduction	7/1/2001 PM control	Other (specify): Mechanical Separator	3/1/1953
Selective Noncatalytic Reduction	7/1/2001 PM control	Other (specify): Mechanical Separator	11/1/1954

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Selective Noncatalytic Reduction	7/1/2001 PM control	Other (specify): Mechanical Separator	11/1/1960
Selective Noncatalytic Reduction	5/1/2005 NOx control	Selective Noncatalytic Reduction	5/1/2005
Selective Noncatalytic Reduction	1/1/2008 Other control	Dry sorbent injection	1/1/2008
Selective Noncatalytic Reduction	SO2 control	Spray dryer type	
Electrostatic precipitator, hot side, w/o flue gas conditioning	6/1/1995 SO2 control	Spray dryer type	6/1/1995
Selective Noncatalytic Reduction	6/1/1972		
Selective Noncatalytic Reduction	4/1/1992 NOx control	Selective Noncatalytic Reduction	4/1/1992
Selective Catalytic Reduction	6/1/1996 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1996
Activated carbon injection	12/1/2009 SO2 control	Venturi type	1/1/1984
Activated carbon injection	7/1/2009 PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	1/1/1971
Fabric Filter, pulse	1/1/1965 SO2 control	Tray type	11/1/2009
Electrostatic precipitator, cold side, w/o flue gas conditioning	10/1/2009 SO2 control	Tray type	11/1/2009
Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1963 SO2 control	Spray dryer type	12/1/1976
Spray dryer type	5/1/1992 SO2 control	Spray dryer type	5/1/1992
Activated carbon injection	7/1/2009 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1963
Spray dryer type	6/1/1984 PM control	Fabric Filter, reverse air	5/1/1984
Selective Noncatalytic Reduction	6/1/1984 PM control	Selective Noncatalytic Reduction	6/1/1984
Other (specify): Electrostatic Precipitator	6/1/1973 Other control	Activated carbon injection	6/1/1999
Other (specify): Electrostatic Precipitator	1/1/1974 Other control	Activated carbon injection	6/1/2007
Activated carbon injection	PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	
Other (specify): Cold Side ESP	1/1/1969 SO2 control	Other (specify): Flue Gas Desulfurization	6/1/2009
Selective Noncatalytic Reduction	SO2 control	Spray dryer type	
Selective Catalytic Reduction	5/1/1995 Other control	Activated carbon injection	
Spray dryer type	5/1/1992 SO2 control	Spray dryer type	5/1/1992
Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1981 SO2 control	Spray dryer type	1/1/1981
Selective Noncatalytic Reduction	11/1/2008 Other control	Activated carbon injection	2/1/2009
Activated carbon injection	7/1/2008 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	7/1/1962
Activated carbon injection	7/1/2009 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	3/1/1966

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control_group_3	control_type_3	install_date_3	control_group_4	control_type_4
PM control	Fabric Filter, pulse	12/1/1995		
PM control	Fabric Filter, reverse air	1/1/1994		
PM control	Other (specify): Fabric Filter	12/1/2009		
PM control	Fabric Filter, reverse air	3/1/1994		
PM control	Fabric Filter, pulse	8/1/2006		
PM control	Fabric Filter, reverse air	9/1/1994		
SO2 control	Circulating Dry Scrubber	8/1/2009 PM control		Fabric Filter, pulse
PM control	Other (specify): Fabric Filter	5/1/2009		
PM control	Fabric Filter, pulse	12/1/2009		
Other control	Activated carbon injection	1/1/2007 PM control		Fabric Filter, pulse
Other control	Fabric Filter, pulse	1/1/2008 PM control		Fabric Filter, pulse
PM control	Fabric Filter, pulse	4/1/2003		
SO2 control	Circulating Dry Scrubber			
PM control	Fabric Filter, reverse air	7/1/2009 PM control		Fabric Filter, pulse
PM control	Spray type	5/1/2001		
SO2 control	Spray type	5/1/1998		
SO2 control	Other (specify): New B&W Spray and Tray Design			
SO2 control	Spray dryer type	4/20/2007		
SO2 control	Spray dryer type	7/1/2008 PM control		Fabric Filter, pulse
SO2 control	Spray type	5/1/2008 PM control		Fabric Filter, pulse
SO2 control	Other (specify): New B&W Spray and Tray Design			
SO2 control	Spray type			
SO2 control	Other (specify): New B&W Spray and Tray Design	11/17/2005		
SO2 control	Spray type	12/1/2007		
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	4/1/1998		
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1976 SO2 control		Spray type
PM control	Spray type	1/1/1976 SO2 control		Spray type
SO2 control	Spray type	12/1/2009		
SO2 control	Spray type			
SO2 control	Other (specify): Limestone scrubbant	5/1/2008		
PM control	Other (specify): Hot Side ESP			
SO2 control	Other (specify): Wet FGD		Other control	Activated carbon injection
SO2 control	Circulating Dry Scrubber			
PM control	Fabric Filter, pulse	2/1/2007 PM control		Fabric Filter, pulse
PM control	Other (specify): New B&W Spray and Tray Design	1/1/1993		

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PM control	Other (specify): Wet Limestone Scrubber Spray type			4/1/1993
SO2 control PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning		Tray type	5/1/1988 1/1/1991 SO2 control
SO2 control	Spray type Spray type			5/1/2009
SO2 control PM control PM control	Spray type Fabric Filter, pulse			5/1/1998 1/1/1994 1/1/2007
SO2 control PM control PM control PM control PM control PM control	Spray dryer type Other (specify): Baghouse/Fabric Filter Electrostatic precipitator, cold side, w/o flue gas conditioning Fabric Filter, pulse Other (specify): Pulse Jet Fabric Filter		Fabric Filter, pulse Tray type	3/1/2008 PM control 10/1/2008 12/1/2008 1/1/1990 SO2 control 4/1/2009 1/1/1994 3/1/2005
PM control PM control NOx control	Fabric Filter, pulse Selective Catalytic Reduction		Spray type Fabric Filter, pulse Spray type	8/1/2009 SO2 control 5/1/1992 PM control 1/1/2002 SO2 control
PM control	Spray dryer type		Spray dryer type	3/1/1992 SO2 control
SO2 control	Dry sorbent injection		Electrostatic precipitator, cold side, w/o flue gas conditioning	
Other control SO2 control	Spray dryer type		Fabric Filter, pulse	5/1/2004 PM control 5/1/2009 PM control
PM control PM control	Tray type Fabric Filter, reverse air		Fabric Filter, pulse	5/1/1992 PM control 10/1/1996
PM control SO2 control PM control	Other (specify): Flue Gas Desulfurization Fabric Filter, pulse		PM scrubber - Venturi Fabric Filter, pulse	11/1/1980 PM control 4/1/2006 PM control 1/1/1984
SO2 control	Spray type			1/1/1995
SO2 control	Tray type			3/1/2008
PM control PM control PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning Electrostatic precipitator, cold side, w/o flue gas conditioning Electrostatic precipitator, cold side, w/o flue gas conditioning		Venturi type Venturi type Venturi type	6/1/1992 SO2 control 3/1/1993 SO2 control 11/1/1994 SO2 control

Metallic_coal			
PM control	Circulating Dry Scrubber	11/1/1960 SO2 control	Venturi type
SO2 control	Electrostatic precipitator, cold side, w/o flue gas conditioning	7/1/1992 SO2 control	Circulating Dry Scrubber
PM control	Fabric Filter, pulse	1/1/2009	
PM control	Multiple cyclone	6/1/1995	
PM control	Spray type	4/1/1982 PM control	Multiple cyclone
SO2 control		6/1/1996	
PM control		1/1/1984	
PM control		5/1/1992 PM control	Fabric Filter, pulse
PM control	Fabric Filter, pulse	6/1/1993 PM control	Fabric Filter, pulse
PM control	Other (specify): Bag House	6/1/2007	
PM control	Other (specify): Bag House		
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	11/1/1999 PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1992 PM control	Fabric Filter, pulse
PM control	Fabric Filter, pulse		
PM control	Fabric Filter, shake and deflate	12/1/1975 PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning

Metallic_coal

Install_date_4	control_group_5	control_type_5	Install_date_5	control_group_6	control_type_6	Install_date_6	control_group_7
8/1/2009							
12/1/2008 12/1/2008							
7/1/2009							
7/1/2008 12/1/1987 PM control		Fabric Filter, pulse	12/1/1987 PM control		Fabric Filter, pulse	12/1/1987	
12/1/2009 12/1/2009							
	Other control	Other (specify): lime injection	2/1/2010 PM control		Other (specify): Fabric Filter	2/1/2010 SO2 control	
2/1/2007							

5/1/2007					
1/1/2008					
10/1/2007					
8/1/2009					
5/1/1992					
1/1/1981					
3/1/1992 PM control	Fabric Filter, pulse	3/1/1992 PM control	Fabric Filter, pulse	3/1/1992	
3/1/1991 SO2 control		6/1/2004			
5/1/2009					
5/1/1992					
12/1/1982 SO2 control	Spray type	12/1/1982			
4/1/2006					
6/1/1975					
6/1/1975					
6/1/1975					

6/1/1975 7/1/1992 PM control	Fabric Filter, pulse	7/1/1992 PM control	Fabric Filter, pulse	5/1/2005
4/1/1992 SO2 control	Spray dryer type	4/1/1992 SO2 control	Spray dryer type	4/1/1992 PM control
5/1/1992				
6/1/1993 SO2 control	Circulating Dry Scrubber	6/1/1993 SO2 control	Circulating Dry Scrubber	6/1/1993

5/1/1968
5/1/1992
12/1/1975

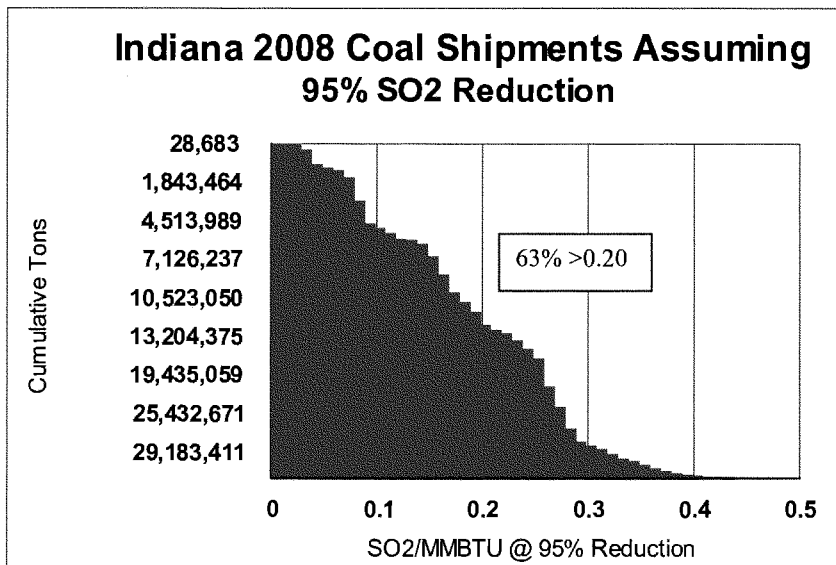
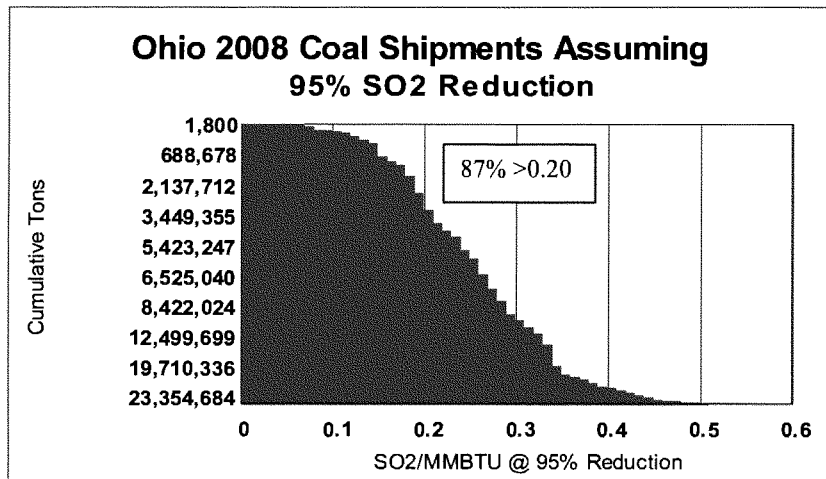
ATTACHMENT 3 4 PAGES

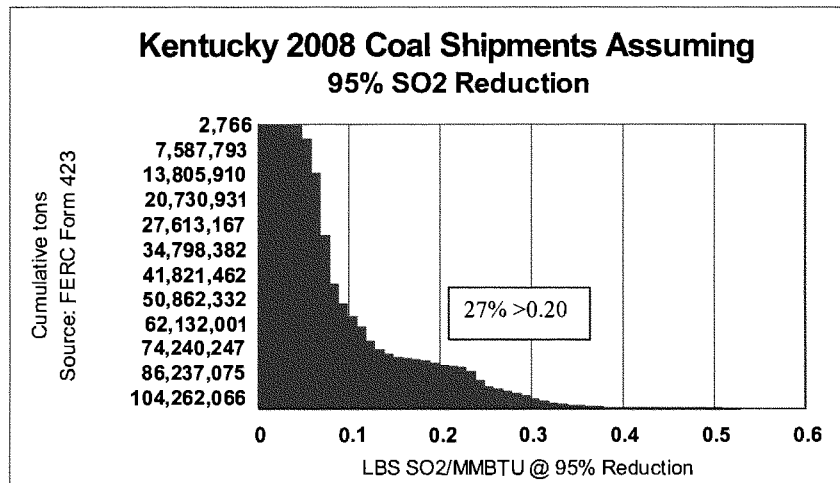
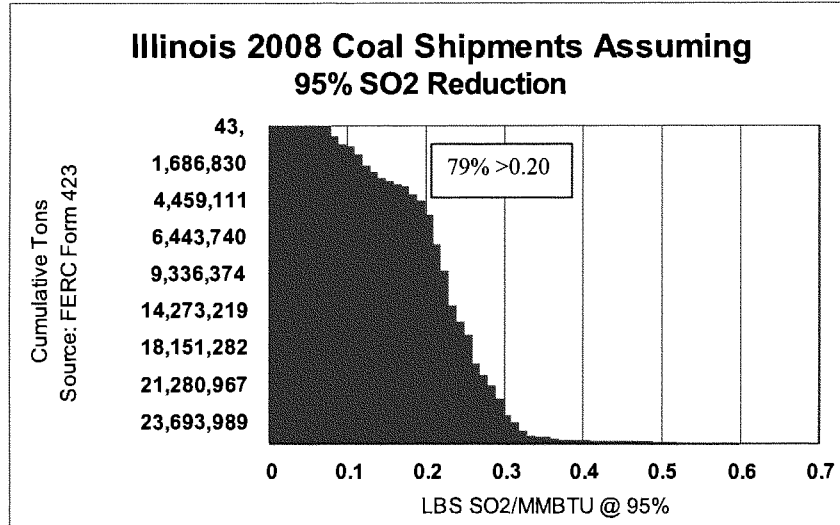
SUMMARY OF 2008 FERC FORM 423 ELECTRIC UTILITY COAL DELIVERIES
BY SULFUR CONTENT IN LBS SO₂/MMBTU, WITH CALCULATED EMISSIONS
ASSUMING 95% SO₂ REDUCTION BY FGD TECHNOLOGY

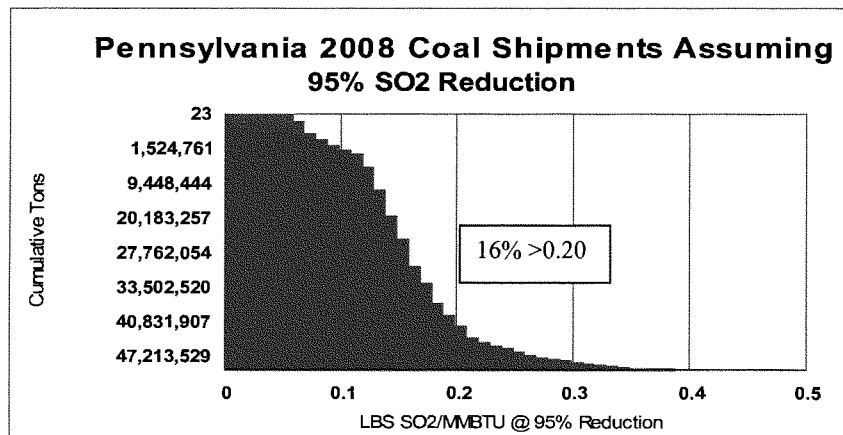
	TONS	PCT OF TONS	AVERAGE SULFUR %	AVERAGE SO ₂ /MMBTU	AVERAGE SO ₂ /MMBTU 95% REDUC.
0.00-0.10 LB SO ₂ @95%	765,169,960	73%	0.64	1.10	0.06
0.11-0.15 LB SO ₂ @95%	109,847,068	11%	1.57	2.57	0.13
0.16-0.20 LB SO ₂ @95%	43,071,975	4%	2.22	3.60	0.18
0.21-0.25 LB SO ₂ @95%	54,975,960	5%	2.81	4.59	0.23
0.26-0.30 LB SO ₂ @95%	40,034,279	4%	3.22	5.54	0.28
0.31-0.35 LB SO ₂ @ 95%	21,663,943	2%	3.82	6.57	0.33
>0.35 LB SO ₂ @ 95%	8,263,028	1%	4.42	8.08	0.40
TOTAL	1,043,026,213	100%			
SUBTOTAL >0.20 LB	124,937,210	12%			
SUBTOTAL >0.25 LB	69,961,250	7%			
SUBTOTAL >0.30 LB	29,926,971	3%			

SOURCE: CALCULATED FROM FERC FORM 423 (2008).

Summary State Findings for Compliance with EPA's Proposed
0.20 lb SO₂/MMBTU Alternative HCL Standard, Assuming 95% SO₂
Reduction for 2008 Coal Shipments
(Source: Derived from FERC Form 423)







ELECTRIC GENERATION FROM ALL SOURCES AND FROM COAL "UNITS AT RISK" WITH DIRECT AND TOTAL JOB ESTIMATES												
ELEC. GENERATION BY STATE 2009 GWH*		GENERATION (2005) FROM >40 YEARS W/O SCRUBBERS		FROM "UNITS AT RISK"*** 25-400 MW,		PCT OF STATE GENERATION		EST. DIRECT COAL/UTILITY/RAIL		JOBS MULTIPLIER		EST. TOTAL DIRECT & INDIRECT JOBS
TOTAL	COAL	# UNITS	GWH	TOTAL	COAL	JOBS AT RISK***	RIMS****	EST. DIRECT JOBS	COAL/UTILITY/RAIL	MULTIPLIER	INDIRECT JOBS	
New England	116,118	14,715	11	11,620	10%	79%		1,975			6,552	
Connecticut	29,786	2,118	1	2,736	9%	129%		465		3.28	1,526	
Mass.	37,065	9,583	7	7,904	21%	82%		1,344		3.36	4,515	
New Hamp.	20,586	2,939	3	980	5%	33%		167		3.07	511	
Rhode Isl.	7,309	0	0	0	0%	0%		0		NA	0	
Vermont	6,263	0	0	0	0%	0%		0		NA	0	
Middle Atlantic	392,410	116,518	34	15,082	4%	13%		2,564			13,101	
New Jersey	58,474	4,920	3	561	1%	11%		95		3.83	365	
New York	127,589	13,649	10	2,687	2%	20%		457		2.91	1,329	
Pennsylvania	206,346	97,948	21	11,834	6%	12%		2,012		5.67	11,407	
East North Central	569,271	390,895	146	103,556	18%	26%		17,605			82,873	
Illinois	180,248	83,746	31	31,715	18%	38%		5,392		5.36	28,899	
Indiana	110,151	102,935	24	14,106	13%	14%		2,398		5.33	12,781	
Michigan	94,926	63,579	32	23,503	25%	37%		3,996		3.66	14,624	
Ohio	126,855	106,124	38	22,192	17%	21%		3,773		5.16	19,467	
Wisconsin	57,093	34,511	21	12,040	21%	35%		2,047		3.47	7,102	
West North Central	294,526	212,291	74	40,401	14%	19%		6,868			29,880	
Iowa	48,119	35,359	23	8,266	17%	23%		1,405		3.99	5,607	
Kansas	44,033	29,715	6	2,633	6%	9%		448		5.4	2,417	
Minnesota	48,736	28,529	13	4,640	10%	16%		789		3.69	2,911	
Missouri	83,210	67,621	21	16,853	20%	25%		2,865		4.53	12,978	
Nebraska	31,588	20,466	8	5,519	17%	27%		938		3.45	3,237	
N. Dakota	31,266	27,673	3	2,490	8%	9%		423		6.45	2,730	
S. Dakota	7,576	2,930	0	0	0%	0%		0		NA	0	

South Atlantic	722,580	328,693	98	84,257	12%	26%	14,324	63,304
Delaware	4,570	2,615	4	2,068	45%	79%	352	1,368
Florida	208,795	50,445	5	4,542	2%	9%	772	2,695
Georgia	123,085	66,934	10	7,891	6%	12%	1,341	5,460
Maryland	42,408	24,070	6	5,497	13%	23%	934	3,738
N. Carolina	111,326	62,300	22	9,798	9%	16%	1,666	6,030
S. Carolina	96,524	32,588	14	10,266	11%	32%	1,745	6,876
Virginia	69,193	25,496	21	14,322	21%	56%	2,435	11,492
West Va.	66,636	64,244	16	29,873	45%	46%	5,078	25,646
East South Central	342,905	186,634	55	53,772	16%	29%	9,141	46,570
Alabama	134,070	53,626	19	20,105	15%	37%	3,418	18,832
Kentucky	86,515	80,125	19	13,416	16%	17%	2,281	12,521
Mississippi	47,003	12,236	0	0	0%	0%	0	0
Tennessee	75,319	40,645	17	20,251	27%	50%	3,443	15,217
West South Central	595,705	207,321	0	0	0%	0%	0	0
Arkansas	55,244	23,474	0	0	0%	0%	0	0
Louisiana	87,165	21,309	0	0	0%	0%	0	0
Oklahoma	73,754	32,685	0	0	0%	0%	0	0
Texas	379,543	129,855	0	0	0%	0%	0	0
Mountain	344,476	183,030	15	9,850	3%	5%	1,675	9,010
Arizona	107,415	36,506	1	783	1%	2%	133	572
Colorado	47,113	28,804	9	5,002	11%	17%	850	4,736
Idaho	12,409	70	0	0	0%	0%	0	0
Montana	23,450	13,456	1	1,011	4%	8%	172	835
Nevada	35,916	6,791	0	0	0%	0%	0	0
N. Mexico	37,164	26,969	0	0	0%	0%	0	0
Utah	40,115	32,818	2	1,349	3%	4%	229	1,287
Wyoming	40,895	37,616	2	1,705	4%	5%	290	1,580

**ANNUALIZED 2009 BASED ON SEP 2009 YTD FROM DOE/EIA ELECTRIC POWER MONTHLY (DEC 2009).
 ***PRELIMINARY 2009 OF UNITS AT RISK BASED ON DOE/NETL 2007 COAL POWERPLANT DATABASE (2009).
 ****COVERING UNITS 25-400 MW AND >400 YEARS OLD WITHOUT INSTALLED OR PLANNED SCRUBBERS.
 *****EXCLUDES ANNOUNCED EXELON CLOSURES IN PA; INCLUDES NRG ANNOUNCED CLOSURES IN DE.
 *****PROGRESS ENERGY ANNOUNCED CLOSURES IN NC AND CONSUMERS ANNOUNCED CLOSURES IN MI.
 *****DIRECT UTILITY/COAL/RAIL JOBS ESTIMATED AT 0.17 JOBS PER GIGAWATT-HOUR, BASED ON 2007 DATA
 FROM DOE/EIA AND ENERGY VENTURES ANALYSIS.
 *****DIRECT EFFECT EMPLOYMENT MULTIPLIERS FOR ELECTRIC, GAS, WATER AND SANITARY SERVICES
 IN US DEPT. OF COMMERCE, USER HANDBOOK FOR THE REGIONAL INPUT-OUTPUT MODELING SYSTEM,
 VOL. 2 (1992).

NETL Coal Plant Database 2007 EGU's 25-400 MW AND >40 YEARS W/O SCRUBBERS REMOVING >50% SO₂
Includes Munis (w/o age data), excludes industrials and cold reserves;excludes units with planned/announced

[illegible]

Colorado Springs City of	Martin Drake	CO	5	6/1/1962	48.7	50	304,639	NL	Colorado
Colorado Springs City of	Martin Drake	CO	6	6/1/1968	42.7	75	613,618	NL	Colorado
Colorado Springs City of	Martin Drake	CO	7	6/1/1974	36.7	132	1,130,607	NL	Colorado
PSEG Power Connecticut LLC	Bridgeport St	CT	BHB3	6/1/1968	42.5	400	2,735,970	1,496	Idaho
Connectiv Energy Supply Inc	Edge Moor	DE	3	12/1/1957	53.2	75	449,193	182	West Virginia
Indian River Operations Inc	Indian River C	DE	1	6/1/1957	53.7	82	382,160	165	West Virginia
Indian River Operations Inc	Indian River C	DE	2	6/1/1959	51.7	82	367,476	165	West Virginia
Indian River Operations Inc	Indian River C	DE	3	6/1/1970	40.7	177	869,366	337	West Virginia
Gulf Power Co	Crist	FL	6	5/1/1970	40.8	370	1,810,463	819	Illinois
Gulf Power Co	Scholz	FL	1	NL	NL	49	193,644	101	Kentucky
Gulf Power Co	Scholz	FL	2	NL	NL	49	171,802	93	Kentucky
Gulf Power Co	Lansing Smith	FL	1	6/1/1965	45.7	150	1,209,964	534	Imported
Gulf Power Co	Lansing Smith	FL	2	6/1/1967	43.7	190	1,156,489	514	Imported
Georgia Power Co	Jack McDono	GA	MB1	6/1/1963	47.7	299	1,819,178	707	NL
Georgia Power Co	Jack McDono	GA	MB2	6/1/1964	46.7	299	1,819,787	691	NL
Georgia Power Co	Mitchell	GA	3	5/1/1964	46.8	163	636,154	268	Kentucky
Georgia Power Co	Yates	GA	Y2BR	11/1/1950	60.3	123	527,511	233	Virginia
Georgia Power Co	Yates	GA	Y3BR	8/1/1952	58.5	123	432,433	196	Virginia
Georgia Power Co	Yates	GA	Y4BR	6/1/1957	53.7	156	798,740	321	Virginia
Georgia Power Co	Yates	GA	Y5BR	5/1/1958	52.8	156	743,536	313	Virginia
Savannah Electric & Power Co Kraft		GA	1	6/1/1953	57.7	50	256,717	123	Imported
Savannah Electric & Power Co Kraft		GA	2	6/1/1961	49.7	54	288,952	135	Imported
Savannah Electric & Power Co Kraft		GA	3	6/1/1965	45.7	104	568,193	248	Imported
Ameren Energy Resources Ge E D Edwards		IL	1	6/1/1960	50.7	136	722,391	6	Illinois
Ameren Energy Resources Ge E D Edwards		IL	2	6/1/1968	42.7	281	1,671,030	18	Illinois
Ameren Energy Generating Co Hulsomville		IL	05	2/1/1953	58.0	75	383,621	162	Indiana
Ameren Energy Generating Co Hulsomville		IL	06	7/1/1954	56.6	75	371,892	44	Indiana
Ameren Energy Generating Co Meredosia		IL	03	1/1/1949	62.1	58	109,708	40	Illinois
Ameren Energy Generating Co Meredosia		IL	04	1/1/1949	62.1	*	*	44	Illinois
Ameren Energy Generating Co Meredosia		IL	05	7/1/1960	50.6	239	1,039,273	641	Wyoming
Midwest Generations EME LLC Crawford		IL	7	5/1/1958	52.8	239	1,190,315	717	Wyoming
Midwest Generations EME LLC Crawford		IL	8	4/1/1961	49.9	358	1,775,558	1,055	Wyoming
Midwest Generations EME LLC Joliet 9		IL	5	7/1/1959	51.6	360	1,673,848	1,055	Wyoming
Midwest Generations EME LLC Waukegan		IL	17	4/1/1952	58.9	121	405,718	272	Wyoming
Midwest Generations EME LLC Waukegan		IL	7	6/1/1958	52.7	326	2,001,661	1,189	Wyoming
Midwest Generations EME LLC Waukegan		IL	8	6/1/1962	48.7	355	2,153,125	1,316	Wyoming
Midwest Generations EME LLC Will County		IL	1	5/1/1955	55.8	188	726,859	459	Wyoming
Midwest Generations EME LLC Will County		IL	2	3/1/1955	56.0	184	725,094	456	Wyoming
Midwest Generations EME LLC Will County		IL	3	6/1/1957	53.7	299	1,444,123	854	Wyoming

Midwest Generations EME LLC Fisk Street	IL	19	3/1/1959	52.0	374	1,673,848	863	Wyoming
Electric Energy Inc	IL	1	8/1/1953	57.5	183	1,334,446	830	Wyoming
Electric Energy Inc	IL	2	9/1/1953	57.4	183	1,345,537	839	Wyoming
Electric Energy Inc	IL	3	5/1/1954	56.8	183	1,286,422	802	Wyoming
Electric Energy Inc	IL	4	8/1/1954	56.5	183	1,395,791	867	Wyoming
Electric Energy Inc	IL	5	6/1/1955	55.7	183	1,313,742	823	Wyoming
Electric Energy Inc	IL	6	8/1/1955	55.5	183	1,202,957	766	Wyoming
Dynegy Midwest Generation In Hennepin Poi	IL	1	6/1/1953	57.7	75	426,690	281	Wyoming
Dynegy Midwest Generation In Hennepin Poi	IL	2	5/1/1959	51.8	231	1,555,459	924	Wyoming
Dynegy Midwest Generation In Vermilion	IL	1	5/1/1955	55.8	74	333,744	165	Indiana
Dynegy Midwest Generation In Vermilion	IL	2	11/1/1956	54.3	109	299,524	179	Indiana
Dynegy Midwest Generation In Wood River	IL	4	6/1/1954	56.7	113	530,260	365	Wyoming
Dynegy Midwest Generation In Wood River	IL	5	7/1/1964	46.6	388	2,414,032	1,458	Wyoming
Springfield City of	IL	7	4/1/1961	49.9	38	77,529	48	Illinois
Springfield City of	IL	8	12/1/1965	45.2	38	130,922	82	Illinois
State Line Energy LLC	IN	3	12/1/1955	55.2	125	566,157	639	Montana
State Line Energy LLC	IN	4	5/1/1962	48.8	209	798,387	766	Montana
Indiana Michigan Power Co	IN	U1	3/1/1951	60.0	153	845,728	384	West Virginia
Indiana Michigan Power Co	IN	U2	11/1/1952	58.3	153	873,420	380	West Virginia
Indiana Michigan Power Co	IN	U3	12/1/1954	56.2	215	1,048,578	457	West Virginia
Indianapolis Power & Light Co	IN	50	5/1/1958	52.8	114	573,130	289	Indiana
Indianapolis Power & Light Co	IN	60	4/1/1961	49.9	114	635,929	315	Indiana
Indianapolis Power & Light Co	IN	3	11/1/1951	59.3	50	244,956	146	Indiana
Indianapolis Power & Light Co	IN	4	1/1/1953	58.1	69	314,669	178	Indiana
Indianapolis Power & Light Co	IN	5	12/1/1953	57.2	69	341,177	182	Indiana
Indianapolis Power & Light Co	IN	6	10/1/1956	54.4	114	576,371	283	Indiana
PSI Energy Inc	IN	7-1	1/1/1949	62.1	40	91,309	50	Indiana
PSI Energy Inc	IN	7-2	1/1/1949	62.1	69	87,308	60	Indiana
PSI Energy Inc	IN	8-1	12/1/1951	59.2	*	*	68	Indiana
PSI Energy Inc	IN	1	7/1/1959	51.6	150	717,609	327	Indiana
PSI Energy Inc	IN	2	12/1/1958	52.2	150	738,073	339	Indiana
R Gallagher	IN	3	4/1/1960	50.9	150	644,914	296	Indiana
R Gallagher	IN	4	3/1/1961	49.9	150	776,308	358	Indiana
PSI Energy Inc	IN	4	1/1/1955	56.1	113	602,049	298	Indiana
PSI Energy Inc	IN	6	8/1/1968	42.5	387	2,149,048	1,028	Indiana
Logansport City Of	IN	1	NL	NL	25	101,968	NL	NL
Richmond City of	IN	1	NL	NL	33	195,648	NL	NL
Hoosier Energy R E C Inc	IN	1SG1	5/1/1970	40.8	117	686,229	308	Indiana
Hoosier Energy R E C Inc	IN	2SG1	5/1/1970	40.8	117	497,108	229	Indiana

Interstate Power & Light Co	IA	1	NL	NL	38	164,192	NL	NL
Dubuque	IA	5	NL	NL	29	50,058	NL	NL
Dubuque	IA	2	5/1/1967	43.8	218	1,225,857	NL	Wyoming
Interstate Power & Light Co	IA	3	6/1/1958	52.7	50	98,904	32	Wyoming
Interstate Power & Light Co	IA	4	6/1/1967	43.7	149	706,549	538	Wyoming
Interstate Power & Light Co	IA	1	6/1/1955	55.7	38	210,202	137	Wyoming
Interstate Power & Light Co	IA	2	6/1/1955	55.7	38	210,202	144	Wyoming
Interstate Power & Light Co	IA	3	6/1/1961	49.7	82	453,592	283	Wyoming
Interstate Power & Light Co	IA	9	6/1/1961	49.7	136	640,217	379	Wyoming
Riverside	IA	1	2/1/1954	57.0	49	297,837	220	Wyoming
Council Bluffs	IA	2	2/1/1958	53.0	82	635,618	399	Wyoming
Council Bluffs	IA	1	5/1/1964	46.8	147	953,847	578	Wyoming
George Neal	IA	1	6/1/1968	42.7	212	1,143,174	741	Wyoming
Burlington	IA	7	NL	NL	33	156,380	NL	NL
Ames Electric	IA	8	NL	NL	65	351,759	NL	NL
Ames Electric	IA	8	NL	NL	35	109,892	NL	NL
Streaker Station	IA	7	NL	NL	25	98,538	82	Wyoming
Muscatine Pli	IA	7	6/1/1958	52.7	75	148,807	363	Wyoming
Muscatine City of	IA	8	6/1/1969	41.7	75	106,922	NL	NL
Pella City of	IA	7	NL	NL	26	*	NL	NL
Pella City of	IA	8	NL	NL	*	*	NL	NL
Corn Belt Power Coop	IA	1	NL	NL	33	138,410	NL	NL
Central Iowa Power Coop	IA	1	NL	NL	25	127,013	NL	NL
Fair Station	IA	2	NL	NL	38	238,377	NL	NL
Fair Station	IA	2	NL	NL	38	174,627	NL	NL
Riverton	KS	39	NL	NL	50	313,874	NL	NL
Riverton	KS	40	NL	NL	49	331,036	228	Wyoming
Lawrence En	KS	3	1/1/1955	56.1	150	896,209	578	Wyoming
Westar Energy	KS	10	4/1/1962	48.9	82	508,011	301	Wyoming
Westar Energy	KS	9	8/1/1957	53.5	82	409,574	260	Wyoming
Tecumseh Er	KS	9	5/1/1965	45.8	82	1,542,054	663	Kentucky
Tecumseh Er	KS	1	1/1/1963	48.1	281	336,573	177	Kentucky
Quindaro	KY	4	4/1/1954	56.9	75	338,730	160	Kentucky
Big Sandy	KY	5	7/1/1959	51.6	114	355,762	184	Kentucky
Green River	KY	5	7/1/1953	57.6	75	914,556	414	Colorado
Green River	KY	5	7/1/1953	57.9	175	917,047	417	Colorado
Tyrone	KY	1	6/1/1953	57.7	175	894,467	403	Colorado
Shawnee	KY	2	10/1/1953	57.4	175	1,016,621	459	Colorado
Shawnee	KY	3	10/1/1954	57.1	175	1,038,069	467	Colorado
Shawnee	KY	4	10/1/1954	56.4	175	1,006,847	455	Colorado
Shawnee	KY	5	11/1/1954	56.3	175			
Shawnee	KY	6	11/1/1954	56.3	175			

Tennessee Valley Authority	Shawnee	KY	7	12/1/1954	56.2	175	883,478	399	Colorado
Tennessee Valley Authority	Shawnee	KY	8	3/1/1955	56.0	175	966,383	439	Colorado
Tennessee Valley Authority	Shawnee	KY	9	7/1/1955	55.6	175	1,000,910	453	Colorado
Western Kentucky Energy Corp Robert A Reik		KY	R1	NL	NL	96	307,446	NL	NL
East Kentucky Power Coop Inc Cooper		KY	1	2/1/1965	46.0	114	664,895	258	Kentucky
East Kentucky Power Coop Inc Dale		KY	1	12/1/1964	56.2	27	139,898	70	Kentucky
East Kentucky Power Coop Inc Dale		KY	2	12/1/1954	56.2	27	146,290	72	Kentucky
East Kentucky Power Coop Inc Dale		KY	3	10/1/1957	53.4	81	451,304	209	Kentucky
East Kentucky Power Coop Inc Dale		KY	4	8/1/1960	50.5	81	495,308	224	Kentucky
Constellation Power Source Gt C P Crane		MD	1	7/1/1961	49.6	190	975,724	389	Pennsylvania
Constellation Power Source Gt C P Crane		MD	2	2/1/1963	48.0	209	1,152,590	464	Pennsylvania
Constellation Power Source Gt Herbert A Wa		MD	2	1/1/1959	52.1	136	718,492	330	West Virginia
Constellation Power Source Gt Herbert A Wa		MD	3	8/1/1966	44.5	359	2,253,747	891	West Virginia
Allegheny Energy Supply Co L I R Paul Smith		MD	11	11/1/1958	52.3	75	327,598	158	Pennsylvania
Allegheny Energy Supply Co L I R Paul Smith		MD	9	10/1/1947	63.4	35	69,054	40	Pennsylvania
Northeast Generation Services Mount Tom		MA	1	6/1/1960	50.7	136	1,026,279	459	Kentucky
Somerset Power LLC	Somerset Sta	MA	8	7/1/1959	51.6	100	790,385	320	Colorado
Dominion Energy New England Brayton Point		MA	1	4/1/1963	47.9	241	1,867,848	782	Colorado
Dominion Energy New England Brayton Point		MA	2	5/1/1964	46.8	241	1,990,026	830	Colorado
U S Gen New England Inc	Salem Harbor	MA	1	11/1/1951	59.3	82	585,305	271	Colorado
U S Gen New England Inc	Salem Harbor	MA	2	9/1/1952	58.4	82	587,005	280	Colorado
U S Gen New England Inc	Salem Harbor	MA	3	6/1/1958	52.7	166	1,057,458	450	Colorado
Consumers Energy Co	B C Cobb	MI	4	7/1/1956	54.6	156	861,914	91	Montana
Consumers Energy Co	B C Cobb	MI	5	5/1/2000	10.8	156	1,191,896	135	Montana
Consumers Energy Co	Dan E Karn	MI	1	7/1/1959	51.6	136	942,115	222	Wyoming
Consumers Energy Co	Dan E Karn	MI	2	3/1/1961	49.9	136	930,553	310	Wyoming
Consumers Energy Co	J H Campbell	MI	1	8/1/1962	48.5	265	2,069,528	NL	Wyoming
Consumers Energy Co	J C Weadock	MI	7	4/1/1955	55.9	156	977,940	126	Wyoming
Consumers Energy Co	J C Weadock	MI	8	4/1/1958	52.9	156	1,078,462	137	Wyoming
Consumers Energy Co	J R Whiting	MI	1	5/1/1952	58.0	106	754,421	72	Wyoming
Consumers Energy Co	J R Whiting	MI	2	2/1/1953	58.0	106	763,397	76	Wyoming
Consumers Energy Co	J R Whiting	MI	3	8/1/1953	57.5	133	810,393	74	Wyoming
Detroit Edison Co	Harbor Beach	MI	1	4/1/1968	42.9	121	357,180	172	Kentucky
Detroit Edison Co	River Rouge	MI	2	11/1/1957	53.3	293	1,671,689	824	Wyoming
Detroit Edison Co	River Rouge	MI	3	10/1/1958	52.4	358	1,277,771	662	Wyoming
Detroit Edison Co	St Clair	MI	1	8/1/1953	57.5	169	751,091	NL	Montana
Detroit Edison Co	St Clair	MI	2	11/1/1953	57.3	156	757,796	NL	Montana
Detroit Edison Co	St Clair	MI	3	6/1/1954	56.7	156	737,858	NL	Montana
Detroit Edison Co	St Clair	MI	4	10/1/1954	56.4	169	864,820	NL	Montana

Detroit Edison Co	St Clair	MI	6	4/1/1961	49.9	353	1,901,210	NL	Montana
Detroit Edison Co	Trenton Chan	MI	16	7/1/1949	61.6	120	719,953	NL	Wyoming
Detroit Edison Co	Trenton Chan	MI	17	8/1/1949	61.5	120	473,181	NL	Wyoming
Detroit Edison Co	Trenton Chan	MI	18	11/1/1949	61.3	*	*	NL	Wyoming
Detroit Edison Co	Trenton Chan	MI	19	2/1/1950	61.0	*	*	NL	Wyoming
Wisconsin Electric Power Co	Presque Isle	MI	3	1/1/1964	47.1	54	337,485	153	Colorado
Wisconsin Electric Power Co	Presque Isle	MI	4	12/1/1966	44.2	58	375,120	175	Colorado
Holland City of	James De Yo	MI	5	NL	NL	29	119,934	NL	NL
Lansing City of	Eckert Stator	MI	1	6/1/1954	56.7	44	216,731	135	Wyoming
Lansing City of	Eckert Stator	MI	2	6/1/1958	52.7	44	190,396	131	Wyoming
Lansing City of	Eckert Stator	MI	3	6/1/1961	49.7	47	209,882	136	Wyoming
Lansing City of	Eckert Stator	MI	4	6/1/1964	46.7	80	274,638	162	Wyoming
Lansing City of	Eckert Stator	MI	5	6/1/1968	42.7	80	351,617	202	Wyoming
Lansing City of	Eckert Stator	MI	6	6/1/1970	40.7	80	451,259	285	Wyoming
Lansing City of	Erickson Stator	MI	1	6/1/1973	37.7	155	1,082,747	615	Colorado
Allete Inc	Syl Laskin	MN	1	4/1/1953	57.9	58	353,900	241	Montana
Allete Inc	Syl Laskin	MN	2	9/1/1953	57.4	58	341,600	233	Montana
Allete Inc	Clay Boswell	MN	1	7/1/1958	52.6	75	471,911	278	Montana
Allete Inc	Clay Boswell	MN	2	1/1/1960	51.1	75	472,980	271	Montana
Northern States Power Co	Black Dog	MN	3	8/1/1955	55.5	114	520,519	349	Wyoming
Northern States Power Co	Black Dog	MN	4	10/1/1960	50.4	180	1,165,666	706	Wyoming
Northern States Power Co	High Bridge	MN	3	1/1/1942	69.1	NL	NL	76	NL
Northern States Power Co	High Bridge	MN	4	1/1/1944	67.1	NL	NL	88	NL
Otter Tail Power Co	Hoot Lake	MN	2	6/1/1959	51.7	54	398,304	242	Montana
Otter Tail Power Co	Hoot Lake	MN	3	6/1/1964	46.7	75	533,326	328	Montana
Austin City of	Austin Northe	MN	NEPP	NL	NL	32	140,898	NL	NL
Rochester Public Utilities	Silver Lake	MN	3	NL	NL	25	66,585	NL	NL
Rochester Public Utilities	Silver Lake	MN	4	NL	NL	54	175,094	NL	NL
Empire District Electric Co	Asbury	MO	1	6/1/1970	40.7	213	1,366,270	669	NL
Kansas City Power & Light Co	Montrose	MO	1	7/1/1958	52.6	188	1,124,149	703	Wyoming
Kansas City Power & Light Co	Montrose	MO	2	4/1/1960	50.9	188	1,124,183	737	Wyoming
Kansas City Power & Light Co	Montrose	MO	3	5/1/1964	46.8	188	1,094,570	661	Wyoming
Aquila Inc	Sibley	MO	1	6/1/1960	50.7	55	314,149	196	Wyoming
Aquila Inc	Sibley	MO	2	5/1/1962	48.8	50	320,879	207	Wyoming
Aquila Inc	Lake Road	MO	5	6/1/1957	53.7	*	*	NL	Wyoming
Aquila Inc	Lake Road	MO	6	5/1/1967	43.8	90	610,924	NL	Wyoming
Ameren UE	Meramec	MO	1	5/1/1953	57.8	138	937,915	601	Wyoming
Ameren UE	Meramec	MO	2	7/1/1954	56.6	138	966,581	607	Wyoming
Ameren UE	Meramec	MO	3	1/1/1959	52.1	289	1,896,179	1,208	Wyoming

Ameren UE	MO	4	7/1/1961	49.6	369	1,889,095	1,171	Wyoming
Independence City of	MO	1	4/1/1958	52.9	25	80,926	58	Missouri
Independence City of	MO	2	5/1/1958	52.8	25	75,196	50	Missouri
Independence City of	MO	3	6/1/1965	45.7	65	173,196	108	Missouri
Springfield City of	MO	3	2/1/1960	51.0	44	272,769	188	Wyoming
Springfield City of	MO	4	5/1/1964	46.8	60	421,827	268	Wyoming
Springfield City of	MO	5	5/1/1970	40.8	105	674,595	420	Wyoming
Associated Electric Coop Inc	MO	MB1	12/1/1966	44.2	180	1,248,024	749	Wyoming
Associated Electric Coop Inc	MO	MB2	3/1/1969	41.9	285	1,969,327	1,173	Wyoming
Central Electric Power Coop	MO	2	NL	NL	44	292,833	NL	NL
PPL Montana LLC	MT	2	7/1/1968	42.6	173	1,010,647	643	Wyoming
Nebraska Public Power District Sheldon	NE	1	7/1/1968	42.6	109	744,968	480	Wyoming
Nebraska Public Power District	NE	2	7/1/1961	49.6	120	807,432	518	Wyoming
Omaha Public Power District	NE	1	6/1/1954	56.7	74	361,170	236	Wyoming
Omaha Public Power District	NE	2	6/1/1957	53.7	109	600,520	398	Wyoming
Omaha Public Power District	NE	3	6/1/1959	51.7	109	597,538	394	Wyoming
Omaha Public Power District	NE	4	6/1/1963	47.7	136	785,291	480	Wyoming
Omaha Public Power District	NE	5	6/1/1968	42.7	218	1,072,896	657	Wyoming
Hastings City of	NE	1	NL	NL	76	549,295	365	Wyoming
Public Service Co of NH	NH	4	10/1/1952	58.4	50	322,425	163	Imported
Public Service Co of NH	NH	5	5/1/1955	55.8	50	313,777	162	Imported
Public Service Co of NH	NH	6	7/1/1957	53.6	50	343,650	169	Imported
Atlantic City Electric Co	NJ	1	12/1/1958	52.2	82	48,849	NL	N/A
Atlantic City Electric Co	NJ	8	12/1/1954	56.2	74	430,108	175	West Virginia
Vineland City of	NJ	10	NL	NL	25	81,820	NL	NL
AES Westover LLC	NY	11	10/1/1943	67.4	44	186,370	48	Pennsylvania
AES Westover LLC	NY	12	10/1/1943	67.4	44	*	48	Pennsylvania
AES Westover LLC	NY	13	12/1/1951	59.2	75	613,413	247	Pennsylvania
AES Westover LLC	NY	4	4/1/1950	60.9	50	223,897	57	Pennsylvania
AES Greenidge LLC	NY	5	4/1/1950	60.9	*	*	56	Pennsylvania
AES Greenidge LLC	NY	6	12/1/1953	57.2	113	665,481	278	Pennsylvania
Rochester Gas & Electric Corp	NY	1	11/1/1948	62.3	46	87,091	41	West Virginia
Rochester Gas & Electric Corp	NY	2	12/1/1950	60.2	63	232,833	102	West Virginia
Rochester Gas & Electric Corp	NY	3	9/1/1953	57.4	63	212,109	102	West Virginia
Rochester Gas & Electric Corp	NY	4	3/1/1957	53.9	82	449,419	182	West Virginia
Jamestown City of	NY	10	NL	NL	29	16,418	NL	NL
Progress Energy Carolinas Inc Cape Fear	NC	5	12/1/1956	54.2	141	896,991	365	West Virginia
Progress Energy Carolinas Inc Cape Fear	NC	6	7/1/1958	52.6	188	979,183	420	West Virginia
Progress Energy Carolinas Inc Lee	NC	1	6/1/1952	58.7	75	357,027	173	West Virginia

Progress Energy Carolinas Inc Lee	NC	2	5/1/1951	59.8	75	342,283	157	West Virginia
Progress Energy Carolinas Inc Lee	NC	3	8/1/1962	48.5	252	1,350,227	549	West Virginia
Progress Energy Carolinas Inc L V Sutton	NC	1	8/1/1954	56.5	113	434,803	215	West Virginia
Progress Energy Carolinas Inc L V Sutton	NC	2	5/1/1955	55.8	113	507,990	228	West Virginia
Progress Energy Carolinas Inc W H Weather	NC	1	9/1/1949	61.4	46	190,443	100	Kentucky
Progress Energy Carolinas Inc W H Weather	NC	2	6/1/1950	60.7	46	184,257	95	Kentucky
Progress Energy Carolinas Inc W H Weather	NC	3	7/1/1952	58.5	74	422,875	194	Kentucky
Duke Energy Corp	NC	5	7/1/1941	69.6	80	187,154	112	West Virginia
Duke Energy Corp	NC	6	6/1/1941	69.7	*	*	112	West Virginia
Duke Energy Corp	NC	7	9/1/1942	68.4	40	81,227	50	West Virginia
Duke Energy Corp	NC	8	9/1/1953	57.4	125	691,815	312	West Virginia
Duke Energy Corp	NC	9	12/1/1953	57.2	125	686,814	310	West Virginia
Duke Energy Corp	NC	1	12/1/1949	61.2	70	206,770	99	West Virginia
Duke Energy Corp	NC	2	3/1/1950	61.0	70	170,831	80	West Virginia
Duke Energy Corp	NC	3	8/1/1955	55.5	150	271,712	115	West Virginia
Duke Energy Corp	NC	10	11/1/1954	56.3	133	545,397	230	NL
Duke Energy Corp	NC	7	10/1/1952	58.4	100	386,624	171	NL
Duke Energy Corp	NC	8	11/1/1952	58.3	100	419,207	191	NL
Duke Energy Corp	NC	9	8/1/1954	56.5	133	484,561	208	NL
MDU Resources Group Inc	ND	B1	11/1/1954	56.3	40	109,952	119	NL
MDU Resources Group Inc	ND	B2	11/1/1963	47.3	75	497,382	281	North Dakota
Minnesota Power Coop Inc	ND	B1	11/1/1970	40.3	257	1,863,383	1,616	North Dakota
American Mun Power-Ohio Inc Richard Gors	OH	1	6/1/1951	59.7	50	229,032	172	Ohio
American Mun Power-Ohio Inc Richard Gors	OH	2	6/1/1951	59.7	50	271,747	187	Ohio
American Mun Power-Ohio Inc Richard Gors	OH	3	6/1/1951	59.7	50	213,148	164	Ohio
American Mun Power-Ohio Inc Richard Gors	OH	4	6/1/1951	59.7	50	231,898	164	Ohio
Cincinnati Gas & Electric Co	OH	1	6/1/1952	58.7	115	527,295	258	Kentucky
Cincinnati Gas & Electric Co	OH	2	10/1/1953	57.4	113	503,252	241	Kentucky
Cincinnati Gas & Electric Co	OH	3	11/1/1954	56.3	125	762,907	347	Kentucky
Cincinnati Gas & Electric Co	OH	4	7/1/1958	52.6	163	1,008,854	457	Kentucky
Cincinnati Gas & Electric Co	OH	5	12/1/1962	48.2	245	1,272,573	577	Kentucky
Cincinnati Gas & Electric Co	OH	6	11/1/1960	50.3	163	1,138,334	485	West Virginia
Cleveland Electric Illum Co	OH	7	12/1/1958	52.2	256	1,408,106	845	NL
Orion Power Midwest LP	OH	10	12/1/1949	61.2	86	234,796	150	Pennsylvania
Cleveland Electric Illum Co	OH	1	9/1/1953	57.4	123	739,967	396	NL
Cleveland Electric Illum Co	OH	3	12/1/1953	57.2	123	657,096	344	NL
Cleveland Electric Illum Co	OH	4	8/1/1954	56.5	208	1,465,556	835	NL
Cleveland Electric Illum Co	OH	18	6/1/1962	48.7	256	950,870	663	NL
Columbus Southern Power Co	OH	1	2/1/1959	52.0	148	41,534	19	Ohio

Columbus Southern Power Co	OH	2	2/1/1957	54.0	136	68,262	31	Ohio
Columbus Southern Power Co	OH	3	10/1/1962	48.4	162	726,694	307	Ohio
Columbus Southern Power Co	OH	9	11/1/1955	55.3	106	241,192	127	Ohio
Dayton Power & Light Co	OH	H-1	7/1/1948	62.9	69	66,750	39	West Virginia
Dayton Power & Light Co	OH	H-2	3/1/1949	61.6	69	67,716	39	West Virginia
Dayton Power & Light Co	OH	H-3	12/1/1950	60.2	69	142,165	63	West Virginia
Dayton Power & Light Co	OH	H-4	2/1/1951	60.0	69	126,658	55	West Virginia
Dayton Power & Light Co	OH	H-5	11/1/1952	58.3	69	149,967	73	West Virginia
Dayton Power & Light Co	OH	H-6	9/1/1953	57.4	69	134,430	63	West Virginia
Ohio Edison Co	OH	5	3/1/1950	61.0	103	11,838	8	NL
Ohio Edison Co	OH	6	3/1/1950	61.0	*	*	8	NL
Ohio Edison Co	OH	7	3/1/1955	56.0	156	946,472	441	NL
Ohio Edison Co	OH	8	6/1/1955	55.7	156	1,036,329	463	NL
Ohio Power Co	OH	1	12/1/1953	57.2	220	1,023,374	409	West Virginia
Ohio Power Co	OH	2	6/1/1954	56.7	220	720,451	289	West Virginia
Ohio Power Co	OH	3	12/1/1957	53.2	238	885,630	349	West Virginia
Ohio Power Co	OH	4	10/1/1968	42.4	238	937,101	363	West Virginia
Toledo Edison Co	OH	2	2/1/1959	52.0	141	853,560	481	NL
Toledo Edison Co	OH	3	5/1/1963	47.8	141	808,672	470	NL
Toledo Edison Co	OH	4	6/1/1968	42.7	218	1,470,130	844	NL
Orville City of	OH	13	NL	NL	25	117,987	NL	NL
Reliant Energy Mid-Atlantic PH Portland	PA	1	10/1/1958	52.4	172	782,336	322	Pennsylvania
Reliant Energy Mid-Atlantic PH Portland	PA	2	10/1/1962	48.4	255	1,366,782	534	Pennsylvania
Reliant Energy Mid-Atlantic PH Titus	PA	1	6/1/1951	59.7	75	430,662	180	Pennsylvania
Reliant Energy Mid-Atlantic PH Titus	PA	2	6/1/1951	59.7	75	420,236	179	Pennsylvania
Reliant Energy Mid-Atlantic PH Titus	PA	3	6/1/1953	57.7	75	422,283	178	Pennsylvania
Reliant Energy Mid-Atlantic PH Shawville	PA	1	6/1/1954	56.7	125	687,481	314	Pennsylvania
Reliant Energy Mid-Atlantic PH Shawville	PA	2	6/1/1954	56.7	125	609,528	281	Pennsylvania
Reliant Energy Mid-Atlantic PH Shawville	PA	3	6/1/1959	51.7	188	960,274	414	Pennsylvania
Reliant Energy Mid-Atlantic PH Shawville	PA	4	6/1/1960	50.7	188	941,587	405	Pennsylvania
Orion Power Midwest LP	PA	3	6/1/1952	58.7	98	379,812	176	Pennsylvania
Orion Power Midwest LP	PA	4	6/1/1958	52.7	114	387,596	178	Pennsylvania
Orion Power Midwest LP	PA	5	6/1/1964	46.7	136	547,499	253	Pennsylvania
Sunbury Generation LLC	PA	1A	11/1/1949	61.3	75	433,438	165	Pennsylvania
Sunbury Generation LLC	PA	1B	11/1/1949	61.3	90	460,553	177	Pennsylvania
Sunbury Generation LLC	PA	2A	9/1/1949	61.4	104	373,753	176	Pennsylvania
Sunbury Generation LLC	PA	2B	9/1/1949	61.4	*	*	183	Pennsylvania
Sunbury Generation LLC	PA	3	4/1/1951	59.9	*	*	210	Pennsylvania
Sunbury Generation LLC	PA	4	8/1/1953	57.5	156	359,900	178	Pennsylvania

UGI Development Co	Hunlock Powe	PA	6	NL	NL	50	236,045	NL	NL
Allegheny Energy Supply Co L/Armstrong Pc		PA	1	4/1/1958	52.9	163	998,552	409	Pennsylvania
Allegheny Energy Supply Co L/Armstrong Pc		PA	2	6/1/1959	51.7	163	1,015,752	413	Pennsylvania
Progress Energy Carolinas Inc H B Robinsor		SC	1	5/1/1960	50.8	207	1,185,543	492	Kentucky
Duke Energy Corp	W S Lee	SC	1	3/1/1951	60.0	90	370,142	163	NL
Duke Energy Corp	W S Lee	SC	2	7/1/1951	59.6	90	312,274	137	NL
Duke Energy Corp	W S Lee	SC	3	12/1/1958	52.2	175	763,363	316	NL
South Carolina Electric&Gas C Canady's Stei		SC	CAN1	4/1/1962	48.9	136	753,076	310	Kentucky
South Carolina Electric&Gas C Canady's Stei		SC	CAN2	5/1/1964	46.8	136	702,852	287	Kentucky
South Carolina Electric&Gas C Canady's Stei		SC	CAN3	5/1/1967	43.8	218	742,691	302	Kentucky
South Carolina Electric&Gas C McMeekin		SC	MCM1	6/1/1958	52.7	147	879,681	NL	Kentucky
South Carolina Electric&Gas C McMeekin		SC	MCM2	11/1/1958	52.3	147	911,922	NL	Kentucky
South Carolina Electric&Gas C McMeekin		SC	URQ3	10/1/1955	55.4	100	602,974	231	Tennessee
South Carolina Pub Serv Auth	Dolphus M Gi	SC	1	6/1/1966	44.7	82	547,407	231	Kentucky
South Carolina Pub Serv Auth	Dolphus M Gi	SC	2	6/1/1966	44.7	82	565,626	247	Kentucky
South Carolina Pub Serv Auth	Jefferies	SC	3	1/1/1970	41.1	173	896,635	386	NL
South Carolina Pub Serv Auth	Jefferies	SC	4	7/1/1970	40.6	173	1,012,419	430	NL
Tennessee Valley Authority	Allen Steam f	TN	1	5/1/1959	51.8	330	1,744,664	917	NL
Tennessee Valley Authority	Allen Steam f	TN	2	5/1/1959	51.8	330	1,657,662	888	NL
Tennessee Valley Authority	Allen Steam f	TN	3	10/1/1959	51.4	330	1,757,813	943	NL
Tennessee Valley Authority	Gallatin	TN	1	11/1/1956	54.3	300	1,779,478	946	Pennsylvania
Tennessee Valley Authority	Gallatin	TN	2	6/1/1957	53.7	300	1,709,067	904	Pennsylvania
Tennessee Valley Authority	Gallatin	TN	3	5/1/1959	51.8	328	1,974,103	1,044	Pennsylvania
Tennessee Valley Authority	Gallatin	TN	4	8/1/1959	51.5	328	2,031,619	1,063	Pennsylvania
Tennessee Valley Authority	Johnsonville	TN	1	10/1/1951	59.4	125	587,866	NL	Kentucky
Tennessee Valley Authority	Johnsonville	TN	10	8/1/1959	51.5	173	972,034	NL	Kentucky
Tennessee Valley Authority	Johnsonville	TN	2	11/1/1951	59.3	125	646,478	NL	Kentucky
Tennessee Valley Authority	Johnsonville	TN	3	2/1/1952	59.0	125	667,154	NL	Kentucky
Tennessee Valley Authority	Johnsonville	TN	4	4/1/1952	58.9	125	649,347	NL	Kentucky
Tennessee Valley Authority	Johnsonville	TN	5	11/1/1952	58.3	147	631,688	NL	Kentucky
Tennessee Valley Authority	Johnsonville	TN	6	2/1/1953	58.0	147	738,947	NL	Kentucky
Tennessee Valley Authority	Johnsonville	TN	7	11/1/1958	52.3	173	806,945	NL	Kentucky
Tennessee Valley Authority	Johnsonville	TN	8	1/1/1959	52.1	173	931,747	NL	Kentucky
Tennessee Valley Authority	Johnsonville	TN	9	6/1/1959	51.7	173	959,223	NL	Kentucky
PacificCorp	Carbon	UT	1	11/1/1954	56.3	75	526,435	265	Utah
Appalachian Power Co	Carbon	UT	2	9/1/1957	53.4	114	823,423	408	Utah
Appalachian Power Co	Clinch River	VA	1	9/1/1958	52.4	238	1,382,762	556	Virginia
Appalachian Power Co	Clinch River	VA	2	12/1/1958	52.2	238	1,273,554	521	Virginia
Appalachian Power Co	Clinch River	VA	3	12/1/1961	49.2	238	1,283,266	514	Virginia

Appalachian Power Co	VA	51	6/1/1944	66.7	100	320,880	83	Virginia
Appalachian Power Co	VA	52	6/1/1944	66.7	*	*	83	Virginia
Appalachian Power Co	VA	6	5/1/1957	53.8	238	1,330,240	503	Virginia
Mirant Mid-Atlantic LLC	Potomac Rive	1	10/1/1949	61.4	92	260,950	142	West Virginia
Mirant Mid-Atlantic LLC	Potomac Rive	2	6/1/1950	60.7	92	206,828	107	West Virginia
Mirant Mid-Atlantic LLC	Potomac Rive	3	7/1/1954	56.6	110	303,283	118	West Virginia
Mirant Mid-Atlantic LLC	Potomac Rive	4	2/1/1956	55.0	110	263,041	108	West Virginia
Mirant Mid-Atlantic LLC	Potomac Rive	5	5/1/1957	53.8	110	285,669	118	West Virginia
Virginia Electric & Power Co	Bremo Bluff	3	6/1/1950	60.7	69	374,235	192	Kentucky
Virginia Electric & Power Co	Bremo Bluff	4	8/1/1958	52.5	185	1,060,572	439	Kentucky
Virginia Electric & Power Co	Chesapeake	1	6/1/1953	57.7	113	624,822	271	Virginia
Virginia Electric & Power Co	Chesapeake	2	12/1/1954	56.2	113	662,801	281	Virginia
Virginia Electric & Power Co	Chesapeake	3	6/1/1959	51.7	185	1,069,211	429	Virginia
Virginia Electric & Power Co	Chesapeake	4	5/1/1962	48.8	239	1,424,392	577	Virginia
Virginia Electric & Power Co	Possum Point	3	6/1/1955	55.7	114	42,742	NL	Kentucky
Virginia Electric & Power Co	Possum Point	4	4/1/1962	48.9	239	84,982	NL	Kentucky
Virginia Electric & Power Co	Yorktown	1	7/1/1957	53.6	188	1,003,384	405	Kentucky
Virginia Electric & Power Co	Yorktown	2	1/1/1959	52.1	188	1,064,934	433	Kentucky
Appalachian Power Co	Kanawha Rive	1	7/1/1953	57.6	220	1,092,162	456	West Virginia
Appalachian Power Co	Kanawha Rive	2	12/1/1953	57.2	220	973,982	404	West Virginia
Central Operating Co	Philip Sporn	11	1/1/1950	61.1	153	869,234	379	West Virginia
Central Operating Co	Philip Sporn	21	7/1/1950	60.6	153	783,060	331	West Virginia
Central Operating Co	Philip Sporn	31	8/1/1951	59.5	153	626,298	259	West Virginia
Central Operating Co	Philip Sporn	41	2/1/1952	59.0	153	642,943	255	West Virginia
Monongahela Power Co	Albright	1	11/1/1952	58.3	69	225,654	118	West Virginia
Monongahela Power Co	Albright	2	9/1/1952	58.4	69	245,168	127	West Virginia
Monongahela Power Co	Albright	3	10/1/1954	56.4	140	590,169	263	West Virginia
Monongahela Power Co	Rivesville	7	1/1/1943	68.1	35	-3,278	1	Pennsylvania
Monongahela Power Co	Rivesville	8	9/1/1951	59.4	75	178,789	94	Pennsylvania
Monongahela Power Co	Willow Island	1	2/1/1949	62.0	50	115,600	69	Pennsylvania
Monongahela Power Co	Willow Island	2	10/1/1960	50.4	163	518,814	256	Pennsylvania
Ohio Power Co	Kammer	1	7/1/1958	52.6	238	1,287,029	493	Pennsylvania
Ohio Power Co	Kammer	2	11/1/1958	52.3	238	1,359,885	529	Pennsylvania
Ohio Power Co	Kammer	3	3/1/1958	53.0	238	1,355,825	525	Pennsylvania
Madison Gas & Electric Co	Blount Street	7	12/1/1949	61.2	*	*	44	Indiana
Madison Gas & Electric Co	Blount Street	8	6/1/1957	53.7	50	200,198	94	Indiana
Madison Gas & Electric Co	Blount Street	9	7/1/1961	49.6	50	172,437	90	Indiana
Wisconsin Electric Power Co	Valley	1	6/1/1968	42.7	136	772,465	222	Colorado
Wisconsin Electric Power Co	Valley	2	6/1/1968	42.7	*	*	232	Colorado

Wisconsin Electric Power Co	WI	3	3/1/1969	41.9	136	690,367	209	Colorado
Wisconsin Electric Power Co	WI	4	3/1/1969	41.9	*	*	200	Colorado
Wisconsin Power & Light Co	WI	3	7/1/1951	59.6	60	395,951	261	Wyoming
Wisconsin Power & Light Co	WI	4	12/1/1969	41.2	330	1,799,567	1,078	Wyoming
Wisconsin Power & Light Co	WI	1	12/1/1959	51.2	100	688,211	311	Montana
Wisconsin Power & Light Co	WI	2	12/1/1962	48.2	100	701,724	312	Montana
Wisconsin Public Service Corp Pulliam	WI	5	9/1/1949	61.4	50	310,522	221	Wyoming
Wisconsin Public Service Corp Pulliam	WI	6	11/1/1951	59.3	69	387,696	247	Wyoming
Wisconsin Public Service Corp Pulliam	WI	7	11/1/1958	52.3	82	605,989	374	Wyoming
Wisconsin Public Service Corp Pulliam	WI	8	12/1/1964	48.2	150	943,492	543	Wyoming
Wisconsin Public Service Corp Weston	WI	1	12/1/1954	56.2	60	401,263	291	Wyoming
Wisconsin Public Service Corp Weston	WI	2	9/1/1960	50.4	82	622,817	375	Wyoming
Manitowoc Public Utilities	WI	6	6/1/1957	53.7	22	109,822	52	Pennsylvania
Manitowoc Public Utilities	WI	7	6/1/1964	46.7	32	154,113	55	Pennsylvania
Dairyland Power Coop	WI	B4	9/1/1957	53.4	54	281,238	115	Wyoming
Dairyland Power Coop	WI	B5	3/1/1960	50.9	82	388,214	150	Wyoming
Dairyland Power Coop	WI	1	7/1/1969	41.6	346	2,414,001	461	Illinois
PacifiCorp	WY	BW41	2/1/1959	52.0	114	858,353	574	Wyoming
PacifiCorp	WY	BW42	1/1/1961	50.1	114	847,085	564	Wyoming
TOTALS		433		53.5	56,338	299,535,716	133,865	
			AVG		135			
MW CAP GWH GEN COAL TONS (000)								
Totals					56,338	299,535,716	133,865	
US coal totals					312,738	2,016,456,000	1,040,000	2005
Pct US coal					18%	15%	13%	2005

Chairman ISSA. With that, I would now recognize the former chairman of the committee, Mr. Towns.

I apologize. I now recognize the distinguished lady from the District of Columbia, Ms. Norton.

Ms. NORTON. That's all right, Mr. Chairman. I thank you.

Welcome, Mr. Attorney General.

There appear to be two separate forks to your complaint. One is the process; the time for the process. I'd like to get to the substance, because it would appear that some States already implement stringent mercury emission limits that are even more stringent mercury emission limits than EPA is now proposing. So I went to a set of States close by, by the way: Connecticut, New Jersey, New Hampshire, Massachusetts, and New York.

Now, here is what the Massachusetts Department of Environmental Protection said: Experience in Massachusetts in imposing stringent emission limits for mercury and other pollutants clearly shows that EPA's proposed limits are achievable and effective. For example, although Massachusetts' mercury emission limits for existing coal-fired power plants are considerably more stringent than those proposed by EPA, Massachusetts facilities have been able to install control equipment with no impact on reliability of electric power and have demonstrated consistent compliance with the limits.

Mr. Attorney General, aren't those the same technologies available to the State of Virginia, for example?

Mr. CUCCINELLI. Well, presumably they're available everywhere, Congresswoman.

Ms. NORTON. Well, have you considered the possibility of using those very same technologies to achieve the results in Virginia that have been achieved even beyond those that the EPA is proposing by nearby States?

Mr. CUCCINELLI. Congresswoman, I think you're focusing on what amounts to less than 1 percent of what the EPA is doing—and that is the mercury piece of this. The mercury piece is a lot more achievable with a lot less damage than if you pile everything else on top of it. All of your statements with respect to mercury, I'd just accept them as stated and would suggest that it wouldn't cause nearly, not on an order of magnitude, the kind of challenge that the whole rule that EPA is advancing.

Ms. NORTON. But, Mr. Attorney General, the Northeast States for Coordinated Air Use says of EPA's proposed rule—and here's what they say of the rule itself: The successful track record demonstrates that there are no unsurmountable technology costs—emphasis on cost, or at least I put the emphasis there, as you appear to—or timing barriers to achieving EPA's proposed mercury and air toxic standards.

They are speaking beyond the mercury standards. Do you disagree with that statement?

Mr. CUCCINELLI. I'm not quite sure what they mean by the air toxics. I assume they mean the acid gases. You've got the mercury acid gasses, you've got the particulate matter. So if you take the—

Ms. NORTON. They say "air toxics," so I assume they're talking about all the air toxics.

Mr. CUCCINELLI. Well, if they're talking about all of them, then no, I would not agree with that statement. If they were strictly speaking of the mercury piece——

Ms. NORTON. Well, they're not strictly speaking of that.

Mr. CUCCINELLI. I do think the mercury piece is probably within reach.

Ms. NORTON. And you think Virginia, in fact, could move forward on the mercury piece.

Mr. CUCCINELLI. If you strip the other stuff out and——

Ms. NORTON. These people went ahead on their own, Mr. Attorney General, because they care about the health and welfare of their people. And they are beyond what EPA is now proposing. So you're going to wait for EPA?

Mr. CUCCINELLI. No, ma'am, they are not. They are beyond what EPA is proposing in the area of mercury, and mercury alone.

Ms. NORTON. So they are beyond what they are proposing in mercury alone.

Mr. CUCCINELLI. Yes.

Ms. NORTON. They went ahead before EPA proposed. I'm asking you, don't you think Virginia might go ahead on mercury alone, since you think that is achievable?

Mr. CUCCINELLI. Virginia could do that, but it obviously has made the policy decision not to do that. I would note that this all has, as I said before, the balancing consequences. We have a much lower unemployment rate than any State you just named. We have a higher economic growth rate than any State you just named. Despite the economic challenges——

Ms. NORTON. Mr. Attorney General, I don't know if that is the case. And I will not accept that until I look at those figures. Let's look at your concern with the process——

Chairman ISSA. I ask the gentlelady have an additional 30 seconds.

Ms. NORTON. I thank the gentleman.

Are you aware that the rule finalized——apparently, to be finalized in December, you'd not have to comply with until 2015, and then extensions could be gotten after that if you demonstrated that an extension was necessary?

Mr. CUCCINELLI. I'm aware that if the rule goes into effect—or is approved in mid-December, it would go into effect in January and have a 3-year implementation timeline. I also know what it takes to replace, to permit, to do all the steps necessary for the utilities in my State to replace certain power generation that will have to be withdrawn in that time period. And we can't match the two up. We can get kind of close, but not match them up.

Ms. NORTON. In which case an extension, it seems to me, would be justified.

Thank you, Mr. Chairman.

Mr. CUCCINELLI. The extensions would undoubtedly be helpful. That is always true. However, there is a limit on the EPA's authority to just extend. And relying on that from a business planning standpoint is not something that I can argue before my State Corporation Commission when the utilities come in and say we have to meet this. They don't have to rely on the extension. And the law of Virginia, as dictated by the U.S. Constitution, because they are

granted a right of return, is that those rates will pass through to all of our citizens—poorest, richest, and everyone in between.

Chairman ISSA. I thank the gentlelady. And I thank the Attorney General.

With that I recognize the former chairman of the full committee—I'm sorry, Mr. Chairman, you're going to have to wait 5 more minutes. With that, I recognize the gentleman from Oklahoma for 5 minutes, Mr. Lankford.

Mr. LANKFORD. Thank you Mr. Chairman. I do apologize for taking a little bit of the former chairman's time.

Chairman ISSA. We'll make it up to him.

Mr. LANKFORD. That would be great.

Thank you for being here, Attorney General. Glad for you to be able to be here.

My concern is that if I went back 35 years ago, Congress was conducting hearings and conversations about pushing power generation out of natural gas into coal and into nuclear because we were "running out" of natural gas. And so, no more natural gas power plants out there. Folks that were using that need to go into coal.

Now, plus 35 years, now the Federal Government is saying, no, coal might not be a good idea; let's try natural gas and see how that works and see if that's better. Or, see if we can use wind. As we continue to adjust the preferences to the Federal Government and now use a series of studies to be able to justify how we want companies to be able to move, that is very difficult on power generation, who can't just plan for next year, they have to plan on the next decade for what they are going to construct. My concern is the cumulative effect of all those regulations and if that has been evaluated.

Is it your opinion, of all the things that are coming down—and I've got 3 pages worth of different regs that are coming down right now out of EPA on power generation, whether it be 316(b), whether it be the cross-State rules, whatever it may be from coal—and there's a whole litany of different issues from coal, from the time it comes out of the ground, all the way until it's fly ash at that point at the end—do you feel like that has been adequately studied in this hurry to be able to get through this almost a million different comments that have been made? Was the cumulative effects also evaluated in this?

Mr. CUCCINELLI. If you're asking if I think it was done adequately, absolutely not. This hasn't even gone to OMB yet and they are still setting a finalization date in the middle of December. That's normally itself a 90-day process. Of course, it's November now. So that isn't going to happen if they're going to keep to the schedule they've laid out. That has absolutely not been looked at.

You mentioned something that triggered a thought, and my Congressman had mentioned it earlier, with respect to greenhouse gases. I think of the switching of fuels. The fact that we had sued EPA over their improper process over the greenhouse endangerment finding was raised earlier. And what's interesting about this is if that's so important, this makes it worse. That hasn't been looked at either in any serious way. Or maybe it's buried in

those 960,000 comments. But it seems the timeline has been set up so that they won't be reviewed, not so that they will.

Mr. LANKFORD. That is my concern is there has not been enough time to able to go through this. The President has been very urgent to say we need to look at cumulative effects of regulations, if that has not occurred, to be able to gather cumulative effects of all these different regs that are coming down and the speed that they're coming down, and the size of them.

One of the statements that was made by EPA was that this may have a potential of, what is it, \$10.9 billion in annual costs on the economy. Just that one regulation alone, \$10.9 billion. Then you start adding to it all the different areas of 316(b) and everything else that's coming down on it. It's fairly significant, what's happening.

And I understand previous comments that have been made to say we continue to add regulations to the power industry but the power continues to go down. I would presuppose at some point that doesn't work anymore. You can't just throw in a thousand regulations and say, We're going to continue to drive the costs down by adding more regulations. It doesn't work that way. At some point, you've got to have some common sense. Agree or disagree with that comment?

Mr. CUCCINELLI. I would certainly agree with that. And I would also note that Executive Order 13-563 requires EPA and other regulators, "to tailor its regulations to impose the least burden on society consistent with attaining regulatory objectives, taking into account the costs of cumulative regulations." And EPA has not performed a cumulative regulation cost analysis for the Utility MACT.

Mr. LANKFORD. What about the effect on reliability of power in the days to come?

Mr. CUCCINELLI. I understand that is widely debated here. It's not much debated in Virginia. We're looking at, just for one of our utilities, probably \$250 million of transmission infrastructure costs. Again, those by law pass right through to the ratepayers. On top of that, from a public policy standpoint, I was in the State senate. These are the ones people scream about. This is where power lines are going to be built across 50, 60 miles of people's backyards that do not now exist, and are going to be necessary to provide the flexibility in the grid to meet the reliability requirements that you'd expect of a modern electrical grid. So we're also looking at that challenge. We haven't talked about that at all.

Mr. LANKFORD. I would say again, if we're going to make a major decision that is going affect billions of dollars and it's going to affect future planning, we better make it right. You go back 35 years ago when we said, Let's go to coal, because that's more abundant than it is for natural gas. Now we're trying to reverse that. Obviously, we should have done more studies 35 years ago instead of doing a knee-jerk reaction. If we do the same knee-jerk reaction again, we're going to have the same kind of consequence if we don't do this right.

So with that, I yield back.

Chairman ISSA. I thank the gentleman from a major natural gas-producing State.

Mr. LANKFORD. Absolutely.

Chairman ISSA. With that, we recognize the former chairman of the full committee, whose picture adorns the area just behind us, Mr. Towns, for 5 minutes.

Mr. TOWNS. That only means I've been here a long time.

Chairman ISSA. Okay. We'll make it 6 minutes.

Mr. TOWNS. Mr. Attorney General, you testified today that one of the impacts of the Air Toxic Rule would be closure of coal-fired power plants, which will in turn cause job loss. Is that correct?

Mr. CUCCINELLI. And with the increased electricity costs that come with it, yes.

Mr. TOWNS. But evidence from our previous hearings on this subject before the Subcommittee on Regulatory Affairs suggests that many of these coal-fired power plants are older and would have gone out of business anyway. What's your answer to that?

Mr. CUCCINELLI. I think that you are certainly accelerating the retirement of part of the coal fleet I don't think in a way that the utilities envision, necessarily. But certainly that will be where they try to sacrifice some of their generation. That's just logic.

Mr. TOWNS. Let me ask you this. At a meeting on June 1 with investors, the chairman of American Electric Power, a gentleman by the name of Michael Morris, told investors the following: "As you know, those are high-cost plans. Throughout almost all of 2009, those plants probably didn't run 5 percent of the time because of natural gas prices. When we shut those down, there will be some cost saving as well, and on balance we think that that is the appropriate way to go."

What is your response to that? Do you agree or disagree?

Mr. CUCCINELLI. Our second biggest utility is one of their subsidiaries. APCO is an AEP subsidiary.

The 5 percent comment. We have some plants that fit in the category he described. I use the oil-fired as an example. Mind you, there is some value to keeping fuel flexibility. Even if they are dirtier plants, even if they aren't what you'd want run all the time, to have them available for peak time in the winter and summer is, I would suggest, of great value on both a cost basis and a reliability basis that far outweighs the benefits you might get by shutting them down permanently, which is, as his comments suggest, what is going to happen.

I think when you—moving them perhaps from a run 24/7/365 position to using them as peak power would be a great alternative for America. It would achieve, even if you just accept all the health claims, everything, without disputing any of that, just moving them from one position to the other would be a huge boon, with tremendous cost savings from an opportunity cost perspective that aren't dropped on ratepayers because you move them over instead of shutting them down. But that is not an option under this rule, it is not an option under this rule. It is in fact the opposite, where you'd have to put in all the upgrades whether you use them 100 percent of the time or five, for a 5 percent plan, so of course you're going to shut it down.

Mr. TOWNS. AEP plans to close two plants in Virginia, I think Clinch River and Glen Lyn; is that true?

Mr. CUCCINELLI. Well, I can't speak for AEP, but I certainly would expect that they are on the block, yes, for this.

Mr. TOWNS. And AEP agreed to retire those plants under a 2007 consent decree over violations of environmental laws; isn't that right?

Mr. CUCCINELLI. I don't know that shutting them down was part of any consent decree.

Mr. TOWNS. I know my time is about to expire. Mr. Attorney General, it seems to me that your testimony before us today is a transparent attempt to blame the government for the fact that many high-cost, dirty coal plants could not compete in today's market even before the air toxins rule goes into effect.

Mr. CUCCINELLI. Then they'd be shut down of their own course.

Mr. TOWNS. You know, I know your answer has been that you only represent Virginia, but when you—actually in the position of Attorney General, you have to look at what happens in other States as well, and then you make an opinion—actually to evaluate was it good, bad, or indifferent, you have to compare it with something. So I want you to know you have to look at other States; you can't just look at Virginia.

Mr. CUCCINELLI. Yeah. My comment to that effect was only with respect to the specific data from those particular States. I agree with you that you have to draw from the experiences of other parts of the country and other States, and I do do that in trying to do what's best for Virginia.

Mr. TOWNS. I yield back and thank you very much for coming to testify.

Mr. LANKFORD. Let me make just a quick comment as well. I will just take a quick moment, and I will yield to Mr. Connolly a quick moment, and then we are going to conclude this panel so we can make a transition as well.

Just a comment. There are 25 other States, obviously, that are represented in this brief. It is not just Virginia we're talking about at this point. So this is not just a single State issue, this is a national issue on all that is happening, and that currently what is in place on this is not just dealing with a small group of plants that are very out of date, but there are no coal plants that can abide by this nationwide; no one is at that standard at this point. So that is the challenge, to try to figure out what do we do with this that no single utility will not be affected by this process on it.

A quick question for the Attorney General on it as well, and that is dealing with the combined regulations. As we talked a little bit before about the cumulative effects of this, the American Coalition for Clean Coal Electricity estimated that some of the combinations here we're talking about an increase of electricity somewhere between 12 and 23 percent. I know we were guessing earlier on some figures. Twelve to 23 percent hits the poor pretty tough, especially. What numbers have you seen, what estimates would you—

Mr. CUCCINELLI. In our last round of utility rate cases, and I'm in—we're now awaiting orders in what is the sound round since I've been Attorney General. In the last round, we actually analyzed the rate increases as it related to Federal, not State, just the Federal environmental regulation, and about 35 to 40 percent of the base rate increases were a pass-through of these environmental costs.

In Virginia unlike, say, North Carolina, our utilities can absorb these costs as they incur them on a rolling basis. In North Carolina, utilities can't incur them until they flip the switch and throw the new plant on line, which of course builds up cost and it keeps their rates a little lower for a while and then they spike. So it happens a variety of different ways but it goes up.

I've only had to have a couple of town hall meetings as Attorney General and they were both on utility rates in the poorer parts of our State, because it is hard to describe from people who are not from poor parts of the State what utility rates mean to the people in these households. When you talk about 10 bucks a month or 20 bucks a month more, it's real money. It's real money in a small house that's pulling maybe 1250 kilowatts, which is an APFO average. That's big dollars to them. It hurts when they are on fixed incomes, as a large swath of that portion of Virginia is relative to the rest of Virginia. We see that a lot, again in the poorest parts of Virginia.

And make no mistake about it. There are going to be economic consequences. There's always a trade-off. You all make these decisions all the time about where these trade-offs should land. But make no mistake about this: The people hurt first and the people hurt worst economically are the poor. They are the poor. That's who you're going to hurt first and that's you're going to hurt the worst.

Thank you, Mr. Chairman.

Mr. LANKFORD. Thank you. With that I yield 3 minutes to Mr. Connolly.

Mr. CONNOLLY. Thank you, Mr. Chairman. I would note that the Attorney General's view of history and mine might be slightly different with respect to utility rates in even the poorer parts of Virginia. Many of the rate increases he's referring to occurred subsequent to the reregulation legislation passed by the General Assembly of Virginia, highly favorable to industry, not particularly favorable to consumers.

Mr. Attorney General, let me ask you just one question. You talked about utilities. The largest utility in the Commonwealth of Virginia is Dominion Resources. Has Dominion Resources requested that you challenge the air toxic rule legally or that legislation be introduced to try to prevent it from being implemented?

Mr. CUCCINELLI. No. As I mentioned earlier on your mischaracterization of nullification, Virginia isn't in a constitutional position to step in on Federal environmental regulation of this type, with a constitutional objection. Even if we had legislation, the supremacy clause of the Constitution has Federal law trumping State law. The health care case you asked about earlier, the supremacy clause contains an exception when the Federal law is not constitutional. No one I'm aware of is alleging that what EPA here is doing here is unconstitutional. Inappropriate, incredibly unique in terms of the speed, particularly in light of the volume of the comments and the potential impacts which, even if you accept the EPA's perspective, are still wildly in dispute.

Mr. CONNOLLY. So the answer is that so far that largest utility in the Commonwealth has not asked you to seek to overturn the rule? I mean in the Federal level?

Mr. CUCCINELLI. I'm sorry, you mean in the what?

Mr. CONNOLLY. At the Federal level. I'm not referring to nullification. Have you received as the Attorney General of Virginia any communication or indication from the largest utility in the Commonwealth that it would like you or others to in fact try to seek to overturn this pending rule?

Mr. CUCCINELLI. No. My concern is more with the ratepayers than it is with the utilities.

Mr. CONNOLLY. Thank you. Mr. Chairman, I would just end—my colleague from Virginia and I do disagree in terms of interpretation and history. Frankly, when a State seeks to preempt Federal law and to argue on its own that that law is, in advance, unconstitutional, is “nullification” by any other sense of the word.

Mr. CUCCINELLI. Not if you know what you're talking about.

Mr. CONNOLLY. I think I do know what I'm talking about and I think you have an agenda, Mr. Attorney General. It is just one I happen to disagree with. With that, I yield back.

Chairman ISSA. Mr. Chairman?

Mr. LANKFORD. Yes.

Chairman ISSA. Before you end the hearing or recess the hearing, I wanted to take just a moment if I may.

Mr. LANKFORD. Certainly may. We had 3 minutes going all the way around so.

Chairman ISSA. Thank you.

Mr. Attorney General, I want to thank you for your presence here. I want to thank you for working for the interest, like nearly half of all Attorneys General have, to try to make sure that we get this new regulation right. I appreciate your being calm and deliberative in explaining what your goal is, what Virginia could do more expeditiously, and, quite frankly, the need to have nearly a million public comments evaluated in the way that it is appropriate before we set a regulation that people may ask for extensions on, but which may in fact be a different regulation than if all these comments are properly viewed in a public way.

So your attention here, your willingness to come on short notice, we very much appreciate. And, again, I appreciate people willing to come before this committee. It is not always pleasant, but your testimony was essential. I yield back.

Mr. LANKFORD. Thank you, Mr. Chairman. With that we will take a short recess so we can shift to the next panel.

[Recess.]

Chairman ISSA. [Presiding.] The hearing will reconvene. We now recognize the Honorable Robert Perciasepe. He's the deputy administrator of the United States Environmental Protection Agency, and it's an honor and a pleasure to have you here today.

Pursuant to the committee rules all witnesses are to be sworn. Would you please rise to take the oath. Would you raise your right hand.

Do you solemnly swear or affirm that the testimony you are about to give will be the truth, the whole truth, and nothing but the truth?

Thank you. Let the record reflect the witness answered in the affirmative. Pursuant to the normal routine, I know you have 5 minutes or more to give, your entire statement will be placed in the

record. You may read off of it or you may summarize it, and we'd only ask that you try to remain fairly close to the 5 minutes to allow time for questions. And with that, you're recognized for 5 minutes.

STATEMENT OF HON. ROBERT PERCIASEPE

Mr. PERCIASEPE. Thank you, Mr. Chairman and Representative Connolly and members of the committee. I appreciate the opportunity to appear before you today on the mercury and air toxic standards.

Chairman ISSA. Is your microphone on? Can you hear?

Mr. PERCIASEPE. I'll move in a little closer.

EPA's clean air power plant rules are necessary to protect public health and the environment from pollution produced by these plants, especially the oldest and dirtiest and least efficient of them all. The EPA will issue a final mercury and air toxic standard, which is the topic of today's hearing, on December 16, 2011.

We are not the first administration to recognize the need to clean up power plants and to issue rules to address that need. In fact, since 1989, when President George H.W. Bush proposed what became the Clean Air Act amendments of 1990, power plant cleanup has been the continuous policy of the United States Government under two Democratic and two Republican presidents.

While past EPA rules have made progress in reducing the harmful effects of pollution, more remains to be done to ensure all Americans have the clean environment to which they are entitled.

The two clean air power plant rules, the mercury and air toxic standard and the cross-State air pollution rule, finalized earlier this summer, will achieve major public health benefits for Americans that are significantly greater than the cost. These pollution reducing rules are affordable and they are technologically achievable.

There's tremendous public support for moving forward with these rules. Since March, we have received hundreds of thousands, as has already been mentioned, of comments from the public urging us to reduce mercury emissions from power plants.

The mercury and air toxic rule have a significant public health benefit. For example, it will reduce mercury, which can cause neurological damage in children who are exposed before birth. The rule, as proposed, also is protective to avoid thousands of premature deaths, thousands of nonfatal heart attacks, and hundreds of thousands of asthma attacks. This rule would provide Americans with 5- to \$13 in health benefits for each dollar it costs.

Our analysis and past experience indicate that warnings from some of dire economic consequences of moving forward with these important rules are exaggerated. While not as focused, the mercury and air toxic standard rule has the potential to improve productivity and provide jobs. We estimate that the proposed rule would result in 850,000 fewer workdays missed due to illness, and could support 31,000 job years of short-term construction work, the net of \$9,000 of long-term utility jobs.

Monies spent on pollution control at power plants provide high-quality American jobs in manufacturing steel, cement, and other materials needed to build the pollution-control equipment, install-

ing the equipment, and in operating and maintaining the equipment. And many of these jobs are jobs that will not be and cannot be shipped overseas. In fact, the United States is the leading exporter of pollution-control equipment.

Our publicly available analysis shows that the EPA rules affecting power plants are affordable. This is corroborated by other outside groups and some in industry who recognize that issuing the rules in the same time frame helps provide power companies with the certainty they need to make smart and cost-effective decisions.

As we did more than 2 decades ago, we are also hearing claims that our rules will lead to potential adverse impacts on electric reliability. EPA's analysis projects that the agency's rules will result in only a modest level of retirements that are not expected to have an adverse impact on electric generation resource adequacy. Our rules will not cause the lights to go out.

While there are some industry studies suggesting that these rules will result in substantial power plant retirements, in general they share a number of serious flaws. Most notably, as the Congressional Research Service emphasized in August, these studies often make assumptions about requirements of the rule that are inconsistent with and dramatically more expensive than the EPA's actual proposals. In some cases, the analyses were performed before many of the regulations in question were even proposed.

In closing, I would like to suggest that the committee should be clear about what is at stake here, and those who have stalled in cleaning up their pollution—those who have stalled in cleaning up their pollution call for further delays. Delay encourages companies to avoid upgrading America's infrastructure and putting people to work modernizing their facilities. And, most importantly, delay means the public health benefits of reducing harmful pollution are not realized.

Thank you and I look forward to answering your questions.

Chairman ISSA. Thank you.

[Prepared statement of Mr. Perciasepe follows:]

Opening Statement of Bob Perciasepe
Deputy Administrator
U.S. Environmental Protection Agency

Committee on Oversight and Government Reform

November 1, 2011

Hearing Titled "Lights Out II: Should EPA Take a Step Back to
Fully Consider Utility MACT's Impact on Job Creation?"

Chairman Issa, Ranking Member Cummings, and members of the Committee, I appreciate the opportunity to testify before you today on EPA's proposed Mercury and Air Toxics Standards (MATS) for power plants.

We do not have to choose between the significant public health benefits from reducing air pollution from power plants and a robust, reliable electric grid. Nor do we have to choose between clean, healthy air and robust economic growth and job creation. We can reduce harmful pollution while growing the U.S. economy and ensuring the reliable delivery of electricity to our families and businesses. As President Obama recently stated in his Joint Address to Congress, "...what we can't do...is let this economic crisis be used as an excuse to wipe out the basic protections that Americans have counted on for decades...We shouldn't be in a race to the bottom where we try to offer the...worst pollution standards."¹

Cleaning up the power sector is overdue

The power plant rules we are developing are necessary to protect public health and the environment from the pollution these plants produce – a need that both Republican and Democratic administrations have recognized for decades. For over 20 years, since President George H.W. Bush proposed what became the Clean Air Act Amendments of 1990, power plant clean-up has been the continuous policy of the U.S. government under two Democratic and two Republican presidents.

Over the years, many power plants have invested in modern pollution controls to reduce their emissions and have contributed to the significant progress this country has made in providing healthy air to our citizens. Many other power plants, however, have delayed investment in pollution control equipment that has been widely available for years – including equipment to reduce emissions of mercury and other toxic air pollutants. As a result, power plants remain the country's largest source of mercury and sulfur dioxide (SO₂) emissions, and the largest stationary source of nitrogen oxides (NO_x).² This pollution contaminates fish,

¹ Address by President Obama to a Joint Session of Congress, September 8, 2011. <http://www.whitehouse.gov/the-press-office/2011/09/08/address-president-joint-session-congress>

² EPA National Emissions Inventory (2008) <http://www.epa.gov/air/emissions/index.htm>

damages our nation's sensitive lakes, rivers, and streams, and is linked to tens of thousands of premature deaths and hundreds of thousands of asthma attacks each year.

MATS is needed to protect public health

This year, EPA is issuing two long-overdue rules to reduce air pollution from power plants – MATS and the Cross State Air Pollution Rule (the Cross State Rule).³ These affordable, technologically achievable rules will provide major public health benefits for Americans that are significantly greater than the costs. The Cross State Rule, which we issued this summer under the Clean Air Act's "good neighbor" provision, requires upwind power plants to reduce pollution to help downwind states meet and maintain the nation's health-based standards for ozone and fine particles. It replaced the Clean Air Interstate Rule (CAIR), which had a similar goal but was found by the U.S. Court of Appeals for the District of Columbia not to meet Clean Air Act requirements.

The Mercury and Air Toxics Standards, the topic of today's hearing, are designed to reduce emissions of mercury, other toxic metals such as cadmium, nickel and arsenic, and acid gases. The MATS Rule is required by the 1990 Clean Air Act Amendments. There currently is no national requirement to reduce mercury and other air toxic emissions from power plants, because the last Administration's rule attempting to limit mercury emissions from power plants was overturned in court for failing to meet the requirements of the Clean Air Act. During the public comment period on MATS, we have heard from hundreds of thousands of people urging us to put these important public health protections in place. EPA is on track to finalize the rule by December 16, 2011.

Reducing mercury and other air toxic emissions will provide important public health benefits. Mercury, depending on the form and dose, may cause neurological damage in children who are exposed before birth and is also associated with impacts on children's cognitive thinking, memory, attention, language, and fine motor and visual spatial skills. Metals such as arsenic, chromium, and nickel cause cancer and other health risks. Acid gases cause lung damage and contribute to asthma, bronchitis and other chronic respiratory diseases, especially in children and the elderly.

The control equipment that reduces emissions of these toxics also will reduce fine particle pollution. For the proposed MATS rule, we project those reductions will prevent, each year beginning in 2016, approximately:

- 6,800 to 17,000 premature deaths
- 11,000 heart attacks
- 120,000 cases of childhood asthma symptoms
- 11,000 cases of acute bronchitis among children
- 12,200 emergency room visits and hospital admissions

³ This was called the "Transport Rule" when it was proposed. In this testimony, we will refer to both the proposed and final rules as the Cross State Rule.

- 850,000 days of work missed due to illness.⁴

MATS is affordable and achievable

It is a priority of the EPA and of this Administration to ensure that our regulatory system is guided by science and that it protects human health and the environment in a pragmatic and cost effective manner. Accordingly, in developing MATS, the EPA has not only assessed the long overdue health benefits of reducing emissions of harmful pollutants from power plants, but also made public information on the economic effects associated with implementing the emission reductions, including effects on electricity rates, jobs, and the adequacy of our electricity resources. These publicly available analyses, which involve detailed modeling of the proposed rule's impact on the power sector, show that this rule is affordable.

EPA modeling indicates that the combined Cross State and MATS Rules, as finalized and proposed, respectively, will result in relatively small changes in the average retail price of electricity, which will remain below 1990 levels. These changes are within the range of normal annual fluctuations for electricity prices.⁵ Additionally, our modeling indicates that moderate levels of energy demand reduction from investments in energy efficiency would substantially cut total emission control costs for the power sector, lower the incremental cost of the standards by more than half in 2020, and lower consumer bills. They would also reduce emissions of air pollutants beyond what the proposed standards would achieve, especially on high electricity demand days when air quality is most threatened.

EPA's analyses of the proposal also looked at the impact of MATS on jobs. Money spent on pollution controls at power plants provides high quality American jobs in manufacturing steel, cement, and other materials needed to build the pollution control equipment; in creating and assembling control equipment; in installing the equipment; and in operating and maintaining the equipment. And many of these are jobs that cannot be shipped overseas. In fact, the U.S. is a leading exporter of pollution control equipment.⁶

EPA paid close attention to feasibility and electric system capacity concerns when we proposed the MATS Rule and we continue to pay close attention to stakeholder comments as we finalize it. With regard to reliability issues, we have consulted with, and will continue to consult with, the North American Electric Reliability Corporation (NERC), regional transmission

⁴ These benefits are from emissions reductions achieved by the proposed Mercury and Air Toxics Standards, and not from the Cross State Rule or any other emissions reduction regulation. When EPA estimated the benefits for the proposed MATS rule, we included the proposed Cross State Air Pollution Rule (known then as the Transport Rule) in the baseline for our analysis, so we estimated the incremental benefits of MATS alone.

⁵ Regulatory Impact Analysis in support of the Proposed Mercury and Air Toxics Standards for Power Plants, March 2011

⁶ International Trade Administration, US Department of Commerce, 2008 <http://web.ita.doc.gov/ete/eteinfo.nsf/068f3801d047f26e85256883006ffa54/4878b7e2fc08ac6d85256883006c452c?OpenDocument>

organizations (RTOs), independent system operators (ISOs), state public utility commissions (PUCs), other federal agencies and others.

EPA's analyses project that the Cross State and proposed MATS rules will result in retirements largely of older, dirtier, less efficient power plants⁷ – and that those retirements are not expected to have an adverse impact on electric generation resource adequacy.⁸⁹ Our rules will not cause the lights to go out.

According to our analysis when we proposed the MATS Rule, companies will have sufficient time to meet the Cross State and MATS Rules. Although we continue to review public comment on this issue, we feel the statements in the proposed rule preamble continue to be valid:

“Our analysis shows that the expected number of retirements is less than many have predicted and that these can be managed effectively with existing tools and processes for ensuring continued grid reliability. Further, the industry has adequate resources to install the necessary controls and develop the modest new capacity required within the compliance schedule provided for in the CAA. Although there are a significant number of controls that need to be installed, with proper planning, we believe that the compliance schedule established by the CAA can be met. . . . EPA believes that the ability of permitting authorities to provide an additional 1 year beyond the 3-year compliance time-frame as specified in CAA section 112, along with other compliance tools, ensures that the emission reductions and health benefits required by the CAA can be achieved while safeguarding completely against any risk of adverse impacts on electricity system reliability.”¹⁰

As we explained in the preamble for the proposed MATS Rule, there are a number of items that provide assurance that national reliability will not be affected:

“EPA believes that the large reserve margins, the range of control options, the range of *flexibilities to address unit shutdowns, existing processes to assure that sufficient* generation exists when and where it is needed, and the flexibilities within the CAA, provide sufficient assurance that the CAA section 112 requirements for the power sector can be met without adversely impacting electric reliability.”¹¹

A number of outside experts have conducted analyses supporting EPA's conclusions. For example, major grid operator PJM recently issued a report concluding the Cross-State Air

⁷ http://www.epa.gov/ttn/atw/utility/pro/planned_projected_retire_03211.xlsx

⁸ The Cross State Air Pollution Rule projects about 5 gigawatts (GW) of incremental coal capacity retirements by 2014. Analysis for the MATS proposal predicts that the rule results in about 10 GW of incremental coal capacity retirements by 2015. Total coal fired capacity for the U.S. is about 315 GW.

⁹ *Resource Adequacy and Reliability in the IPM projections for the Toxics Rule*, EPA Docket No. EPA-HQ-OAR-2009-0234-3063.

¹⁰ Excerpts from May 3, 2011 FR notice -- MATS proposal, page 25057

<http://www.epa.gov/ttn/atw/utility/fr03my11.pdf>

¹¹ Excerpts from May 3, 2011 FR notice -- MATS proposal, page 25057

<http://www.epa.gov/ttn/atw/utility/fr03my11.pdf>

Pollution Rule and the proposed MATS rule do not threaten system-wide resource adequacy in the PJM region, although there could be localized concerns. PJM also points out that, to the extent that these rules spur newer more efficient and more dependable generation, they may enhance reliability.¹²

In August 2010, MJ Bradley & Associates and the Analysis Group released a report commissioned by several utilities on the reliability impacts of the Mercury and Air Toxics Standard and the Cross State Rule. Their analysis concluded that the *“electric industry is well-positioned to comply with EPA’s proposed air regulations without threatening electric system reliability.”* They updated that report in June 2011 based on the actual Mercury and Air Toxics Standard proposal, recent financial statements from industry, and recent activity in the markets for additional electricity capacity. This update *“reaffirms the major conclusion of the prior report that the electric industry can comply with EPA’s air pollution rules without threatening electric system reliability provided that EPA, the industry and other agencies take practical steps to plan for the implementation of these rules and adopt appropriate regulatory approaches.”*¹³

A report by the Bipartisan Policy Center identified a variety of significant flaws in many of the previous industry studies of reliability and concluded that *“scenarios in which electric system reliability is broadly affected are unlikely to occur.”*¹⁴

EPA has reviewed the industry studies suggesting, contrary to the EPA’s and other groups’ analyses, that these rules will result in substantial power plant retirements that will have adverse effects on electric reliability in some regions of the country. While the particulars of these analyses differ, in general they share a number of serious flaws that call their conclusions into question:

- First, as an August 2011 Congressional Research Service emphasized,¹⁵ these studies often make assumptions about the requirements of the EPA rules that are inconsistent with, and dramatically more expensive than, the EPA’s actual proposals. In most cases, the analyses were performed before many of the regulations in question were even proposed.
- Second, in reporting the number of retirements, many analyses fail to differentiate between plant retirements attributable to the EPA rules and older, smaller, and less efficient plants that are already scheduled for retirement because owners have made business decisions, based in significant part on market conditions, not to continue operating them.

¹² PJM Interconnection, August 2011, “Coal Capacity at Risk for Retirement in PJM: Potential Impacts of the Finalized EPA Cross State Air Pollution Rule and Proposed National Emissions Standards for Hazardous Air Pollutants” available at <http://pjm.com/~media/documents/reports/20110826-coal-capacity-at-risk-for-retirement.ashx>.

¹³ M. J. Bradley & Associates, LLC and Analysis Group, *Ensuring a Clean, Modern Electric Generating Fleet while Maintaining Electric System Reliability*, June 2011 (emphasis added).

¹⁴ Bipartisan Policy Center, June 2011, “Environmental Regulation and Electric System Reliability”

¹⁵ Congressional Research Service Report #41914, “EPA’s regulation of coal-fired power: Is a ‘train-wreck coming?’”, James E. McCarthy and Claudia Copeland, August 8, 2011

- Third, many analysts do not account for the whole host of tools, including new generation, demand response, energy efficiency, transmission upgrades and energy storage that can be used to maintain reliability.

Simply put, many of the studies which have dire predictions for increases in electricity rates, reliability and other economic consequences are not based on the reality of the rules the Agency has put in place or is considering. The Agency's robust analyses indicate that the proposed MATS rule will continue to build on the EPA's 40-year record of success in reducing harmful pollution while our economy has continued to grow and the power system has remained reliable despite increasing demand.

While some in industry are seeking to delay finalization of these standards, many others recognize that issuing MATS and the cross-state air pollution rules in the same timeframe helps provide power companies with the certainty they need to make smart and cost-effective investments. The Clean Energy Group¹⁶ has said, "Needed regulatory certainty will result from EPA's timely implementation of regulations consistent with the Clean Air Act, which is in the best interests of the electric industry, the market, and customers."¹⁷ The CEOs of eight electric companies have also stated that: "Contrary to claims that EPA's agenda will have negative economic consequences, our companies' experience complying with air quality regulations demonstrates that regulations can yield important economic benefits, including job creation, while maintaining reliability."¹⁸ In addition, the Chairman and CEO of Wisconsin Energy has said, "We see very little impact on customer electric rates or our capital plan between now and 2015 as a result of the new EPA regulations."¹⁹

The Clean Air Act

The Cross State and MATS Rules would continue the 40-year Clean Air Act success story. For 40 years, the Clean Air Act has allowed steady progress to be made in reducing the threats posed by pollution and allowing us all to breathe easier. In the last year alone, programs implemented pursuant to the Clean Air Act Amendments of 1990 are estimated to have reduced premature mortality risks equivalent to saving over 160,000 lives; spared Americans more than 100,000 hospital visits; and prevented millions of cases of respiratory problems, including

¹⁶ The Clean Energy Group's Clean Air Policy Initiative members include Austin Energy, Avista Corporation, Calpine Corporation, Constellation Energy, Exelon Corporation, National Grid, New York Power Authority, NextEra Energy, PG&E Corporation, Public Service Enterprise Group, Inc., and Seattle Light.

¹⁷ Letter to Lisa Jackson, Administrator, EPA, from Michael Bradley, Executive Director of the Clean Energy Group's Clean Air Policy Initiative (June 15, 2011), http://www.thecleanenergygroup.com/documents/Letter_Jackson_UtilityToxicsRule.pdf

¹⁸ Peter Darbee, chairman, president and CEO, PG&E Corp.; Jack Fusco, president and CEO, Calpine Corp.; Lewis Hay, chairman and CEO, NextEra Energy, Inc.; Ralph Izzo, chairman, president and CEO, Public Service Enterprise Group, Inc.; Thomas King, president, National Grid USA.; John Rowe, chairman and CEO, Exelon Corp.; Mayo Shattuck, chairman, president and CEO, Constellation Energy Group; Larry Weis, general manager, Austin Energy, "We're OK With the EPA's New Air-Quality Regulations," Letter to the Editor, Wall Street Journal, December, 8, 2010.

¹⁹ May 3, 2011 Wisconsin Energy Corporation 1st Quarter 2011 Earnings Call.

bronchitis and asthma.²⁰ They also enhanced productivity by preventing 13 million lost workdays; and kept kids healthy and in school, avoiding 3.2 million lost school days due to respiratory illness and other diseases caused or exacerbated by air pollution.²¹

However, few of the emission control standards that gave us these huge gains in public health were uncontroversial at the time they were developed and promulgated. Most major rules have been adopted amidst claims that they would be bad for the economy and bad for employment.

In contrast to doomsday predictions, history has shown, again and again, that we can clean up pollution, create jobs, and grow our economy all at the same time. Over that same 40 years since the Act was passed, the Gross Domestic Product of the United States grew by more than 200 percent.²²

It is misleading to say that enforcement of the Clean Air Act is bad for the economy and employment. It isn't. Families should never have to choose between a job and healthy air. They are entitled to both.

Some may find it surprising that the Clean Air Act also has been a good economic investment for our country. A study led by Harvard economist Dale Jorgenson found that implementing the Clean Air Act actually increased the size of the US economy because the health benefits of the Clean Air Act lead to a lower demand for health care and a healthier, more productive workforce. According to that study, by 2030 the Clean Air Act will have prevented 3.3 million lost work days and avoided the cost of 20,000 hospitalizations every year.²³ Another study that examined four regulated industries (pulp and paper, refining, iron and steel, and plastic) concluded that, "We find that increased environmental spending generally does not cause a significant change in employment."²⁴

The EPA's updated public health safeguards under the Clean Air Act will encourage investments in labor-intensive upgrades that can put current unemployed or under-employed Americans back to work. Environmental spending creates jobs in engineering, manufacturing, construction, materials, operation, and maintenance. For example, EPA vehicle emissions standards directly sparked the development and application of a huge range of automotive technologies that are now found throughout the global automobile market. The vehicle

²⁰ USEPA (2011). The Benefits and Costs of the Clean Air Act from 1990 to 2020. Final Report. Prepared by the USEPA Office of Air and Radiation. February 2011. Table 5-5. This study is the third in a series of studies originally mandated by Congress in the Clean Air Act Amendments of 1990. It received extensive peer review and input from the Advisory Council on Clean Air Compliance Analysis, an independent panel of distinguished economists, scientists and public health experts.

²¹ Ibid.

²² Bureau of Economic Analysis, National Economic Accounts, "Table 1.1.5. Gross Domestic Product," <http://bea.gov/national/index.htm#gdp>

²³ Dale W. Jorgenson Associates (2002a). *An Economic Analysis of the Benefits and Costs of the Clean Air Act 1970-1990. Revised Report of Results and Findings*. Prepared for EPA.

[http://yosemite.epa.gov/ee/epa/eeerm.nsf/vwAN/EE-0565-01.pdf/\\$file/EE-0565-01.pdf](http://yosemite.epa.gov/ee/epa/eeerm.nsf/vwAN/EE-0565-01.pdf/$file/EE-0565-01.pdf)

²⁴ Morgenstern, R. D., W. A. Pizer, and J. S. Shih. 2002. "Jobs versus the Environment: An Industry-Level Perspective." *Journal of Environmental Economics and Management* 43(3):412-436.

emissions control industry employs approximately 65,000 Americans with domestic annual sales of \$26 billion.²⁵ Likewise, in 2008, the United States' environmental technologies and services industry of 1.7 million workers generated approximately \$300 billion in revenues and led to exports of \$44 billion of goods and services,²⁶ larger than exports of sectors such as plastics and rubber products.²⁷ The size of the world market for environmental goods and services is comparable to the aerospace and pharmaceutical industries and presents important opportunities for U.S. Industry.²⁸

Jobs also come from building and installing pollution control equipment. For example, the U.S. boilermaker workforce grew by approximately 35 percent, or 6,700 boilermakers, between 1999 and 2001 during the installation of controls to comply with EPA's regional nitrogen oxide reduction program.²⁹ Over the past seven years, the Institute for Clean Air Companies (ICAC) estimates that implementation of just one rule – the Clean Air Interstate Rule Phase 1 – resulted in 200,000 jobs in the air pollution control industry.³⁰

Conclusion

As we did more than two decades ago during debate of the Clean Air Act Amendments of 1990, we are hearing claims that our rules will lead to potential adverse impacts on electric reliability. Our analysis and past experience indicate that warnings of dire consequences of moving forward with these important rules are exaggerated at best. For example, during development of the 1990 Clean Air Act Amendments, industry estimated that the cost of the new requirements for sulfur dioxide would be \$7.5 billion per year. In reality, the cost of achieving the reductions was around \$1.5 billion per year – a fraction of the costs estimated by those seeking to prevent enactment of that landmark legislation.³¹ In fact, at the time, one utility warned of unrealistic compliance dates and issues with electrical reliability. These predictions were not true then, and industry's remarkably similar claims about the current Clean Air Act regulations are not true now.

I would like to suggest that the Committee should be clear about what is at stake here as those who have stalled in cleaning up their pollution call for further delays. We are pursuing

²⁵ Manufacturers of Emissions Control Technology (http://www.meca.org/cs/root/organization_info/who_we_are)

²⁶ DOC International Trade Administration. "Environmental Technologies Industries: FY2010 Industry Assessment." [http://web.ita.doc.gov/ete/eteinfo.nsf/068f3801d047f26e85256883006ffa54/4878b7e2fe08ac6d85256883006c452c/\\$FILE/Full%20Environmental%20Industries%20Assessment%202010.pdf](http://web.ita.doc.gov/ete/eteinfo.nsf/068f3801d047f26e85256883006ffa54/4878b7e2fe08ac6d85256883006c452c/$FILE/Full%20Environmental%20Industries%20Assessment%202010.pdf) (accessed February 8, 2011)

²⁷ U.S. Census Bureau, Censstats Database, International Trade Data--NAICS, http://censtats.census.gov/naic3_6/naics3_6.shtml (accessed September 6, 2011)

²⁸ Network of Heads of the European Environment Protection Agencies, 2005. "The Contribution of Good Environmental Regulation to Competitiveness." http://www.eea.europa.eu/about-us/documents/prague_statement/prague_statement-en.pdf (accessed February 8, 2011).

²⁹ International Brotherhood of Boilermakers, *Boilermaker Labor Analysis and Installation Timing*, March 2005, EPA Docket OAR-2003-0053 (docket of the Clean Air Interstate Rule).

³⁰ November 3, 2010 letter from David C. Foerter, Executive Director of the Institute of Clean Air Companies, to Senator Thomas R. Carper (http://www.icac.com/files/public/ICAC_Carper_Response_110310.pdf) (accessed February 8, 2011).

³¹ National Acid Precipitation Assessment Program Report to Congress: An Integrated Assessment, 2005 <http://www.epa.gov/airmarkets/resource/docs/NAPAP.pdf>

these rules because they will dramatically improve public health, they are affordable, and they are technologically achievable. Delay encourages companies to keep cash on the sidelines instead of spending it putting people to work modernizing their facilities. And most importantly, delay means that the public health benefits of reducing harmful pollution are not realized.

Thank you for the opportunity to testify today. I look forward to your questions.

Chairman ISSA. I want to recognize myself for the first 5 minutes.

I will take your opening statement in reverse order. If I understand the nature of every time there is one of these pollutant standards, I just want to understand, you really don't usually do much to the overall facility. It's normally a bolt on some additional cleaning equipment. Isn't that true in this case?

Mr. PERCIASEPE. Yes, but obviously from an engineering perspective, it has to be integrated into the operation of the facility.

Chairman ISSA. That begs the bigger question. Isn't it true that today there is no utility that you can show us that is able to implement this entire standard today? I know there are pieces of it in various places, but no utility is currently able to implement it; isn't that true?

Mr. PERCIASEPE. I don't believe that that is correct. I believe we look at the best performing plants around the country—

Chairman ISSA. But we looked at that, and you looked at each plant and you put together various plants and said, If you do this and this and this, like Frankenstein, you can get one person. But you make the assumption that you can put together the best of all these plants. Some of these plants have different non-combinable operations at the current time; isn't that true?

Mr. PERCIASEPE. I believe that the plants can meet these standards, and some do. But I would like—

Chairman ISSA. Is there any plant that meets this standard today? You said some do.

Mr. PERCIASEPE. I believe they do.

Chairman ISSA. If you would answer for the record of a single plant that meets this standard today, we would be thrilled to hear that. Because we just had an Attorney General, one of 25—24, I'm sorry, who have asked for a delay, as you know, in order to get public comment; but most importantly, have asserted as does—and I'll put it into the record—the Unions for Jobs and the Environment Public Comments, a union—a combined trade union organization who believe that today there are—there is no standard.

Isn't it not uncommon that the EPA believes that a standard will be—compliance for the standard can be achieved within the time parameter and that it might be—and I want to give the benefit of the doubt—it might be that they could achieve it by 2015. Isn't that part of the assumption? Not that it exists today, but if you take all of the analysis, that they could achieve it by 2015?

Mr. PERCIASEPE. The air toxic standards that we are proposing for power plants has to be based on available technology that is currently performing at the level that we are proposing.

Chairman ISSA. Okay. So if you will, for the record, have the EPA deliver us one power plant of, let's just say, a megawatt or above, that uses coal that currently meets the standard, we would appreciate having that for the record. We will hold the record open.

Mr. PERCIASEPE. Thank you.

Chairman ISSA. Now, if we could put back up the pie chart. Earlier we had one of those 24 Attorneys General who said, although he's not a scientist skilled in this area, but that he believed that when it came to the area that would be under this normal regulatory process, which is the mercury, that incredibly small sliver of

pink, that if this standard were only affecting mercury, he believed that a shorter comment period with a great likelihood of achievement was possible.

Do you agree with that, that mercury is not what's driving most of the objections, from what you can tell?

Mr. PERCIASEPE. That is the—that chart is correct, the best I can tell, Mr. Chairman.

Chairman ISSA. Okay. I mean from your analysis, but we couldn't resist using your own figures because they seem compelling.

So isn't it disingenuous, a term we like to use here in Washington more often than maybe we should, but isn't it disingenuous for the EPA to talk endlessly about mercury and its effects, all of which we're very concerned about, when in fact the vast majority of this regulation has to do with particulates and, if not 920 out of 960,000 comments, the vast majority of those comments are about the mercury portion, a portion which is probably achievable well within the time parameter.

Mr. PERCIASEPE. The effects of mercury on children affects their neurological—

Chairman ISSA. No, no, no. My question is very narrow. It's not about the effects of mercury. It's if, in fact, the technology exists today, or can predictably exist in time to meet the 2015 as to mercury, isn't the combining of particulate, normally covered by another part of your authority, a fairly disingenuous use of the benefits? Because the benefits of reducing the mercury and the technology to reduce the mercury appears not to be in widespread conflict. In fact, if this was a mercury-only standard, you might likely have much quicker—much greater support for a much quicker implementation.

Mr. PERCIASEPE. You have to let me try a little bit here to answer that question.

Chairman ISSA. Of course.

Mr. PERCIASEPE. First of all, we can't quantify all those benefits from those neurological impacts on children. Those are not completely quantifiable as we are able to quantify some of the fine-particle co-benefits. And the reason we have co-benefits is because the pollution-control equipment that you would use for mercury, for arsenic, for nickel, chromium, and the acid gases, which are all regulated under the air toxic program, all of which have public health implications—we think having co-benefits is a good thing and that those co-benefits also have substantial public health benefits.

So it is those same pollution-control—it is that same pollution-control equipment that is making those reductions in fine particles. It isn't like we have asked for a separate control for fine particles. These are the controls that will reduce those other emissions.

Chairman ISSA. With that, I recognize the ranking member from Virginia, Mr. Connolly.

Mr. CONNOLLY. Thank you, Mr. Chairman. If you want to continue, I would certainly yield to the chairman.

Chairman ISSA. Very quickly. I just want to run one followup. I thank the gentleman.

As I understand it, roughly 90 percent of the benefits that you're claiming under this regulation would already occur under particu-

late reduction under MACTs; isn't that true? In other words you're double-counting. You have another regulation that would cover 90 percent of this. You're counting 100 percent of the reduction in particulate when, in fact, 90 percent is going to occur—and most of the benefit.

So I guess for the record, would you tell us what that last—the differential between the two standards, that last 10 percent on particulate, what portion of the co-benefit would actually occur? In other words, the numbers for what is the last little fraction of reduction?

Mr. PERCIASEPE. Did you say MACTs?

Chairman ISSA. By the MACTs program. In other words, the amount of reduction here, and the cost, my understanding is that about 90 percent of the particulate reduction under that part of the regulatory authority is already ordered, basically.

Mr. PERCIASEPE. All I can—what I have to answer here is this rule is aimed at reducing the toxic—air toxic emissions. Those air toxic emissions that I mentioned, those metals and acid gases are—associate the same control technologies are used—

Chairman ISSA. No, I understand that. But here's the point. Much of this standard for particulate is below what you say is safe by your own figures. So under NAAQS, when you say you get down to this level, you now have clean air. You've defined "clean" and "safe." And yet in this regulation, you're regulating a standard lower than what you say is necessary. In a nutshell, isn't it true that your regulatory authority ends at the point in which air is safe?

Mr. PERCIASEPE. We are—

Chairman ISSA. Now, wait a second. Your staff is shaking "no" behind you. So if you can answer that you think you have a regulatory authority beneath a threshold which is safe by your own standard, I would like to hear it.

Mr. PERCIASEPE. Two quick points. We are regulating air toxics here, and it's a technology standard that's looking at the best available technology, the maximum available control technology—that's what the MACT stands for—those air toxics. It gets those benefits, it gets those co-benefits of reducing fine-particle pollution which we think is great, and there are health benefits even below the standards.

Chairman ISSA. The ranking member has been very generous. Then why is it you have 15 milligrams per cubic meter per billion, et cetera, et cetera. You have this 15-milligram standard, and yet you're your new standard, you're now setting—that's what you considered safe on one hand. And then you come in below 11.5 milligrams, M3. I can't think in terms of that small, but I agree that particulates, even in these small amounts, are important to look at. But why wouldn't you change your standard, support it with science, change your standard to an amount below 11.5 before regulating before 11.5 and claiming benefits below 11.5? Doesn't it seem like you declared clean as 15, and you're regulating below that and taking credit for cleaner—I'm not a scientist, and I will not claim to have any expertise in this. I can just look and say there is an inconsistency, like a set of books that don't balance, you may not know where the missing money is, but if they don't bal-

ance, you go looking for it. Why not have a standard that is adjusted based on science to match this greater regulatory request you're making?

Mr. PERCIASEPE. We are regulating the air toxics here, the nickel, the arsenic, the mercury, the acid gases. The control technologies that we use—

Chairman ISSA. But you're claiming the benefits from the particulate.

Mr. PERCIASEPE. But those benefits are real. Those benefits will accrue to the American public.

Chairman ISSA. Then why not lower the standard to 11.5 or below, so that you're consistent in what you say you want to reduce the particulate level?

Mr. PERCIASEPE. The National Ambient Air Quality Standard is set under a science process where we have science advisors that advise us on what level is adequate—adequate for the protection of public health. It doesn't mean that there aren't public health benefits below that level, and that's what we are looking at here. These are co-benefits from controlling the air toxics. That is the objective of this particular rulemaking.

Chairman ISSA. Well, it's clear as mud, but I thank you for your efforts. I now recognize the ranking member.

Mr. CONNOLLY. I thank the chair. Mr. Perciaspe.

Mr. PERCIASEPE. Perciaspe.

Mr. CONNOLLY. I'm sorry, Perciaspe.

The chairman asked you the question of whether any coal-fired power plants in the United States could possibly be compliant with the proposed new rule. I have a list in front of me of existing coal-fired power plants—it's a partial list—that are already fully compliant with EPA's proposed rule, including four in my native State of Virginia. Despite the testimony of the previous witness that nobody in Virginia could be compliant, I have got four coal-fired power plants that are fully compliant today. Are you aware of this list?

Mr. PERCIASEPE. I know there are some that are in compliance with the rules. I just don't—

Mr. CONNOLLY. I would ask, without objection, this list be entered—

Mr. PERCIASEPE. I do know there is a new one under construction in your State at Virginia City.

Mr. CONNOLLY. Mr. Chairman, I'd ask unanimous consent that, to the extent it exists, it be provided for the record.

Mr. GOWDY. [presiding.] Without objection.

Mr. CONNOLLY. I thank the chair.

Is it not also true that nearly 60 percent of all coal-fired power plants that report emissions to EPA are compliant currently with EPA's proposed limit for mercury?

Mr. PERCIASEPE. I don't know the exact number. Perhaps my staff behind me have an exact number.

Mr. CONNOLLY. Again, I would ask that this be entered into the record.

Mr. PERCIASEPE. To be clear, we can't base the standard on something that hasn't been met by an existing—

Mr. CONNOLLY. Correct. My point in asking you this question is that this notion that the hobnail-booted government is going to de-

stroy industry and consumers and cut off the source of electricity in the United States is a false premise, given the fact that 60 percent are already compliant on the mercury standard. Is it not further true that 73 percent of all reporting units are already compliant with the proposed limit for HCl?

Mr. PERCIASEPE. It's likely.

Mr. CONNOLLY. I would ask that be entered into the record, too.

Mr. CONNOLLY. And almost 70 percent of all units comply with the EPA'S proposed limit for PM, particulate matter?

Mr. PERCIASEPE. True.

Mr. CONNOLLY. So what we're trying to do is make at the margin an improvement for those not compliant, some of which, as we already heard in previous testimony, are all the plants that are probably on the chopping block anyhow, and would serve both consumers and the breathing public if they sort of used this occasion to perhaps move on.

We also heard from the chairman concerns about, well, why didn't you just take a lower level? Didn't the previous administration try that tack, and wasn't there a court ruling that it was—it required more rigorous enforcement?

Mr. PERCIASEPE. On fine particles? I think it was on ozone that there might have been a court ruling or court activity, but I don't know about fine particles. The bottom line is that there are health benefits, you're talking about this rule?

Mr. CONNOLLY. Yes, this rule.

Mr. PERCIASEPE. Yes. The previous administration—first of all, there's a 20-year——

Mr. CONNOLLY. Please finish your sentence.

Mr. PERCIASEPE. There is a 20-year history here.

Mr. CONNOLLY. You were about to say, "The previous administration"——

Mr. PERCIASEPE. The previous administration proposed controls for mercury in 2004.

Mr. CONNOLLY. And what did a court of law——

Mr. PERCIASEPE. The court threw those out because they did not comply.

Mr. CONNOLLY. Yes,, that is the answer to the chairman's question. Why are you doing this? It is not unique to the Obama administration. The previous administration tried doing what the chairman suggested: Why not just settle for a lower level? And a court of law said "not good enough," and it told EPA in a court suit, you have to come up with new regulations that are tougher than that; is that not correct?

Mr. PERCIASEPE. The court said that the—yes, that's correct.

Mr. CONNOLLY. Yes.

Mr. PERCIASEPE. It had to be regulated under a different part of the Clean Air.

Mr. CONNOLLY. Thank you. So that's the answer to why you are doing what you are doing today. A court told you you had to. And throughout the Bush administration attempt to look to have a lower standard.

It isn't because you just in some lab somewhere decided to just be a pain in everyone's side by coming up with tough, hard-to-reach

regulations, and as the data shows, they aren't, since the majority of units reporting already meet one or more of the regulations.

Was this standard on toxic pollutants envisioned or incorporated in the 1990 Clean Air Act amendments?

Mr. PERCIASEPE. Yes.

Mr. CONNOLLY. Why did it take 21 years, then, to implement the law passed in 1990, signed into law by a Republican President?

Mr. PERCIASEPE. Well, it's hard to imagine that it has taken 21 years to get to this particular point, which obviously flies in the face that we're going too fast. It has been looked at numerous times by EPA. There have been proposed regulations that were not properly completed. And we are in the situation now in this administration of having to be guided by the judicial branch toward the end that we are now aiming at.

Mr. CONNOLLY. Thank you, Mr. Perciasepe. Thank you, Mr. Chairman.

Mr. GOWDY. I thank the gentleman.

Social studies was a long time ago for me, civics. I'm familiar with the legislative branch, I'm familiar with the executive branch, and even occasional executive branch overreach. "Sue and settle" was new to me until I got here. Does EPA ever encourage groups to sue them?

Mr. PERCIASEPE. No. In fact, usually we get sued when we're not doing what Congress asks us to do, and that usually is what results in us getting on a schedule that's different than the schedule that Congress set.

Mr. GOWDY. So you never invite lawsuits?

Mr. PERCIASEPE. No.

Mr. GOWDY. And there would never be anything to indicate that you had suggested that someone sue? A friendly lawsuit, shall we say?

Mr. PERCIASEPE. No.

Mr. GOWDY. Never?

Mr. PERCIASEPE. Not that I know of.

Mr. GOWDY. What is so talismanic about December 2011?

Mr. PERCIASEPE. Twenty-one years waiting, health benefits denied, the—

Mr. GOWDY. If we waited 21 years and we have almost a million comments, wouldn't you think we ought to wait maybe 22 so we can fully digest all 1 million comments?

Mr. PERCIASEPE. It might be good to say something about those million comments since they've come up, if you would appreciate that. Of those million comments, 960,000, the vast majority are in favor of the rule. And of those million comments, as you know, as some people have systems that they can reply, only about 22,000 are unique as opposed to duplicates of comments.

Mr. GOWDY. Well, 22,000 is still a lot. It's not a million. Twenty-two thousand seems like a lot to digest between now and Christmas.

Mr. PERCIASEPE. It is a lot, but it's not between now and Christmas. Again, we've been working on this rule for a long time. The comment period, we left the comment period open longer than we normally do so that we would—we expected to get a lot of comments.

Mr. GOWDY. Have you asked the court for more time?

Mr. PERCIASEPE. Pardon?

Mr. GOWDY. Have you asked the court for more time?

This is a court decree, I assume.

Mr. PERCIASEPE. That's correct.

Mr. GOWDY. A judgment?

Mr. PERCIASEPE. And we recently asked the court for another 30 days to finish the work. We have read every one of those comments, and we will be replying to every one of those comments in the Response to Comments document that we are currently working on. We knew that we would get a lot of comments, because we left the comment period open longer than we normally do, and therefore we put the staff to task that we would need to be able to review those comments.

Mr. GOWDY. Did you have an opportunity to listen or watch the President's joint address to Congress several weeks ago?

Mr. PERCIASEPE. I did.

Mr. GOWDY. He mentioned regulations and he mentioned some that are having a deleterious, pernicious effect on industry. Then he said we should have no more regulation than is necessary for the health, safety, and security of the American people. I think he's identified 500 that—at least 500 that can be done away with.

It strikes me as curious—let me ask before I say it strikes me as curious. Are you arguing that the imposition of this regulation is actually going to create jobs?

Mr. PERCIASEPE. We believe that construction jobs and then the operation and maintenance jobs will be a net positive in this sector.

Mr. GOWDY. How many coal jobs do you think will be lost?

Mr. PERCIASEPE. You know, we expect—you know, one of the things you have to realize, we're investing in—we, the country, not me, EPA—we are investing with this rule in coal-fired power plants. We are going to make a major capital investment—

Mr. GOWDY. I probably didn't ask my question artfully. How many coal jobs do you think we'll lose? You think we're going to add some construction jobs. How many jobs will be lost? Because neither one of us are naive enough to believe there aren't going to be jobs lost.

Mr. PERCIASEPE. I expect that the amount of coal that is used will be roughly flat. The plants that we will invest in here, which will be many—

Mr. GOWDY. What analysis—

Mr. PERCIASEPE. —will then look in the fact that we're going to be using coal for many, many years.

Mr. GOWDY. What analysis did EPA do with respect to job loss?

Mr. PERCIASEPE. We have a range that we've identified; 9,000 permanent job gains is in the middle of the range. There are some that go just slightly below zero—

Mr. GOWDY. I am just asking about job loss. I haven't gotten a jobs gain. What analysis did EPA do about job loss?

Mr. PERCIASEPE. Best estimate of the net gain is 9,000.

Mr. GOWDY. So EPA did factor in the losses to the coal industry and others?

Mr. PERCIASEPE. Yes.

Mr. GOWDY. Okay. My time's up, sorry. We want to thank you on behalf of Mr. Connolly and myself. Give me one second.

Thank you, and we will be briefly in recess as the third panel approaches.

Mr. PERCIASEPE. We will provide the information, as I suggested to the chairman, in followup. And, of course, every question that you all have we'll follow up with as quickly as possible. Thank you for your time and I appreciate the questions.

Mr. GOWDY. Very well, thank you.

We will be in recess for 5 minutes.

[Recess.]

Chairman ISSA. [Presiding.] The hearing will now reconvene. We now welcome Mr. Josh Bivens, he's an economist at the Economic Policy Institute. Mr. Bivens, I noticed that you were here for the previous panel, so you recognize that pursuant to our rules all witnesses are sworn. Would you please rise to take the oath. Raise your right hand.

Do you solemnly swear or affirm that the testimony you are to give will be the truth, the whole truth, and nothing but the truth?

Once again, let the record reflect the witness answered in the affirmative. And once again, the witness is recognized for 5 minutes for his opening statement.

**STATEMENT OF JOSH BIVENS, PH.D., ECONOMIST, ECONOMIC
POLICY INSTITUTE**

Dr. BIVENS. I thank the committee for the invitation to testify today. My name is Josh Bivens. I'm an economist at the Economic Policy Institute in Washington, D.C.

My professional, peer-reviewed research standard for the ratio of benefits to costs of the EPA's air toxics rule are very large. But somewhere along the way the debate moved on to the grounds of job creation, which is a little odd, because regulatory changes just aren't big drivers of job growth.

But in my testimony, and especially in my written testimony, I sketch out how regulatory change in general and the air toxics rule specifically can affect job creation and unemployment. I conclude that the air toxics rule, like almost all related regulatory changes, will have trivial effects on job growth over the longer run, but that over the next couple of years, particularly if the unemployment rate remains high, the rule will actually on net create jobs and lower the unemployment rate.

Further, it's precisely because the unemployment rate is high today that the rule, as implemented, as planned, would have clearly positive impacts on job creation. So in short, calls to delay implementation of the rule based on vague appeals to wider economic weakness, have the case entirely backward. There is no better time than now, from a job creation perspective, to move forward with these rules.

My research which I summarize in my written testimony indicates the adoption of the air toxics rule would lead to the net creation of about 28,000 to 158,000 jobs between now and 2015. The primary economic impact of these rules will be in significantly boosting health and quality of life, leading to benefits that are at least five to ten times larger than the cost. But since we are here

to talk about jobs, or at least that's why I've been asked here today is to talk about jobs, let me just say a couple of words on it.

The job impacts of regulatory changes depend on the wider macroeconomic context. When the economy is functioning well, job impacts from regulatory changes are going to be quite small for two main reasons. The most important reason is just that in a well-functioning economy, the Federal Reserve can neutralize any boost or drag on overall employment growth that may result from regulatory changes through their conventional monetary policy measures. They can raise or lower short-term interest rates.

We may criticize the specific targets that the Fed adopts at given times. But in a well-functioning economy they will be able to hit these targets. Moreover, the direct first-round impact of regulatory change on employment growth are going to be modest anyway, because they carry offsetting influences. So the Fed won't even have to do that much to counterbalance them: On the one hand, employment, because of regulatory changes, boosted because of the extra investments needed to bring producers into compliance, so power plants, purchasing and installing scrubbers; on the other hand, a rise in the price level of energy because of the regulatory change may be transmitted to the overall economy by causing a slight rise in overall prices, and this may cause a reduction in spending.

But it is clear that the first-round impacts, before the Federal Reserve decides to neutralize them, of regulatory change are indeterminate. It's important to note that even regulations that have large measured compliance costs are no more likely to lead to job losses than those with smaller compliance costs. Compliance costs go on both sides of the job creation ledger. They represent both the scales, investments needed to bring firms into compliance, and they represent sort of the potential increase in prices that may result from them.

When the economy is not functioning well, especially at a time like today when unemployment is high, even as the short-term policy interest rate controlled by the Fed sits at zero, this analysis changes. The most important way it changes is that the Fed can no longer neutralize any effect of regulatory changes on employment growth. So instead of the Fed counterbalancing any change, these changes are actually likely to have multiplier effects so they will ripple through the economy.

The briefing paper that my written testimony is based on assesses the positive and negative first-round effects as well as the effect of the likely multipliers to the economy. And it comes to the finding that positive effects dominate. I just want to point out quickly that estimates are awfully conservative. Basically they are conservative because the only real adjustment to the results I make is the assumption that the Fed can't or won't lean against whatever happens to employment because of regulatory changes. But actually there's plenty of reason to think that there will be very little scope for the overall price level to actually rise, given how much slack demand is in the economy today. Basically the idea that the capacity utilization rate of utilities is at the lowest rate on record, that regulatory changes will lead to large price spikes, is a very hard thing to believe.

And second, when you have economies with high rates of unemployment, chronic excess supply, they often see rapid disinflation. That's what the U.S. economy is seeing, basically since what we now call the "Great Recession" started. And this disinflation actually leads to real interest rates rising, even while the Federal Reserve is trying to keep them down, and this provides a break on economic growth. So even if the price increase and the power generating sector is passed on to the overall general price level, this will actually arrest the upper pressure on real interest rates and this would be as likely as not to be positive for overall demand. I don't include this latter consideration an effect in my paper.

So in short, I think my estimates of the likely job impacts of the air toxics rule by 2015 actually allow the widest scope possible for the negative impacts to run free. So I think they are very conservative.

To conclude, I want to be clear, this is not a major jobs program. It's something that should be done because it will help Americans' health, but it will not reduce job growth.

[Prepared statement of Dr. Bivens follows:]

Regulatory changes and employment, focusing on the “toxics rule”

Testimony before the U.S. House of Representatives Committee on Oversight and Government Reform, for a hearing on “Lights Out II: Should the EPA Take a Step Back to Fully Consider Utility MACT’s Impact on Job Creation?”

November 1, 2011

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I thank the House Committee on Oversight and Government Reform, especially Chairman Issa and Ranking Member Cummings, for the invitation to testify today on the topic of the Environmental Protection Agency's (EPA) proposed rules governing the emission of mercury, arsenic and other toxic air pollution from power plants, which I'll refer to henceforth as the "toxics rule".

I am Josh Bivens, an economist at the Economic Policy Institute in Washington, DC. For the kind of professional, peer-reviewed cost/benefit analysis that *should be* the clear criterion upon which judgments about the toxics rule – and all other proposed regulatory changes – are made, I'm at best just one in a long list of economists that could be testifying in front of your committee. Further, it's not just modesty that compels me to say that for this sort of cost/benefit analysis, there are plenty of economists and other experts that could be even better choices.

However, the debate over the toxics rule has often become a debate about jobs – and this is partly understandable, given that far too many Americans remain jobless nearly four years after the bursting housing bubble led to what is now known as the Great Recession – the steepest and longest economic contraction we've seen since the Great Depression.

This entangling of the debate regarding the toxics rule with the current crisis of joblessness is why I began writing about this rule – because on the topic of job-creation and economic performance, I actually am an expert. I know what does and what does not materially affect unemployment and employment growth in the U.S. economy; and regulatory change is something that generally does *not* affect these. Put simply, what drives changes in the unemployment rate is just the macroeconomic performance of the economy. So unless one can tie a given regulatory change to a major shift in macroeconomic performance, it will be very hard indeed to say that the change has any major effect on unemployment.

In my testimony, which draws heavily on a Briefing Paper that I authored for EPI, I will sketch out how regulatory change in general, and the air toxics rule specifically, can impact unemployment. I conclude that the air toxics rule – like almost all related regulatory changes – can have only trivial effects on job-growth over the longer-run, and that in the shorter- run (over the next couple of years – particularly if the unemployment rate remains high) its effects on unemployment will be clearly ameliorative (if modest). In fact, it is *precisely because* the economy has so much unused capacity today that the impact of the air toxics rule, if implemented as planned, would have positive impacts on job-creation and would lead to a lower unemployment rate. In short, calls to delay implementation of the rule based on vague appeals to wider economic weakness have the case entirely backward – there is no better time than now, from a job-creation perspective, to move forward with these rules.

The major findings of my research on the employment effects of the toxics rule are as follows:

- The rule will have a modest positive net impact on overall employment, likely leading to the creation of 28,000 to 158,000 jobs between now and 2015.
- This net job impact is the result of "cross-cutting" effects. In other words, higher energy prices are likely to lead to small increases in industry costs, which will lead to small reductions in final demand for their output and hence small reductions in labor demand.

These depressing effects, however, are swamped by the job growth spurred by new investments in pollution abatement and control (PAC) and induced spending as well as small increases within the utility sector itself. Furthermore, this net gain is amplified through re-spending effects as those who gain jobs increase their consumption thereby generating jobs throughout the economy. More specifically:

- Between 17,000 jobs would be lost and 35,000 jobs would be gained in the utility industry itself.
- Between 81,000 and 101,000 PAC jobs would be created.
- Between 31,000 and 46,000 jobs would be lost due to higher energy prices leading to reductions in output.
- Assuming a re-spending multiplier of .5, and since the net impact of the above impacts is positive, another 9,000 to 53,000 jobs would be created through responding.

Again, the clearest take-away point from the EPA's regulatory impact analysis (RIA) and other analyses of pollution standards is that the *primary* economic impact these rules will have is on health and quality-of-life outcomes. The improvements to health and quality-of-life stemming from the proposed rule changes would be very large and make the regulatory change worthy of support in and of itself. Specifically, the EPA estimates (based on the state-of-the-art research) that adoption of the proposed rule would:

- lead to 6,800 to 17,000 lives saved (which the EPA describes as "avoiding premature mortality");
- lead to 11,000 fewer heart attacks;
- lead to 12,200 fewer hospital and emergency room visits;
- lead to 225,000 fewer cases of respiratory symptoms; and
- lead to 850,000 more work days (because workers are healthier).

The 'monetized' value of these and certain other health benefits would amount to \$55-146 billion per year, dramatically exceeding the \$11.3 billion annual cost of the program (figures in 2010 dollars).¹

Again, it is these substantial benefits to health and quality of life that should be the main criterion for judging the worth of passing the toxics rule. But, since we're here today to talk about jobs – I will pivot for the rest of the report to this.

Overview of how economists think about regulatory changes and employment

Given that regulations are often reflexively opposed on the grounds that they inevitably lead to job loss (generally, very large job-losses are implied), and given as well that huge damage inflicted by the Great Recession remains very much with us even two-plus years after its end, insecurity over jobs remains front-and-center in American political debates. Hence, it is useful to take a rigorous and comprehensive look at how these regulatory changes are likely to affect job-creation and unemployment. Again, it should be noted that this briefing paper assesses the job impacts of the economic projections provided by the EPA in their rigorous RIA. If their estimates

¹ In the EPA RIA these numbers are expressed in 2007 dollars – the monetized benefits in those units are between \$53 and \$140 billion while the costs are \$10.9 billion.

of key economic parameters (the number of coal plant retirements, the price impacts of regulation, or the amount of capital spending induced by the rule) are changed, the job impacts in this analysis would change as well. That said, past research (see Shapiro and Irons (2011), for example) shows that EPA estimates of the costs of regulations tend to, if anything, generally be too pessimistic about how difficult they will be for businesses to comply with.

It should also be noted at the outset that the job impacts of regulatory changes are very different depending both on the time-horizon examined as well as the macroeconomic context. Below, the differing employment effects that occur over these different time-horizons and macroeconomic contexts are sketched out.

Employment over the long-run in well-functioning economies

In the long-run and during times when the economy is functioning well, the job impacts from these regulations would likely to be quite small, for two main reasons.

In the long-run, industries have time to adjust inputs to reflect changing relative prices (say, substituting more capital and labor for energy inputs as regulatory changes make energy more expensive), and job *losses* in energy-intensive industries that see demand for their output fall due to rising energy prices will be substantially counter-balanced by job *gains* in industries that are not energy-intensive and that benefit from the changed consumption patterns induced by the regulatory change.

Furthermore, in a well-functioning economy any depressing effect on aggregate demand stemming from regulatory changes (declines in consumers' purchasing power driven by increased energy prices, for example) can be offset with other macroeconomic policy levers—reducing interest rates to spur business investment, for example.

Hence, in the long-run in a well-functioning economy, it is accurate to say that there are *no aggregate job losses at all* stemming from regulatory actions like the toxics rule. Instead, because regulations may slightly raise the price of energy and this cuts the purchasing power of workers' wages, there may be very small voluntary reductions in hours supplied to the labor market by American workers. By all accounts, however, the price increase spurred by the toxics rule as well as the labor-supply response stemming from them will be vanishingly small.

The fact that there are no *aggregate* job-losses does not mean, of course, that each and every industry escapes job losses. Some industries will see job losses (energy-producing and heavily energy-using industries) and some will see job gains (light energy-using industries and some that provide alternative sources of energy-generation that do not emit the regulated toxics). The degree to which job-losing industries should be aided with complementary policies is an important question, but it should remain clear that in the long-run regulatory action like the toxics rule does not lead to overall involuntary job loss.

Employment effects in the short-run in economies with excess capacity

The analysis is very different in the short-run, especially a short-run characterized by chronic excess capacity and historically high rates of unemployment. Under these conditions, the job impacts of regulatory changes can be substantial.

On the negative side, any depressing effect these regulatory changes have on aggregate demand are harder to counter-balance with traditional macroeconomic policy levers (for example, the “policy” interest rates controlled by the Federal Reserve are sitting essentially at zero today, so lowering these is not a viable option – though fiscal stimulus could still be used to counter-balance any declines in demand stemming from regulatory changes), and job losses in energy-intensive industries are not likely to be recouped quickly through job gains in less energy-intensive sectors. In fact, these job losses may well just be amplified through multiplier effects.

On the positive side, capital investments made in order to bring power plants into compliance with new rules also spur multiplier effects, and may well represent net new spending in an economy where both businesses and households are extremely reluctant to make new purchases.

Given the actual context in the U.S. economy today as these rules are being debated, this briefing paper mostly focuses on the short-run impacts of regulatory change occurring in an economy with chronic excess capacity. Furthermore, economists and policymakers should be mindful of a key lesson of both the Great Recession but also the Japanese lost decade of the 1990s: while in theory it is easy to imagine ways to keep aggregate demand shortfalls from being problematic for economies, in practice this demand-management might be considerably harder. Given these historical episodes and given academic research on the positive externality benefits of spurs to aggregate demand, economists and policy makers should not be too quick in assuming a long-run horizon where problems of excess capacity have been solved.

The role of complementary policies

Another issue that is made even more salient by today’s context of high rates of joblessness and economic under-performance is the role of complementary policies to aid the adjustments that will be needed should the proposed rule become law.

Some industries will see job losses (even as overall job changes are positive), and workers will need to find alternative employment in a very tough labor market. Complementary policies should cushion the amount of industry loss and help those workers who must change jobs. Most importantly, complementary policies that help to achieve both the explicit goals of the regulation (reduced emissions from power plants) as well as minimizing the labor-market adjustments needed should be front and center in the policy debate.

The specific impact of the air toxics rule

In this section, we quickly sketch out the different channels that are relevant to the debate over the effect of the proposed toxics-rule regulation and jobs given the context of a U.S. economy still facing clear shortfalls in aggregate demand. We would note that an analysis that attempts to capture the incremental employment effects stemming from the proposed rule through all of these channels has not yet, to our knowledge, been undertaken. As mentioned before (and documented below), the EPA technical analysis released with the proposed rule quantified the employment implications of some channels of the rule, but was far from exhaustive. And other studies (see Heintz et al. (2010), for example) have looked at the likely activities of the utility sector in light of a set of assumptions regarding the combined effects of the final toxics rule as well as other regulations, but have not isolated the incremental job-effects of the toxics rule

alone, apart from other regulatory changes and (importantly) apart from the presumed baseline path of employment and investment in the utility sector. This paper aims to quantify solely the incremental employment changes to be expected from adoption of the proposed toxics rule.

The channels that link the proposed rule-change to employment changes are as follows:

Impact on directly-regulated utilities themselves

The most obvious effect of regulations is on the industries that are directly regulated. In the case of the toxics-rule, this means utilities. The toxics rule RIA provides a very good assessment of the likely employment effects of the rule on the utilities themselves, following the approach of Morgenstern, Pizer, and Shih (MPS, 2002), which provided an empirically rigorous examination of the employment effects of regulation on four industries (none of them utilities). MPS identify three separate channels through which regulatory change can impact an industry that is being directly regulated:

-***The output effect.*** This is simply the reduction in demand for industries' output that can occur if regulatory changes raise the price of this output.

-***The cost effect.*** The cost-effect reflects the fact that if production costs rise due to regulatory change, more inputs (including labor) are needed to produce the same amount of output.

-***The factor-shift effect.*** The factor-shift effect reflects the fact that environmental activities *within* a given sector may be more labor intensive than conventional production.

The toxics rule RIA essentially uses the overall averages from the MPS (2002) study to estimate the likely impact on employment in the utilities sector. While none of the four industries studied by MPS (2002) are utilities, there is still a strong case to be made that the study's results can provide a useful benchmark and, if anything, actually paint a too-pessimistic picture in regards to the likely impact of regulations on job trends in the utility sector.

This is because the average output effect measured for the industries studied by MPS (2002) is likely to be far larger (in the negative direction) than that faced by the utility sector, for two reasons.

First, the price elasticity of demand for utility sector output is much lower (by a factor of four) than that facing three of the four industries examined in MPS (2002). This means that a change in the prices of the output of the utility industry has much less effect on demand for its output (and consequently on employment) than do changes in prices of the products of the other industries.

Second, the utility sector is much less exposed to international competition than the four industries examined by MPS (2002). The relevant elasticities and import shares are displayed in the table below, drawn from my briefing paper.

TABLE 1					
Price elasticities of demand and import shares, utilities vs. Morgenstern et al. industries					
	Utilities	Pulp and paper	Plastics	Steel	Petroleum
Elasticity	-0.16	-0.698	-0.987	-0.953	-0.071
Import share of domestic consumption	0.5%	33.2%	15.3%	22.1%	10.0%

SOURCE: Morgenstern, Ploet, and Shih (2002) and Ho, Morgenstern, and Shih (2006).

Given that the output effect is by far the largest negative contributor to employment growth in the directly regulated industries studied by MPS (2002), and given that this effect is sure to be much smaller for the utility sector than for the average of the industries they studied, it seems clear that the MPS (2002) results are likely to be quite pessimistic in regards to the jobs impact of the proposed toxics rule.

Impact on the environmental protection (EP) sector

Meeting the new standards will, according to the EPA RIA, lead to substantial investments in pollution abatement and control (PAC) – and these investments will spur output in what Bezdek, Wendling, and DiPerna (2008) call the “environmental protection” (EP) sector of the economy. For example, utilities are forecast to purchase and install scrubbers and filters and other equipment meant to capture pollutants before they are released into the atmosphere. These PAC investments will lead to job-growth – scrubbers must be manufactured and installed.

It is important to note as well that a given amount of final demand in the EP sector does not just create jobs *within* that sector; it also creates jobs in industries that *supply* this sector. For example, if steel is a key intermediate good used in the production of scrubbers, then increased demand for scrubbers will lead to employment gains in the steel sector as well.

The toxics rule RIA assumes that utilities will respond to the new standards in part by undertaking significant investments in PAC construction and installation. While investments made by firms as a result of tougher environmental standards are often thrown under the rubric of “compliance costs,” it is important to realize that these are *not* simply foregone economic activity, but instead are largely a *re-orientation* of activity.² In short, spending on goods and services that are needed to reduce pollution is an activity every bit as capable of creating jobs as spending on anything else.

The RIA forecasts that \$8 billion will be spent in the construction and installation of PAC equipment between now and 2015 as a result of the proposed rules. The RIA further estimates that this \$8 billion results in roughly 31,000 job-years supported directly in the EP sector. A technical supporting document (TSD) to the RIA breaks out these jobs and allocates them to

2 While there are portions of the social costs identified in the RIA that are indeed purely foregone economic activity, costs dedicated to purchase of PAC equipment are not part of them.

installation of pollution control equipment and jobs spurred by the need to hire operators and materials used in the PAC processes. Table 3 replicates their job break-outs below.

TABLE 3	
Employment effects using the environmental sector approach	
Jobs associated with PAC construction and installation	Number of jobs
Construction jobs	30,440
Steel jobs	430
Subtotal	30,870
Jobs associated with new operational needs	Number of jobs
Increased resource use ⁽¹⁾	5,230
Increased operational needs ⁽²⁾	5,500
Subtotal	10,730
Total	41,600

(1) These jobs are supplier jobs.
 (2) These jobs are probably already estimated in the "effects on directly regulated industry" methodology following Morgenstern et al. (2002).
 SOURCE: EPA (2013a).

On balance, the toxics rule technical supporting document likely undercounts EP jobs

The EPA's analysis of the jobs generated by the toxics rule is likely actually too conservative, leading to an undercount of the employment generated by these EP investments, for two reasons.

First, the implied direct job-multiplier of one job-year created for every \$259,000 in spending seems low when compared to other data sources. When data sources like the employment requirements matrix (ERM) of the Bureau of Labor Statistics (BLS) or the Census of Construction are consulted, one gets a much higher direct job-multiplier (between roughly one job per \$134,000 to \$158,000; see Table 3).

Second, the RIA identifies only the jobs *directly* related to the construction and installation of PAC equipment—mostly missing in this analysis are the jobs supported by final demand for the construction and installation of PAC equipment in *supplier* industries, like those that manufacture the PAC components that are installed. The toxics rule RIA *does* show jobs supported in the steel industry stemming from PAC construction and installation, but these jobs are likely far too small a fraction of the direct jobs to fully reflect the impact of increased PAC construction and installation on supplier industries.

To get a rough sense of how many supplier jobs are being missed in the toxics rule RIA, one can consult the BLS ERM and examine the employment vector in the overall construction industry associated with each \$1 million in final demand in that sector. The construction vector in the ERM indicates that each \$1 million is associated with roughly 11 jobs in the overall economy, with just fewer than seven of these jobs being accounted for directly in construction. This means that four of the 11 overall jobs (or about 37% of the total) associated with each \$1 million in construction spending is actually a supplier job. Of the supplier jobs associated with a given level of spending in the overall construction sector, over a *quarter* come from the manufacturing sector.

In short, the toxics rule RIA, by not accounting fully for supplier jobs supported by spending on installation and construction of PAC equipment, could well be undercounting jobs through this

channel by almost 40%, and manufacturing jobs are some of the most significantly undercounted jobs. Counting the steel jobs alone does not nearly give one a good order of magnitude of the supplier jobs supported through the construction and installation of PAC equipment.

A more complete number on PAC investments and jobs

The safest method to use to estimate the number of jobs (including both direct and supplier jobs) that are supported by a given amount of spending on PAC construction and installation is to use the BLS ERM and plug-in the forecasted amount of induced PAC investment as the input. This approach will be the preferred estimate used in this paper for identifying the overall job effects; this approach indicates that 91,000 jobs (56,000 direct and 35,000 indirect) are created through the \$8 billion in PAC spending by 2015, at a per job cost of \$87,000.

Is counting job gains stemming from compliance costs like the “broken windows” fallacy?

Often in regulatory debates, counting jobs gained through business spending meant to meet new regulatory standards is subject to the accusation that this calculation is an example of the “broken windows” fallacy. This alleged fallacy is the notion that replacing a shopkeeper’s window that has been broken by a stray baseball does not generate net new productive employment because the money spent to replace the broken window would have been spent somewhere else (and more productively) had it not been necessary to make the repair – and this foregone spending is destroying jobs as surely as replacing the broken window creates them.

The “broken windows” fallacy is useful to remind policymakers that each use of resources has opportunity costs that must be kept in mind when making cost/benefit analyses, but it surely does not say that the jobs gained through investments made to meet regulatory standards can never constitute net new additions to overall employment. There are essentially two ways that such induced capital compliance costs can spur net new job growth.

The first way—and the way most relevant to today’s debate—is if these compliance costs mobilize currently idle financial savings into productive investment flows. This seems extremely likely in today’s economy. For one, U.S. corporations sit on massive amounts of liquid cash-holdings that are not being mobilized to finance job-creating investments. For another, the economic channel that is supposed to mobilize these cash holdings into investment is declines in interest rates—yet these rates sit at historic lows today with little prospect that they can be pushed lower through regulatory inaction that will spur non-compliance investments. In the jargon, the U.S. economy is in a liquidity trap that keeps financial savings from being channeled into job-creating investments. Regulatory changes that mobilize this financial savings will indeed create jobs in this economic situation.

Second, even in a well-functioning economy, it is far from clear that the investments undertaken in the name of meeting new regulatory standards cannot add to total employment *even if the financial resources that financed them would have spent elsewhere*. If the construction and installation of PAC equipment, for example, is significantly more labor intensive than the same amount of spending deployed in alternative economic activities, for example, then even just switching from these other activities to PAC investments would yield an increase in labor demand. This scenario actually seems quite likely, especially when one considers the likely alternative uses of the financial resources used to undertake these investments.

Remember, the economic mechanism that channels financial savings into productive investments is interest rate changes. So, if not spending \$8 billion on PAC construction and installation boosts financial savings of utilities by this amount, and if the economy is functioning well and seamlessly translates this money into alternative job-creating investments, it will do so by lowering interest rates. This means that the alternative job-creating investments will take place in *interest-sensitive* industries. Interest-sensitive industries are essentially construction or durable goods manufacturing. Since the PAC investments are largely construction, and typically labor-intensive forms of construction at that, it is hard to see why alternative ways of spending this \$8 billion would obviously lead to more jobs created through increased non-PAC construction spending. Durable goods manufacturing, additionally, is some of the least labor-intensive production in the entire economy, so spending directed there as an alternative to PAC construction and installation is very unlikely to prove a better job creator.

Given the large amounts of excess capacity and the failure of interest rates to mediate the savings and investments relationships in the U.S. economy today, it seems very likely that the investments mobilized through the need to meet the new proposed standards would represent a nearly pure net new addition to economy-wide employment. And even if these investments happened in an already well-functioning economy, there is still little reason to believe that they would be anything but a plus to job creation.

It should be noted that this macroeconomic reasoning carries through to the utilities sector as well. Even if the utilities sector had concrete plans to spend the \$8 billion that will now have to be dedicated to compliance costs on some other investment project, today's historically low interest rates mean that they are free to do both at minimal cost. Furthermore, as most analysts agree that the financial health of the utilities sector is even more connected to interest rates than most (because of their significant infrastructure needs, utilities tend to have high debt load and benefit greatly from low interest rates), it is hard to imagine that the utilities sector is currently more cash-constrained than the overall corporate sector today.

Impact on energy-using industries

If the proposed rules lead to increases in the price of energy, industries that are intensive *users* of energy could see noticeable increases in their own production costs. These price increases could lead to reduced demand for their output, harming employment in these sectors.

The RIA estimated that the new toxics standards would raise prices of electricity by 3.7% and overall energy prices by 0.8%. To estimate the effect on demand for industrial output (and then employment) in energy-using sectors, one only needs an estimate of each industry's energy intensity (the share of energy costs in total production costs) and an estimate of the elasticity of demand for final output. As energy prices rise, one can assume that overall costs in a sector rise in proportion to energy's share of total costs. Then, the increase in total costs can be multiplied by the elasticity of demand for final output to yield the output losses in each industry stemming from rising energy prices.

A study by Ho, Morgenstern and Shih (HMS, 2007) provides the parameters needed to make this calculation. It is a little unclear whether to use the parameter for total energy price increases (0.8%) or electricity only (3.7%) to calculate the output effects of rising prices. If one assumes

that it is relatively easy to change energy sources for an energy-intensive industry, even in the very short-run, then overall energy prices should be used. If one does not assume this, then the larger electricity price increases should be used. Doing it both ways, this study finds that the total job loss stemming from lost output in energy-using industries is 31,000 using the overall energy price increase and 46,000 using the electricity-only price increases.

It is important to realize, however, that much of the discussion regarding economic counter-factuals that informed our estimates of jobs gained through PAC construction and installation (i.e., concerns over the “broken windows” fallacy) apply to the jobs displaced by rising energy prices, but in reverse. This means that while demand for industrial output falls as the price of this output rises in response to rising energy prices, in the longer-run and in a better-functioning economy, much of this decline in demand can (and would) be neutralized by using other macroeconomic policy tools: lowering policy interest rates to spur business investment, for example. In short, if one decided that it was utterly inappropriate to look at short-run employment gains that might be counter-balanced by larger macroeconomic policy levers, then it must also be inappropriate to examine short-run employment losses that could also be so counter-balanced.

Impact stemming from re-spending effects of net job creation outcomes from other channels

The net impact of the previous channels will, given the vast amounts of unused capacity in today's U.S. economy, be amplified by “re-spending” effects. As workers are, on net, either hired or displaced through the channels sketched out previously, this will either increase or decrease overall purchasing power in the economy and this initial change in spending will be subject to a re-spending “multiplier” as it ripples through the economy. So, if net job creation stemming from the other channels is positive, then newly-hired workers will buy more food and clothes and other goods and their spending will add to incomes in these other sectors. If the net job-creation from other channels is negative, the reduced spending on food and clothes and other goods will subtract from incomes in these other sectors.

In the short-run in an economy characterized by excess capacity, if the previous channels all sum to a net job-gain stemming from the implementation of the proposed toxics-rule, then these extra jobs should be multiplied by the “re-spending” effects of newly employed workers to get a total jobs impact.

The intuition is simply that construction workers newly hired to install PAC equipment and manufacturing workers newly hired to produce the intermediate inputs for this construction will have extra income, a portion of which they will spend. This additional spending in the economy will support production (and jobs) in sectors of the economy wholly unrelated to the activities associated with conforming to the toxics rule. For example, waitstaff will be hired by diners that are serving more lunches because the newly hired construction workers come through the door, and clerks will be hired by retail clothing stores that will sell more back-to-school clothes to newly hired manufacturing workers.

These re-spending effects are likely to be particularly large in the present economic moment, when the U.S. economy is characterized by a severe shortfall of aggregate demand for goods and services relative to what is needed to ensure low rates of unemployment.

Of course, if the combined job impacts of the previous channels sum to less than zero, then the negative shock to employment would also be amplified by the re-spending effects (waitstaff would be laid-off as diners served fewer lunches because workers in energy-using industries lost their jobs and these effects dominated others).

The estimates of re-spending effects (or, "re-spending multipliers") stemming from job-creation are rather varied. Bivens (2006) uses an estimate of 0.5, noting that the literature provides estimates of the re-spending multiplier that run from 0.25 to 1.7. Given that there's very little objective criterion to judge what is the best value within this range, the re-spending effects are presented spanning the full-range of these estimates, with 0.5 being the preferred estimate. With this estimate, and using the mid-point of estimates of job changes from each of the other channels, re-spending effects will add 31,000 jobs stemming from adoption of the proposed toxics rule.

Again, in the longer-run and in a better-functioning economy, the boost or decline to aggregate demand stemming from these re-spending multipliers can and will be offset with other macroeconomic policy tools. But in today's economy, characterized by lots of excess capacity, these re-spending effects will be powerful indeed.

The table below sums the effects from the previously mentioned channels, being careful to not double-count any effects. It then applies various re-spending multipliers to the results to get a final number on job creation stemming from the proposed toxics rule.

TABLE 5			
Employment effects from each channel			
Channel	Jobs (high)	Jobs (low)	Jobs (average)
<i>Directly regulated utility effects, MPS approach</i>	35,000	-17,000	9,000
<i>Effects from investments in EP sector, direct + supplier jobs</i>	101,000	81,000	91,000
<i>Effects from output changes in energy-using sectors</i>	-31,000	-45,600	-38,300
Subtotals	105,000	18,400	61,700
<i>Re-spending effects channel</i>			
Re-spending multiplier = 0.25	26,250	4,600	15,425
Re-spending multiplier = 0.5	52,500	9,200	30,850
Re-spending multiplier = 1.7	178,500	31,280	104,890
Totals			
Re-spending multiplier = 0.25	131,250	23,000	77,125
Re-spending multiplier = 0.5	157,500	27,600	92,550
Re-spending multiplier = 1.7	283,500	49,680	166,590

SOURCE: EPA (2011a); author's calculations using data from the BLS ERM and HMS (2008), as described in text.

A note on the fundamental conservatism of these estimates

Of the primary (ie, before re-spending) effects of the toxics rule on employment specified in this report, one is essentially neutral (employment changes within utilities), one is clearly positive

(effects of PAC investment) and one is negative (effects of price changes due to higher energy costs).

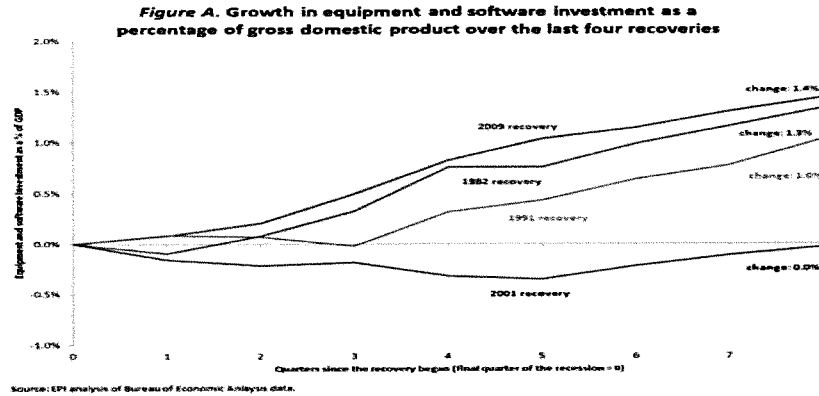
Given the current situation of the U.S. economy – caught in a “liquidity trap” – it’s actually unclear that the higher product prices caused by more-expensive energy generation would actually have any negative bite at all on the economy.

Buitier (2000) has perhaps the clearest exposition of what an increase in a sector’s relative price will do for overall economic growth. His overall assessment is that any relative price change not associated with a permanent change to economy-wide productivity growth will not affect the degree of economic slack – this is an uncontroversial position. Moreover, he argues that if a relative price increase in one sector is generated through a slight increase in the overall price level, the only way this increases economic slack in the short-run is by spurring a response from the Federal Reserve in the form of higher interest rates. But, we know that the Federal Reserve has no plans in the next couple of years to respond excessively to what would be clearly a very small and very transitory rise in the overall price level spurred by the toxics rule (or actually any degree of regulatory change currently on the table).

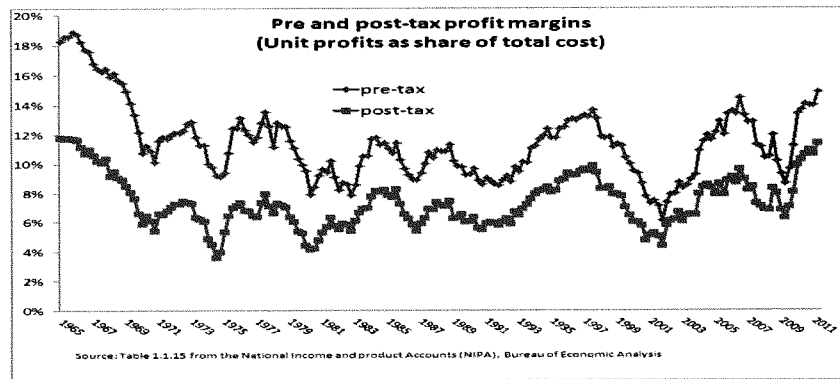
In short, assuming that higher prices spurred by the need to make investments in plant and equipment in the utility sector will actually dampen employment growth in the next couple of years represents a very adverse scenario wherein the Federal Reserve does something that is both unwise and which they have repeatedly said they would not do. Given that the potential downsides of this action – which are very unlikely – are included in the overall tally of the employment impacts of the toxics rule, this means that I would treat the bottom-line estimate as a very conservative estimate of the job-gains that should be expected from its timely implementation.

General observations on the generic argument that regulatory changes are damaging growth
 Recently, many observers have tried to make the case that regulatory changes – either implemented or proposed – are causing uncertainty that is keeping businesses from spending money and hiring new employees. We have tried our mightiest to fairly assess this claim. The first difficulty lies in the fact that the vast majority of people making it fail to specify any evidence that could even test the proposition. So, we have tried to figure out what a testable proposition of this might be.

The first thing to look at is the growth of business investment. If firms really are reluctant to make commitments to future production, it should show up in depressed rates of investment relative to previous episodes of recovery from recession. The figure below shows that business investment is actually quite strong in the current recovery.



Another obvious place to look for regulatory burdens (or any other) that are strangling businesses ability to be profitable is profits per unit sold. This measures is at its highest level in over 40 years – measured both as pre- and post-tax profitability. Given that businesses are making record profits on every unit shipped today, it seems odd indeed to think that regulatory changes now or in the future would keep them from shipping as much as possible. Of course, what would keep them from shipping all they can today is the real cause of the economy's poor performance – slack demand for goods and services.



Lastly, even if firms were reluctant to commit to *permanent* acquisitions of capital or labor, if this reluctance was all that was holding back production than we should expect to see them using their *incumbent* factories and staff at peak capacity. They're not. Average hours per employee still have not recovered their pre-recession peak, and capacity utilization rates remain very, very low relative to other non-recessionary periods.

In short, there is nothing to suggest in the macroeconomic data that regulatory change or uncertainty about it is holding back the economy's performance. It's worth noting that the opposition to regulatory changes based on claims of its "job-killing" characteristics has been consistently overblown for decades – Irons and Shapiro (2011) have provided an excellent overview of the hyperbolic claims and review of the economic evidence.

Conclusion

In normal times, regulatory changes have an almost totally neutral impact on employment growth. Any economist who tells you otherwise is lying or misinformed. In times like today – with very high rates of unemployment, regulatory change that induces job-creating investments from corporations that are sitting on plenty of savings but finding no other incentive to make these investments – such regulatory changes can boost job-growth.

Both the macroeconomic data and the review of the air toxics rule argue strongly that regulatory change, while not a jobs-program per se, would only nudge up the level of job-creation in the US economy.

To be clear, the most relevant debate about any regulation – and the air toxics rule specifically – would focus simply on the cost/benefit analyses. On this measure, the air toxics rule is a no-brainer, with benefits to health and quality of life dwarfing the compliance costs of meeting its mandates. But since opponents of the rule have demanded to fight on the much less-relevant ground of jobs, it is worth highlighting that even on this their arguments are wrong. First, it is a modest job-creation strategy, and, second, the best time to undertake these regulatory changes are precisely times like today, when the economy is starved of job-creating investments like the ones this rule would induce.

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Chairman ISSA. I thank the gentleman and yield myself 5 minutes. First of all, I want to compliment you. I have never seen an economist with so many "ands." I tried to listen to your opening statement and it was pretty amazing, because it did balance so many but, but, but, but—so I will look forward to going through your conclusions once again after the hearing and see if I can't reconcile them.

But let me go through a few things that I think are appropriate to your presence here today. First of all you're here, funded by the Blue-Green Alliance; is that right?

Dr. BIVENS. No.

Chairman ISSA. No.

Dr. BIVENS. I'm an employee of the Economic Policy Institute.

Chairman ISSA. Do you work with the Blue-Green Alliance?

Dr. BIVENS. Yes, I have.

Chairman ISSA. Would you say it is fair to say that a coalition of unions and environmentalists are essentially the people that you work with closely?

Dr. BIVENS. I have worked with closely, yes.

Chairman ISSA. Would it surprise you to know that the International Brotherhood of Electric Workers, the AFL-CIO, opposed the implementation of this standard at this time?

Dr. BIVENS. I did know that.

Chairman ISSA. Without objection, I would like to enter that letter into the record. Without objection, so ordered.

Chairman ISSA. I'm not an economist. I don't have a Ph.D., So I'm going to try and make everyone who looks at the record of this hearing a little bit simpler. And I appreciate the breadth of your knowledge and capability to balance it. I'm not taking away from it, but I just think that most of us have to understand this a little differently.

This standard does not create new, less expensive energy; is that correct?

Dr. BIVENS. No, it does not do that.

Chairman ISSA. It does, however, when fully implemented in 2015, reduce pollutants and thus has positive health benefits; is that right?

Dr. BIVENS. That's my understanding.

Chairman ISSA. Okay. And although there are some jobs created as a result of implementing this standard, those jobs are by definition either temporary, the 37,000 or so, or permanent. The permanent ones are, by definition, greater ongoing costs to producing the same amount of electricity; is that correct?

Dr. BIVENS. Yeah, I think that's correct.

Chairman ISSA. Okay. So to put it in terms that my economist—economics professor at Kent State would have said, those are rocks in the knapsack. The benefit is you get cleaner air, and whatever you get from that is fine. But your ability to walk long distances are impeded by the rock in the knapsack. And this is an additional burden, an additional ongoing costs to producing the same amount of electricity. Would you say that's correct?

Dr. BIVENS. With one caveat. We're using more labor to produce the same amount of energy, but we are producing cleaner energy than we would have without that layer.

Chairman ISSA. And the benefit of cleaner energy would be the health care benefits clearly, and we all agree to that. So on one hand you have got a rock in a knapsack; you've got this cost, and the cost is at least 9,000 permanent greater jobs, estimated to be about \$1 billion by what we might call the low side, the EPA's own estimate of best case. We will forget about the dollars. Just understand that you will have 9,000 more jobs to produce the same amount of electricity, and those jobs will add forever to the cost of producing that energy.

So with that assumption, as we look at the speed with which they want to implement this, 3 years after only basically a 3-month look-see period, now extended by about a month, what if 100 percent of the mercury and 90 percent of the particulate worked out to be an answer which could be implemented with more available technology today?

In other words, what if you could get 99 percent of the benefit, all of the mercury reduction, and 90 percent—and I'm using that as a hypothetical figure—of the particulate reduction, you could get that for a fraction of the cost. Let's say \$1 billion in additional costs, representing only hundreds of additional workers, hypothetically. If that were the case, as an economist wouldn't you want that cost-benefit looked at, vast majority of the savings perhaps in health benefits, 100 percent, because at some point as you reduce particulates, you have a drop-off in the health care benefit improvement. I grew up in Cleveland, a place that all the walls were black, you could see the air when I was a young man. So I'm very aware of improvements made since the sixties.

So my question to you is: Wouldn't you as an economist want to have that information at your disposal to make a calculation of cost-benefit to the economy on a long-term basis?

Dr. BIVENS. Yes. Basically what you're saying is could we achieve the same goals more productively, less labor needed. I would say in the long run that sounds exactly right. I would say in the short run we have a jobs crisis in the country, everyone agrees with that. And actually those compliance costs over the next 4 years represent job-creating investments that will be made, that the corporate sector is showing no sign of making any other way. Instead they are showing signs of sitting on massive amounts of savings without seeing any need to do those job-creating investments.

And so that to me is why now is the time, assuming we have done all the due diligence about whether or not these rules should be done, and if that is the case, and it strikes me it is the case, now is the time to do them. It is what will help solve the job crisis we have over the next couple of years.

Chairman ISSA. I don't if you were here earlier, but in the earlier testimony, what we had explained to us is it was 5 years of rule-making and implementation after the passage of the Clean Air Act in 1990. There has been as much as a full year for less controversial, less expensive proposed rules, while this one enjoyed roughly 3 months, now extended by a month.

So the question would be, not as an economist, but from a standpoint of wanting to know, if going through nearly a million comments and evaluating those and evaluating the cost-benefit that comes from those suggestions, if that would get you 90 percent for

10 percent, and of course allow additional technology to get the rest, wouldn't that be advisable for your finding the optimum benefit to the economy in the way of affordable energy, cleaner air, and, of course, job creation, on both sides?

Dr. BIVENS. Yes, it would be useful to know if that was a possible scenario.

Chairman ISSA. Well, we hope it is. With that, I recognize the ranking member.

Mr. CONNOLLY. I thank the chairman. By the way, Mr. Chairman, you had asked earlier whether there were any coal-fired power plants that might meet this new standard. I think maybe you were out of the room when I entered into the record a list of coal-fired power plants right now that would in fact fully meet the standard, including four in my native Virginia, which contradicts the previous testimony.

I now have been corrected. There are actually at least six. The Chesterfield power station and the Virginia City plant, both run by Dominion Resource, would be fully compliant today.

Chairman ISSA. Well, hopefully the EPA will take and codify that list as exactly that. And I appreciate the gentleman.

Mr. CONNOLLY. I thank the chairman, and I would also point out for the record that all of the at least six coal-fired power plants in the Commonwealth of Virginia that would be compliant are south of Rappahannock. They are not in Northern Virginia.

Chairman ISSA. You don't get to represent them?

Mr. CONNOLLY. I don't get to represent them, but our first witness does. You may recall his concern for poor communities bearing this brunt.

Dr. Bivens, following up on the chairman's question about trying to follow testimony, you're now our third witness, and we've had actually three different sets of data in terms of job numbers.

Our first witness cited an industry-funded study that claimed that perhaps as many as 180,000 jobs could be lost. Our second witness from EPA said that the midpoint in their analysis was 9,000 jobs would be created. And you just indicated, if I heard you correctly, somewhere between 28,000 and as many as 150,000 net positive jobs created between now and 2015 if this rule were to go into effect.

To what do you attribute the variance in these estimates? It is awfully hard as a Member of Congress to sort of make the right decision policy-wise with such a wide array of job loss or creation estimates.

Mr. BIVENS. I can speak pretty clearly between the difference between my estimates and EPA. The industry-funded study is pretty opaque, so I can only guess what is driving it. The difference between mine and EPA's is EPA restricted itself to looking only at the likely job impact within the utility sector itself, and with one supplying industry—steel—that is going to supply the scrubbers. I think they're missing a good chunk of the likely job impacts by not looking at the full range of jobs created by the investment spurred by the need to meet the regulatory change. So that is what my study tries to do. It tries to look at, both within the utility sector and outside it, looking at both the positive and the negative.

The industry studies that I've seen that have chalked up big losses regarding this rule I think make two big common problems, generally. Each one is a little different. The first one is there seems to be a big discordance between their compliance costs and their price implications. So basically they have compliance costs that look relatively vague; say, two times as large as the EPA. But then they have price spikes that are like four times as large.

Given that the compliance costs, that dollar value, is the scale of investments that actually support jobs, those should actually move pretty much in tandem with the price increases. Because the only reason you have to raise prices in response to regulatory change is if you have to hire new people in order to do the stuff you have to do to comply with the new regulatory regime. And so I think that they have consistently had price increases that are well out of line with what the rest of the study looks at.

The other thing they don't do, I think, is properly account for the very different macroeconomic environment we're in right now. They basically assume it's kind of what would these investments do, dropped into the U.S. economy at a normal point in time. We're not at a normal point in time. We've had 9 percent unemployment for 3 years, even while the Fed short-term interest rates are stuck at zero. In the jargon that's called a liquidity trap. It's a really important context for how the U.S. economy is operating right now.

Mr. CONNOLLY. My time is limited. So let me ask you this question. Thank you.

We've heard assertions made that this kind of regulation is a job killer, going to crush industry, going to actually pass on significant costs to consumers. And yet when one looks at the data of the record of implementation of the Clean Air Act since 1970, and the Clean Air Act amendments since 1990, the data suggests the opposite. I wonder, as an economist, would you comment?

Dr. BIVENS. I agree with that characterization. I would urge people to look at a paper my Institute did by Isaac Shapiro and John Irons. They looked exactly at that; sort of forecast for what regulatory changes were going to do to jobs, price increases, things like that; and consistently, in the end, the cost of the regulation was almost always much smaller than what was forecast ahead of time.

Mr. CONNOLLY. And the price of electricity?

Dr. BIVENS. I'm not sure if they looked at the price of electricity. I would say I think the best estimate for what's going to happen to the price of electricity is the EPA's—and I see a lot of the other studies out there—that look far out of line.

Mr. CONNOLLY. Just for the record, I'd repeat, in my native State, the Commonwealth of Virginia, since 1990 the net cost of electricity has actually gone down by 35.6 percent.

With that, I yield back, Mr. Chairman.

Chairman ISSA. I thank the gentleman. But if I can ask the gentleman a question about your State. In Virginia, for those to go down, I'm presuming that since it's a rate base on their cost, that in fact that's a matter of efficiency. In order to reduce costs over that same period of time, they produced more electricity at lower cost, where they're getting a return on their capital—a regulated return on their capital. So in this case, where the EPA, by its own estimates, has a cost of implementation, those costs would be

passed on. So there would be at least a temporary spike in what otherwise is a cost-benefit reduction that they have been achieving for that period of time.

Mr. CONNOLLY. I think the chairman makes a fair point that obviously that could happen. I would only point out, though, that contrary to our first witness' testimony, the reason for price spikes in especially rural parts of Virginia, has to do with the reregulation of the industry, a bill that was written by the industry, in the General Assembly of Virginia. It had nothing to do with Federal regulation.

Chairman ISSA. I appreciate that explanation. I will tell you that as somebody who's seen our State go through deregulation, dramatic reduction in cost, and then blackouts, and we have partial reregulation, although not complete, it is one of the challenges—do we give the regulated utilities—and this is what I'm going to ask one last question to the witness—regulated utilities, when they're given a cost-plus situation, they love cost. They often do not complain about cost drivers because they can pass it on, which essentially grows the benefit to their stockholders, while at the same time they will say they want a free market system, but not unless it gives them greater profit margins.

I think the gentleman has a good point in your State, as I do in mine.

Mr. CONNOLLY. I agree with the chairman.

Chairman ISSA. At this point, I should adjourn. But I want to thank the witness. Dr. Bivens, you were very helpful. Your entire statement will be there.

Additionally, because you had not as many witnesses but you had some questions related to some economic hypothetical that may be beyond what even in your thorough comments you provided, any additional for the next, let's say, 7 days, and if you need longer, let us know, we'll keep the record open so that anything you believe are missing analyses, either on the upside or the downside, we'd appreciate having.

Additionally, if you could do me a personal favor, or the committee a personal favor, to the extent that you could try to deliver us a timeline cost of money; in other words, the cost of a delay as they just had of 30 days in the implementation, and the benefit that is potentially there from slight adjustments in the final standard, how you think the parameters of best case of a slight change and worst case of a slight change; because delay has a cost to cleaner air. Well, getting it right may have a benefit to lower cost and ultimately greater affordability. I didn't see that in your earlier stuff. It is kind of esoteric. But I think for all of us who want to weigh—not just on this bill but in future hearings—do we delay to get it right? What is the cost of delay? Something that since we are talking about 1990 until today, I think we have to put in that perspective.

I would yield to the ranking member.

Mr. CONNOLLY. Mr. Chairman, I support your request. And I think in the endeavor to try to better understand the economics of that, that would be helpful.

I wonder if the chairman would also entertain asking Dr. Bivens to provide a little more analysis on his answer to the question

about the job number variation we've heard in this hearing, because we've heard three different sets of numbers. I certainly would welcome Dr. Bivens taking some time to help us better understand the different methodologies that led to those different sets of numbers.

Chairman ISSA. Absolutely, to the extent that you could.

The ranking member said it maybe more artfully than I did, because we do see where one side is looking at the costs of jobs—higher utility costs, and so on—and the other side, self-servingly and rightfully so, is looking at the jobs created. And obviously we want to look at the balance, particularly in regulated utility States. I think the doctor's comments were exactly right on. In a free-market regulatory State, much of this could be a compression of profits of the utilities. Well, in those States that are cost-plus or regulated, it is going to be passed on. I think that is one of the things the ranking member made such a good point of.

With an affirmative yes, we stand adjourned.

[Whereupon, at 3:15 p.m., the committee was adjourned.]

Questions for Bob Perciasepe
Deputy Administrator, EPA

Chairman Darrell Issa
Committee on Oversight and Government Reform

Hearing on "Lights Out II: Should EPA Take a Step Back to Fully Consider Utility MACT's
Impact on Job Creation"

1. EPA received 960,000 public comments, 22,000 of which were unique, regarding the Utility MACT rule. How many days did EPA take to analyze and respond to these comments? Did this timeline allow EPA to adjust the proposed rule based on these comments or had EPA already come to a predetermined conclusion on how to move forward on the Utility MACT rule?

Response: EPA began to analyze comments as soon as they were received. Our responses are documented in the Response to Comments document that is available in the docket (EPA-HQ-OAR-2009-0234-20126). The final standards make extensive use of the data and information we received during the public comment process.

In response to stakeholder comments EPA received on operational concerns related to the magnitude and technical feasibility of retrofits required by the standard, we made a number of major substantive changes to the compliance requirements that were directly responsive to comments received. These changes include switching to a filterable particulate matter (PM) emissions limit and providing sources the option to use a more flexible facility-wide averaging approach as long as it provides equivalent reductions in mercury. We are also providing separate sub-categories of standards for limited use and non-continental oil-fired units, as well as more achievable new source standards. These changes maintain reductions in air toxics while making implementation easier and less costly.

EPA also paid close attention to comments raised by stakeholders regarding the time available to achieve compliance with MATS, as well its impacts on electric reliability. Before MATS was finalized, EPA and the Department of Energy (DOE) conducted several analyses of its effects on electric generation resources. EPA's and DOE's analyses demonstrate that the vast majority, if not all, sources will be able to meet the MATS requirements within the time frames provided under the Clean Air Act, as discussed in response to question 3 below.

Having taken the time to analyze and respond to these comments, it did not make sense to further delay this rule. These standards are already overdue, and the benefits far outweigh the costs. The fact remains that power plants are the biggest source of mercury and other air toxics such as chromium and acid gases in the United States and Americans will be healthier when power plants are cleaner.

2. It took EPA 449 days to finalize the CAIR rule and 700 days to finalize the Regional Haze rule. Why has EPA determined that Utility MACT requires less time to finalize than these rules? Shouldn't EPA request at least that amount of time from the court before implementing the most expensive rule it has ever promulgated with regard to coal-fired electricity generation?

Response: As evidenced by the final rule, EPA did not require additional time to issue these important air toxics standards, which will provide long overdue public health protections. Also, as explained in more detail in the response to question 1, EPA was able to make extensive use of the data and information we received during the public comment process and we made a number of major substantive changes to the compliance requirements that were directly responsive to comments received.

3. The NERA study and ICF International study both indicate that EPA has underestimated the impact of the Utility MACT rule. What is EPA's reaction to these studies? Shouldn't EPA give credence to the impacts that these studies claim Utility MACT will have? Given that EPA's analysis of coal-fired EGU retirement varies so widely from other analyses shouldn't EPA spend more time conducting its own analysis of the Utility MACT rule before finalizing it? If not, why not? Given that ICF International, the company contracted to work with EPA to support clean energy programs, has analyzed Utility MACT and determined vastly different reliability impacts than EPA, shouldn't the agency take more time to consider the effects of this rule? Doesn't this analysis lend additional credibility to contradictory studies (such as NERA) that EPA formerly dismissed?

Response: EPA's resource adequacy analysis continues to demonstrate that only a modest amount of generating capacity will become uneconomic to operate under the MATS standards, and removal of this capacity will not adversely affect capacity reserve margins in any region of the country. In addition, new capacity will be added between now and 2015. The analysis projects that, as a result of MATS, plant operators will choose to retire less than one half of one percent (4.7 gigawatts (GW)) of the more than 1,000 GW that make up the nation's electric generating capacity. This retiring generation capacity is an average of more than fifty years old, relatively inefficient, and does not have modern pollution controls installed. It should be noted that over the last few years low natural gas prices and an aging coal generation fleet have been pushing the industry towards less reliance on coal and greater reliance on natural gas.

EPA's power sector modeling considers the impact of regulations on the resource adequacy of the power grid at a regional level, using 32 regions across the United States that generally correspond to subregions of the North American Electric Reliability Corporation (NERC) regions used for reliability planning. At present, many regions have excess capacity available above their required reserve margins. Our analyses project that even under the regulations proposed or finalized to date, regional reliability authorities will continue to have access to an adequate generating resource base with which they can flexibly operate the power system in accordance with reliability requirements to maintain service to power consumers.

EPA's analysis is supported by other detailed studies, including independent analyses by the Department of Energy (DOE) and outside groups such as the Bipartisan Policy Center. David Sandalow, DOE Assistant Secretary for Policy and International Affairs, summarized the DOE analysis as "demonstrat[ing] that new EPA rules – which will provide extensive public health protections from an array of harmful pollutants – should not create resource adequacy issues."¹ The DOE study found that, even under a stringent "stress test," using very conservative assumptions, "overall supply-demand balance for electric power in each region examined would be adequate" and

¹ <http://energy.gov/articles/energy-department-releases-study-electricity-system-ahead-proposed-epa-air-quality>

“mechanisms exist to address such reliability concerns or other extenuating circumstances on a plant-specific or more local basis.”² In addition, a recent Congressional Research Service report (January 2012)³ reviewed industry data on planning reserve margins and potential retirement of units that do not currently meet the standards and concluded, based on these data “that, although the rule may lead to the retirement or derating of some facilities, almost all of the capacity reductions will occur in areas that have substantial reserve margins.”

EPA took steps in the final MATS standards to address stakeholder concerns that compliance with MATS could not be achieved within the maximum three-year compliance date authorized under the statute. In the final rule, EPA described in detail the wide range of situations where we believe an additional year for compliance could be granted by permitting authorities. This fourth year - in addition to the three years provided to all sources - is provided by the Clean Air Act as needed to complete installation of control technologies. EPA suggests that permitting authorities make this fourth year broadly available to sources that require it to complete their compliance activities, including installing pollution control equipment, constructing on- or off-site replacement power, and upgrading transmission. EPA is also encouraging the fourth year to be available as needed to units that continue to operate for reliability purposes while other units are installing pollution controls. As described in more detail below, EPA will engage in outreach to states and permitting authorities to help ensure that the fourth year for compliance is broadly available and that the process for sources to request and states to grant the extensions is clear and straightforward. As a result, EPA estimates that sources generally will have until spring of 2016 to comply – one year longer than our analysis indicates is necessary for most sources.

Although EPA’s analysis indicates that most, if not all, sources can comply within three years, and that the fourth year should be available in the broad range of situations described above, EPA is also providing a clear pathway for units that are shown to be critical for electric reliability to obtain a schedule to achieve compliance within up to an additional year beyond the four years mentioned above. This pathway is set forth in a policy memorandum from EPA’s Office of Enforcement and Compliance Assurance.⁴ As stated above, EPA believes there will be few, if any, situations in which this pathway will be needed. In addition, in the unlikely event that there are situations where sources cannot come into compliance on a timely basis that do not fall into any of these categories, EPA will address them on a case-by-case basis, at the appropriate time, to determine the appropriate response and resolution. This is consistent with its longstanding historical practice under the Clean Air Act.

As part of the Administration’s commitment to maximize flexibilities under the law, MATS was accompanied by a Presidential Memorandum that directs EPA to take a number of steps to ensure continued electric reliability. These steps include: 1) working with State and local permitting authorities to make the additional year for compliance with MATS provided under section 112(i)(3)(B) of the Clean Air Act broadly available to sources; 2) working with the Department of Energy, the Federal Energy Regulatory Commission, State utility regulators, Regional Transmission

² U.S. Department of Energy, December 2011, “Resource Adequacy Implications of Forthcoming EPA Air Quality Regulations.”

³ James E. McCarthy, January 9, 2012. “EPA’s Utility MACT: Will the Lights Go Out?” http://www.eenews.net/assets/2012/01/19/document_gw_03.pdf

⁴ EPA Memorandum December 16, 2011. “The Environmental Protection Agency’s Enforcement Response Policy For Use of Clean Air Act Section 113(a) Administrative Orders in Relation To Electric Reliability and the Mercury and Air Toxics Standard” <http://www.epa.gov/compliance/resources/policies/civil/erp/mats-erp.pdf>

Organizations, the North American Electric Reliability Corporation and regional electric reliability organizations, other grid planning authorities, electric utilities, and other stakeholders, as appropriate to promote early, coordinated, and orderly planning; and 3) making available to the public, including relevant stakeholders, information that describes the process for identifying circumstances where electric reliability concerns might justify allowing additional time to comply. EPA is in the process of taking a number of steps to implement the directives in this memo.

EPA is actively engaging power plants and other entities that will be involved in getting power plants retrofitted while maintaining the reliability of the electric grid. EPA has held, and will continue to hold, a series of discussions with the Department of Energy, the Federal Energy Regulatory Commission, State utility regulators, Regional Transmission Organizations, the North American Electric Reliability Corporation, regional electric reliability organizations, and other grid planning authorities to promote early compliance planning, to support orderly implementation of the MATS standards, and to ensure that any potential, localized reliability concerns are identified and addressed.

There have been a number of flawed studies alleging that upcoming EPA regulations will result in substantial power plant retirements, drastically increased electricity costs, and negative economic impacts. While the particulars of these analyses differ, in general they share a number of serious flaws that call their conclusions into question. These studies often make assumptions about the requirements of the EPA rules that are inconsistent with, and dramatically more expensive than, EPA's actual proposed or final rules. Second, within many of these evaluations, the projected retirements are caused by regulations other than MATS and are exacerbated by incorrect or unrealistic assumptions about these other rules. In one case, the assessment assumes that EPA's cooling water rule will lead to 100 percent of units installing closed cycle cooling systems—an option EPA rejected in its proposal. Third, in reporting the number of retirements, many analyses fail to differentiate between plant retirements attributable to the EPA rules and inefficient and costly plants that are already scheduled for retirement because owners make the business decisions to close them. Many of these studies use overly pessimistic assumptions about the capability of control technology to meet the standards. This is especially true in the case of dry sorbent injection (DSI). Many of these studies do not consider DSI capable of meeting the acid gas standard and assume that the flue gas desulfurization (FGD), which is much more expensive, will be needed on all plants. Also, many analyses do not account for the many tools, including new generation, demand response, energy efficiency, energy storage and transmission upgrades that can be used to maintain reliability.

The NERA analysis was commissioned by the American Coalition for Clean Coal Electricity (ACCCE). The analysis lacks transparency, its assumptions and methodologies are so unclear that that EPA is unable to fully critique the report. Note also that the NERA report does not address the reliability issue. Nonetheless, based on what was released, EPA has concluded that the analysis significantly overstates the cost and employment impacts of EPA's rules.

4. Is EPA aware of the critical reliability issues that currently exist in areas that will be affected by the Utility MACT rule? For example, in September in the southwest, millions were without power when back-up power generation failed to come online?⁵ Is this something that EPA has studied with regard to the likely impacts of the Utility MACT rule?

⁵ Mike Anton, et. al, *More than 4 million lose power in major blackout*, L.A. TIMES, September 8, 2011.

Response: See response to question 3 above.

In regards to the September 2011 power outage in the Southwest, as the referenced newspaper article explains, it "was triggered by a mishap on a high-voltage power line" and that "excessive electricity demand didn't appear to be a factor in the power loss."⁶ In other words, there is no apparent connection between this particular incident and the relationship of the power sector to current or future environmental regulations.

5. Isn't the risk of more frequent blackouts, like what happened in the southwest, the likely outcome of EPA's regulations as utilities try to upgrade their facilities to comply with the new mandates and are forced to retire back-up power plants?

Response: EPA's projections have yielded no evidence to suggest that the rules we have proposed or finalized to date would increase the frequency of blackouts, as discussed in more detail in the answer to Question 3.

Increasing Electricity Rates and Jobs

6. You stated in the "Lights Out: How EPA Regulations Threaten Affordable Power and Job Creation" hearing held on July 26, 2011, before the Subcommittee on Regulatory Affairs, Stimulus Oversight and Government Spending that "[EPA] analysis shows, particularly on these utility rules, that it will create jobs." Is this analysis based on the net number of jobs? Does it take into consideration the effects of an increase in energy prices?

Response: EPA's analysis shows that the updated standards will support thousands of good jobs for American workers who will be hired to build, install, and operate the equipment to reduce health-threatening emissions of mercury, acid gases, and other toxic air pollutants. EPA estimates that investments made to comply with MATS will provide 8,000 long term jobs in the power sector and 46,000 short term construction jobs.

EPA also reviewed the anticipated effect of the combined effect of MATS and CSAPR on electricity rates. Under both rules combined, electricity rates are projected to stay well within normal historical fluctuations. EPA analyses shows that plants across the country will be able to meet these standards on time, while maintaining more than enough electricity generating capacity to meet our nation's energy needs. EPA's modeling for the final standards indicates that any change in retail electricity prices will be very small (approximately 3% on a national basis) and will not cause prices to rise even to 1990 levels. In fact, EPA's modeling shows that after both MATS and the Cross State Rule (in the base case) are implemented, electricity rates are projected to stay well within the range of normal historical fluctuations and below levels seen as recently as 2009. In the RIA for the final MATS, EPA used US Bureau of Economic Analysis data to determine the portion of production expenditures attributable to electricity across all sectors of the U.S. economy. Based on this analysis, EPA estimates that the retail electricity price increase resulting from MATS would lead to a production cost increase of up to 0.023% across all sectors.

⁶ Mike Anton, et. al, *More than 4 million lose power in major blackout*, L.A. TIMES, September 8, 2011.

7. You stated in the above-mentioned July 26, 2011, hearing before the Subcommittee on Regulatory Affairs that "[EPA] estimated that it will have an increase in electric rates and an increase in natural gas rates." Has EPA modeled how these rate increases will affect small businesses and manufacturers who rely heavily on inexpensive access to electricity? Has EPA analyzed whether higher rates will impact job creation as employers have to spend scarce resources on electricity costs, leaving less money available to pay their workers or hire new ones?

Response: Electricity rates are projected to stay well within normal historical fluctuations, even with both MATS and the Cross State Rule. EPA analyses shows that plants across the country will be able to meet these standards on time, while maintaining more than enough electricity generating capacity to meet our nation's energy needs. EPA's modeling for the final standards indicates that any change in retail electricity prices will be very small (approximately 3% on a national basis) and will not cause prices to rise even to 1990 levels. In fact, EPA's modeling shows that after both MATS and the Cross State Rule (in the base case) are implemented, electricity rates are projected to stay well within the range of normal historical fluctuations and below levels seen as recently as 2009. In the RIA for the final MATS, EPA used US Bureau of Economic Analysis data to determine the portion of production expenditures attributable to electricity across all sectors of the U.S. economy. Based on this analysis, EPA estimates that the retail electricity price increase resulting from MATS would lead to a production cost increase of up to 0.023% across all sectors.

In addition, the costs of complying with the rule are dwarfed by the public health benefits from cleaner air. EPA estimates that the MATS rule will prevent more than ten thousand premature deaths and over a hundred thousand childhood asthma attacks every year, among other health benefits, with net benefits valued between \$27 and \$80 billion annually. In fact, for every one dollar spent to reduce pollution, EPA estimates that Americans will get \$3 to \$9 in health benefits.

8. EPA described the Utility MACT rule as being "affordable" in Mr. Perciasepe's written testimony. The Utility MACT rule is expected to impose a cost on utilities of \$10.9 billion annually. Much of this cost will be passed through to rate payers. Why does EPA believe \$10.9 billion is affordable? How many jobs would have to be lost because of this regulation before EPA determined that it was not affordable?

Response: EPA's projected costs for the final rule are \$9.6 billion annually (not \$10.9 billion as stated in the question). Meanwhile, EPA's projected benefits from the rule are between \$37 and \$90 billion annually. As a result, EPA projects that the American public will see \$3 to \$9 primarily in health benefits for every \$1 spent to comply with MATS. In addition, as discussed more fully in response to question 7, with implementation of both MATS and CSAPR, electricity rates are projected to stay well within normal historical fluctuations.

Furthermore, MATS will support thousands of good jobs for American workers who will be hired to build, install, and operate the equipment to reduce health-threatening emissions of mercury, acid gases, and other toxic air pollutants. EPA estimates that investments made to comply with MATS will provide 8,000 long term jobs in the power sector and 46,000 short term construction jobs.

*EPA Consultations with FERC***9. How many times did the Federal Energy Regulatory Commission (FERC) and EPA consult on the impact of Utility MACT on grid reliability issues?**

Response: During the development of the MATS rule, the EPA and FERC had multiple face-to-face meetings. These included both meetings of technical staff, as well as members of senior Management, including Administrator Jackson, Assistant Administrator McCarthy and Chairman Wellinghoff.

10. Did EPA and FERC discontinue these consultations after May 2011? If so, why?

Response: No. The agencies did not discontinue these consultations after May 2011.

11. Does EPA feel that its consultations with FERC have been adequate to prevent foreseeable grid reliability issues? What about regional grid reliability concerns?

Response: EPA believes that its consultations with FERC, as well as our consultations with other organizations important to grid reliability such as DOE, NERC and the RTOs, have been very important in ensuring that the final MATS rule adequately addresses any reliability concerns. In response to these discussions and other stakeholder comments, the EPA included flexibilities that provide reliability-critical units up to five years to comply with this rule. Furthermore, in accordance with the Presidential Memorandum entitled Flexible Implementation of the Mercury and Air Toxics Standard Rule, EPA is meeting with DOE, NERC, the RTOs and others and will continue to do so to facilitate implementation of MATS in ways that do not pose grid reliability issues.

12. Has EPA investigated concerns about regional grid reliability?

Response: Yes, both the EPA and DOE have conducted analysis that show that under the regulations proposed or finalized to date, regional reliability authorities will continue to have access to an adequate generating resource base with which they can flexibly operate the power system in accordance with reliability requirements to maintain service to power consumers. See response to question 3 for further discussion.

*Safety Valve***13. On October 27, 2011, *Inside EPA* reported that EPA was seriously considering a "safety valve" option to respond to possible reliability concerns.⁷ Is it true that EPA is planning on including such a provision in the final rule of Utility MACT rule? If so, please describe the safety valve proposal under consideration.**

Response: The final MATS rule does not include a "safety valve" provision.

⁷ Grid Operators Outline Draft 'Safety Valve' Language for EPA Utility MACT, *Inside EPA*, Oct. 27, 2011.

14. The Clean Air Act provides two exemptions for a waiver for a noncompliant utility: 1. when a utility is installing pollution control technology and 2. A presidential waiver, if the control technology is unavailable or operation is necessary for national security. Under which of these authorities is the "safety valve" being considered for Utility MACT? If neither of these, what authority does EPA have to implement the safety valve under the Clean Air Act?

Response: The final MATS rule does not include a "safety valve" provision. The final rule sets a three year compliance deadline for existing sources to meet the emission standards. EPA explained in the final rule that section 112(i)(3)(B) of the Clean Air Act (CAA) authorizes CAA Title V permitting authorities (generally States) to "issue a permit that grants an extension permitting an existing source up to 1 additional year to comply with standards under [CAA Section 112(d)] if such additional period is necessary for the installation of controls." In the final rule, EPA provided guidance to permitting authorities to assist them in determining whether to provide utilities additional time to comply pursuant to CAA section 112(i)(3)(B). MATS Rule Preamble at 581-588.⁸ In addition, on December 16, 2011, EPA's Office of Enforcement and Compliance Assurance (OECA) issued a memorandum discussing the EPA's intended approach regarding the use of administrative orders under CAA Section 113(a) with respect to sources that must operate in noncompliance with the MATS rule for up to a year to address a specific and documented reliability concern. The policy can be accessed at: <http://www.epa.gov/compliance/resources/policies/civil/erp/mats-erp.pdf>.

15. While the "safety valve" reportedly under consideration would give extra time for plants forced into retirement to operate, a consent decree must be approved by a court on a case by case basis. Would such a consent decree require plant operators to admit that the operation of the plant is unlawful based on requirements of new utility MACT standard? Given that consent decrees must be approved by a court as well as involved third parties, can an outside group oppose a consent decree as not sufficiently stringent? Isn't it true the final disposition of consent decrees implementing the Safety Valve Proposal would be outside of EPA's control?

Response: As explained above, the final MATS rule does not include a "safety valve" provision, and the policy memorandum issued by OECA on December 16, 2011, does not discuss judicial consent decrees, but rather administrative orders under CAA Section 113(a).

16. Please list the meetings or discussions that EPA has conducted regarding the safety valve proposal with persons not employed by EPA. For each such meeting or discussion, please identify the date and location, participants (by name and affiliation), and a summary of the topics discussed at the meeting. Please also include a copy of any documents or other materials given to EPA at the meeting.

Response: The EPA understands this question to relate to the so-called "safety valve" proposal made by five Regional Transmission Organizations (RTOs) jointly and by PJM Interconnection individually in written comments submitted on the proposed MATS rule. The EPA held several

⁸ A pre-publication version of the final MATS Rule can be accessed at <http://www.epa.gov/mats/pdfs/20111216MATSfinal.pdf>.

meetings with the RTOs to clarify their comments. In addition, the EPA held meetings and discussions with other outside stakeholders and with FERC in which their views on the RTO comments were discussed. The following list represents the information that the EPA has been able to identify with regard to these meetings. The meetings at which documents were provided to EPA are designated with an asterisk; the relevant documents can be found in the entry for the relevant meeting under docket number: EPA-HQ-OAR-2009-0234 at www.regulations.gov.

Date	Participants	Topic	Location
9/15/11*	EPA staff PJM: Craig Glazer Paul McGlynn Paul Sotkiewicz Jean Tribulski Gary Helm	RTO comments on proposed MATS rule	EPA HQ – and by phone
10/3/11	EPA staff Duke Energy: James Gainer Bill Tyndall	RTO comments on proposed MATS rule	EPA HQ
10/4/11	EPA staff ISO- New England: Eric Wilkinson New York ISO: Mollie Lampe PJM Interconnection: Paul Sotkiewicz Jennifer Tribulski Gary Helm Craig Glazer Midwest ISO: Kurt Bilas Southwest Power Pool: Michael Deselle Electric Reliability Council of Texas: Matt Morais Warren Lasher	RTO comments on proposed MATS rule	EPA HQ – and by phone
10/5/11*	EPA staff North American Electric Reliability	RTO comments on proposed MATS rule and related issues	EPA HQ

	Corporation (NERC): Gerry Cauley David Cook Mark Lauby Janet Sena		
10/5/11	EPA staff Western Electricity Coordinating Council (WECC): David Godfrey Rachel Sherard	RTO comments on proposed MATS rule	By phone
10/13/11	EPA staff National Association of Regulatory Utility Commissioners (NARUC): Chuck Gray Robin Lunt States Commissions: Jon McKinney (WV) John Betkoski (CT) Tracy Babbidge (CT) Colette Honorable (AR) Erin O'Connell-Diaz (IL) Rob Powelson (PA) Matt Baker (CO) Cheryl Roberto(OH) Steve Lesser(OH) Andre Porter(OH) Hisham Choueiki (OH staff) Klaus Lambeck (OH staff) Kim Wissman (OH staff) Jim Gardner (KY) Stan Wise (GA) Jean Fox (NJ) Kim Jones (NC Staff) Ed McNamara (VT Staff) James Austen (NY) Staff	RTO comments on proposed MATS rule and related issues	EPA HQ and by phone
10/26/11	EPA staff	RTO comments on proposed MATS	EPA HQ

	Environmental Integrity Project: Eric Schaeffer Leah Kelly Stephen Brick	rule and related issues	
10/28/11	EPA staff FERC staff	RTO comments on proposed MATS rule and related issues	FERC
12/01/11	EPA staff American Public Power Association (APPA): Theresa Pugh Sue Kelly Joe Nipper, Mark Crisson	RTO comments on proposed MATS rule and related issues	EPA HQ
12/1/11	EPA staff FERC staff	RTO comments on proposed MATS rule	EPA HQ
12/02/11	EPA staff National Rural Electric Cooperative Association (NRECA): Kirk Johnson Ted Cromwell John Novak	RTO comments on proposed MATS rule and related issues	EPA HQ
12/02/11	EPA staff ISO-New England: Anne George Theodore Paradise New York ISO: John Buechler Mollie Lampi Ray Stalter PJM Interconnection: Craig Glazer Gary Helm Paul Sotkiewicz Jennifer Tribulski Midwest ISO: Kurt Bilas Electric Reliability	RTO comments on proposed MATS rule and related issues	EPA HQ and by phone

	Council of Texas: Matthew Morais		
	Southwest Power Pool: Jay Caspary Michael Desselle Paul Suskie		
	California ISO: Andrew Ulmer		

17. Please indicate the date at which an EPA employee first viewed a copy or draft of the Safety Valve Proposal (including drafts prior to the version transmitted to EPA on October 14, 2011), regardless of whether a copy of the proposal was given to EPA for the agency's own possession.

Response: The Agency is not aware of any EPA employees seeing the proposal before it was transmitted to EPA on October 14, 2011.

18. It appears that the safety valve proposal was not presented for notice and comment in the proposed Utility MACT, published in the Federal Register at 76 Fed. Reg. 24976. Should EPA include the Safety Valve Proposal or a similar provision in the final Utility MACT regulations, please explain how such a final provision would be a "logical outgrowth" of the proposed Utility MACT.

Response: As stated above, the final MATS rule does not include a "safety valve" provision.

19. Please explain how consent decrees implementing the Safety Valve Proposal could comply with EPA's *Clean Air Act Stationary Source Civil Penalty Policy* (Settlement Guidance), which outlines "mandatory minimums" in fines and other requirements that the Agency must seek for consent decrees of CAA violations? Specifically:

i. How would EPA apply its Settlement Guidance, which contains a strict formula to calculate mandatory minimum civil penalties, to consent decrees implementing the Safety Valve Proposal?

ii. Does EPA's Settlement Guidance mandate that EPA recoup all the "economic benefits of noncompliance" gained through a CAA violation? Doesn't the Settlement Guidance require EPA recoup all profit generated after the Utility MACT compliance deadline from retiring plants that operate by consent decree? Could a third party challenge a consent decree implementing the Safety Valve Proposal that does not recoup all such profits?

iii. Does EPA's Settlement Guidance require that consent decrees be stringent enough to serve as a deterrent to future noncompliance? Could a third party challenge a consent decree implementing the Safety Valve Proposal that the third party believed was not stringent enough to serve as a deterrent to noncompliance?

Response: As stated above, the final MATS rule does not include a "safety valve" provision.

20. You testified that CAA section 112 provides "other compliance tools" that will safeguard electric reliability. However, according to Western Governor Association notes from an October 13th conference call with EPA, EPA said "[i]t is important to recognize that EPA has limited flexibility under the CAA for MACT compliance, but if EPA is statutorily able to implement such a safety valve under their statutory authority how would it best work in vertically integrated and RTO/ISO markets?"⁵ Given EPA's statement of limited flexibility under section 112, please identify, in detail, the "other compliance tools" you implied existed in your testimony.

Response: As stated above, the final MATS rule does not include a "safety valve" provision. Section 112 does provide compliance tools that can safeguard electric reliability. As EPA explained in the final rule, section 112(i)(3)(B) of the Clean Air Act (CAA) authorizes CAA Title V permitting authorities (generally States) to "issue a permit that grants an extension permitting an existing source up to 1 additional year to comply with standards under [CAA Section 112(d)] if such additional period is necessary for the installation of controls." In the final rule, EPA provided guidance to permitting authorities to assist them in determining whether to provide utilities additional time to comply pursuant to CAA section 112(i)(3)(B). MATS Rule Preamble at 581-588. In addition, on December 16, 2011, EPA's Office of Enforcement and Compliance Assurance (OECA) issued a memorandum discussing the EPA's intended approach regarding the use of administrative orders under CAA Section 113(a) with respect to sources that must operate in noncompliance with the MATS rule for up to a year to address a specific and documented reliability concern. The policy can be accessed at: <http://www.epa.gov/compliance/resources/policies/civil/erp/mats-erp.pdf>. Section 112(i)(4) also confers certain authority on the President.

Administrator Jackson Op-Ed

21. Administrator Jackson in an Op-Ed for the *L.A. Times* entitled "Too Dirty to Fail" stated that "contrary to industry lobbying, this overhaul could be accomplished without affecting the reliability of our power grid." In fact, Commissioner Moeller at FERC has expressed reliability concerns and ICF, EPA's consulting firm, also disagrees. Moreover, EPA's work on the "safety valve" concept is proof positive that the Utility MACT rule has the ability to impact grid reliability. Is it still EPA's position that Utility MACT and other utility rules will not impact grid reliability and that Commissioner Moeller and FERC and ICF, among others, are wrong to raise these concerns?

Response: EPA has never said that it was 'wrong' for duly charged officials, such as FERC commissioners, to be vigilant in safeguarding electric reliability; indeed, EPA engaged with FERC, Regional Transmission Organizations (RTOs), and other key stakeholders to ensure that, as the Administrator pointed out, MATS "could be accomplished without affecting the reliability of our power grid." EPA's analysis shows that MATS poses no threat to regional electricity capacity reserve margin targets. Furthermore, the Clean Air Act provides adequate flexibility to bring sources into compliance with regulatory requirements while maintaining electric reliability. As part of a commitment to maximize the flexibilities under the law the standards are accompanied by a Presidential Memorandum entitled Flexible Implementation of the Mercury and Air Toxics Standard Rule that directs EPA to use tools provided in the Clean Air Act to implement MATS in a cost

effective manner that ensures electric reliability. Existing power plants generally will have up to four years if they need it to comply with MATS.

This includes the three years provided to all sources by the Clean Air Act. The EPA's analysis continues to demonstrate that this will be sufficient time for most, if not all, sources to comply.

Under the Clean Air Act, state permitting authorities can also grant an additional year as needed for technology installation. The EPA expects this option to be available broadly and, as guidance to the states, has provided a number of examples of situations we feel satisfy the requirements for obtaining the fourth year for compliance.

The EPA is also providing a pathway for reliability critical units to obtain a schedule with up to an additional year to achieve compliance. This pathway is described in a separate enforcement policy document. This document can be found at:

<http://www.epa.gov/mats/pdfs/EnforcementResponsePolicyforCAA113.pdf>.

Scientific Consultation

22. EPA's Science Advisory Board (SAB) said it could not evaluate the Utility MACT's Mercury Risk Assessment because important elements and methods were "missing or poorly explained." The SAB qualified its support of the Assessment on EPA rewriting it to include all 82 of the SAB's recommendations. Will EPA provide the SAB an opportunity to review a revised Mercury Risk Assessment to ensure that it also isn't "poorly explained"?

Response: EPA responded fully to SAB's useful and focused advice in preparing a revised Mercury Risk Assessment for the final MATS rule. The statements quoted in the question are taken out of context and in no way undermine the validity of EPA's analysis. The peer review panel is simply raising concerns about some of the ways EPA presented information— not about the scientific basis of the draft analysis, which examines health risks associated with mercury emissions from US power plants.

In fact, the board confirmed that EPA's analysis is scientifically credible. The board "supports the overall design of and approach to the risk assessment and finds that it should provide an objective, reasonable, and credible determination of the potential for a public health hazard from mercury emitted from U.S. EGUs."⁹ The SAB also said it "regards the design of the risk assessment as suitable for its intended purpose, to inform decision-making regarding an "appropriate and necessary finding" for regulation of hazardous air pollutants from coal and oil-fired EGUs, provided that our recommendations are fully considered in the revision of the assessment." While the SAB included recommendations for improving the Mercury Risk Assessment, it did not request the opportunity to review the document again.

23. In the proposed Utility MACT preamble, EPA committed to submitting an important scientific assessment called the "Non-Mercury HAP Case Studies" to peer

⁹ Notes of an EPA Conference Call with NARUC and Numerous State Commissions to Discuss Compliance with the MACT Rule (October 18, 2011), http://www.westgov.org/wieb/meetings/crepcfall2011/briefing/present/j_tarpey.pdf.

review. EPA hasn't yet done so. Does EPA intend to peer review this document? If not, why not?

Response: EPA stated in the preamble to the proposed rule (76 FR 25012) that, in addition to peer review of the national-scale mercury risk analysis, we would perform a peer review of the characterization of the chemical speciation for the emissions of chromium (Cr) and nickel (Ni), which was used in the non-mercury inhalation case study analysis. As explained in the preamble to the final rule (<http://www.epa.gov/mats/pdfs/20111216MATSfinal.pdf>), the Agency has determined that the remaining aspects of the non-mercury HAP case study risk assessments used methods and data that have already been subject to adequate peer review and, therefore, we do not have plans for additional review. The methodologies used to conduct those risk assessments were consistent with those used to conduct inhalation risk assessments under EPA's Risk and Technology Review (RTR) program. Because the RTR assessments are considered to be highly influential science assessments, the methodologies used to conduct them were subject to a peer review by the Science Advisory Board (SAB) in 2009. The SAB issued its peer review report in May 2010.¹⁰ In addition, EPA's case studies identified Cr and Ni emissions as the key drivers of the estimated inhalation cancer risks for EGUs. Because these results hinged on specific scientific interpretations of data used to characterize EGU emissions of Cr and Ni, EPA conducted a peer review of its analysis and interpretation of those data relative to the quantification of inhalation risks associated with these emissions from U.S. EGUs. EPA fully addressed the recommendations from the peer review in the case study analysis performed for the final rule. All peer review materials are available on EPA's Science Inventory website.¹¹

OMB Review

24. On Tuesday, November 8th EPA submitted the final Utility MACT rule to the Office of Management and Budget (OMB) for interagency review. OMB now has 38 days to conduct a review, which is significantly less than the 60 day review that is called for by Executive Order 12866. In negotiating its consent decree, why did EPA provide OMB so little time to review such an important rule?

Response: EPA's projected timeline provided sufficient time for a robust interagency vetting of the rule, and this occurred.

25. EPA submitted its "appropriate and necessary" finding to OMB on October 24, 2011, allowing OMB just 45 days to conduct interagency review. Why has EPA not provided OMB the full 60 days for this review required under E.O. 12866? How can OMB conduct the necessary review under E.O. 12866 if EPA has not verified the

¹⁰ U.S. Environmental Protection Agency – Science Advisory Board (U.S. EPA-SAB). 2010. *Review of EPA's draft entitled, "Risk and Technology Review (RTR) Risk Assessment Methodologies: For Review by the EPA's Science Advisory Board with Case Studies – MACT I Petroleum Refining Sources and Portland Cement Manufacturing"*. EPA-SAB-10-007. May. Available on-line at: [http://yosemite.epa.gov/sab/sabproduct.nsf/4AB3966E263D943A8525771F00668381/\\$File/EPA-SAB-10-007-unsigned.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/4AB3966E263D943A8525771F00668381/$File/EPA-SAB-10-007-unsigned.pdf)

¹¹ http://cfpub.epa.gov/si/si_public_pra_view.cfm?dirEntryID=238928

validity of the scientific assessments purporting to support the Utility MACT's "appropriate and necessary" finding?

Response: EPA's projected timeline provided sufficient time for a robust interagency vetting of the appropriate and necessary finding, and this occurred. EPA depends on the peer review process to verify the validity of scientific information used to support rulemakings. Both the Mercury and Non-Mercury risk assessments completed peer review prior to OMB review.

Electricity Plant Compliance

26. Isn't it true that the Part III Information Collection Request (ICR) data that EPA used to establish certain Utility MACT standards was collected from only 40 power-plants largely over the course of just two to three days of sampling where those power-plants operated under near constant conditions and burned a single type of coal? Isn't it the case that the Utility MACT will apply to over 1000 power-plants for much longer than two to three days? Further, isn't it the case that these power-plants normally operate under varying conditions and will often burn differing types of coals with different compositions? How, then, can EPA say that the Part III ICR data shows anything more than then the emissions released by a power-plant operating under the Part III ICR's idealized conditions? Does EPA believe that the Part III ICR's idealized conditions represent the most adverse conditions under which a power-plant can reasonably expect to operate?

Response: The EPA required approximately 470 EGUs – not just 40 – to conduct testing for one or more hazardous air pollutant under the 2010 ICR. While it is true that most of the data were collected over the period of a few days, the 30-day rolling average and the statistical analyses applied to the data adequately account for variability. Sufficient continuous emissions monitoring system (CEMS) data were available to conduct an analysis indicating this result; this analysis is provided in the memo "The Impact of Emissions Averaging Time on the Stringency of an Emission Standard" in the docket (EPA-HQ-OAR-2009-0234-20134).

27. In light of the lack of variability in Part III ICR data, how can EPA conclusively say that a power plant not using the same fuel and not operating under constant conditions will be able to achieve Utility MACT compliance for longer than two to three days? Indeed, given the limited picture of power-plant emissions provided by the Part III ICR data, how can EPA conclusively say the data shows that any power-plant will consistently meet Utility MACT emissions requirements for longer than two to three days?

Response: See response to Question 26 above.

28. EPA has informed the Committee that "[t]he total number of existing electric generating units estimated to meet all three of the proposed limits (i.e., mercury, hydrogen chloride and particulate matter limits) that will apply to them is at least 39." Please identify these 39 units. Of these 39 units, how many units are equipped with monitors that continuously measure mercury, hydrogen chloride, and particulate matter emissions? Did EPA determine that these 39 units comply with all Utility MACT limits by using continuous data or the ICR data? If EPA utilized the ICR data, how can EPA

conclusively say that any of these 39 units will continuously comply with Utility MACT requirements in light of the ICR data's above-mentioned limited applicability?

Response: All of the emission limits set in MATS reflect what actual power plants already achieve in practice. EPA does not have test data for each unit at each facility. However, where we do, the data submitted to EPA by utilities suggest that dozens of units already meet the final standards. Units at these plants use a range of widely available control technology – technology that takes toxics out of the plant's emissions and leads to healthier communities.

All facilities have the flexibility to decide the most cost-effective way to comply with these standards. Some may choose to make minor adjustments to existing equipment, and others – especially those that have not installed advanced controls – may need to install new equipment. The rule does not tell facilities how they have to comply, so it is hard to say just how a particular facility will respond.

Based on the data available to the Agency, there are approximately 69 existing coal-fired EGUs that meet all of the final existing source MACT emission limits (out of 252 EGUs that reported data for Hg, PM, and HCl in the 2010 ICR). This is based on the short-term data available but, as noted in the response to Question 26 above, we believe that additional data available to the EPA and the associated analyses show that these EGUs will likely be able to meet the limits over a 30-day rolling average compliance period.

29. Please provide a list of all units that EPA has determined will comply with all proposed Utility MACT requirements for which the agency has continuous monitoring data on mercury, hydrogen chloride, and particulate matter.

Response: The EPA does not have the information requested as there are currently no hydrogen chloride CEMS and we received no PM CEMS data. However, as noted in the response to Question 26 above, we believe that EGUs will be able to comply on a 30-day rolling average basis.

30. The Utility MACT will apply to over 1,300 units in the United States. EPA has said that "at least 39" of those units will comply with all proposed Utility MACT standards. Is it EPA's position that, of all the units that would be required to comply with the proposed Utility MACT, the agency is aware of only 3 percent that currently meet the proposed Utility MACT standards?

Response: Based on the information we have, some facilities are already well positioned for compliance, some will have to upgrade existing controls, and some will have to add new controls to meet the emissions limits. When EPA sets limits for toxic emissions, it must follow the requirements established by Congress in the Clean Air Act and in recent court decisions. The Clean Air Act is very specific in telling EPA how to calculate these limits based on the emissions of the best-performing facilities.

EPA must set the standards for each subcategory of existing sources at a level of emissions control at least as stringent as that achieved by the average of the best-performing 12 percent of existing sources in the subcategory. EPA finalized subcategories based on the design, use, and/or location of the various types of units at different power plants.

As noted above, based on the data available to the Agency, there are approximately 69 existing coal-fired EGUs that meet all of the final existing source MACT emission limits (out of 252 EGUs that reported data for Hg, PM, and HCl in the 2010 ICR).

Benefits

31. The vast majority of the Utility MACT's benefits are derived from reductions of particulate matter with a diameter of 2.5 microns or less (PM_{2.5}), rather than the reduction of hazardous air pollutants (HAPs). However, EPA is near completion of its review of the existing National Ambient Air Quality Standards (NAAQS) for PM_{2.5} that will propose additional PM_{2.5} reduction if the Administrator concludes that scientific evidence supports strengthening the standard. Please explain why EPA is not confining the Utility MACT to HAPs reductions, and has rejected using the CAA's statutory NAAQS revision process to pursue any necessary additional reductions in PM_{2.5} emissions.

Response: The Mercury and Air Toxics Standards regulate only air toxic emissions from power plants. MATS will make sure that power plants do not put unlimited amounts of more than 60 harmful toxics into the air – including mercury, other toxic metals and acid gases. To reduce toxics, power plants will use control technologies that are widely available. An additional benefit of installing these controls is that they will also reduce emissions of air pollutants that cause fine particle pollution at no extra cost. The science is clear – reducing particle pollution will result in fewer premature deaths, heart attacks, hospital admissions, and emergency department visits.

Accounting for ancillary benefits is standard practice in benefit-cost assessment since these benefits are a consequence of the rule, regardless of the rule's intended purpose. As such, EPA estimates all of the anticipated costs and benefits associated with a regulatory action, to the extent feasible. Unfortunately, we cannot monetize all of the health and environmental benefits associated with reducing mercury and other air toxics, including other HAP benefits, ecosystem effects, and visibility impairment. If we were able to fully monetize all these benefits, the benefits would exceed the costs by an even greater amount than we currently estimate.

**Joint Statement of
Douglas F. Gansler, Maryland Attorney General
and
Robert M. Summers, Secretary of the Maryland Department of the Environment
Committee on Oversight and Government Reform
Tuesday, November 01, 2011**

**“Lights Out II: Should EPA Take A Step Back To Fully Consider Utility MACT's Impact
On Job Creation?”**

Chairman Issa, and honorable members of the committee, thank you for the opportunity to share Maryland's views on the Utility MACT and, more importantly, for your interest in this very important issue.

Maryland has a strong interest in ensuring that the mandates of the Clean Air Act are followed, including the timely promulgation of national emission standards for hazardous air pollutants emitted by coal- and oil-fired power plants. The Clean Air Act required EPA to promulgate emission standards for source categories of pollutants within 10 years by Dec. 15, 2000, or within 2 years after the date on which such category is listed, whichever is later. 42 U.S.C. § 7412(c)(5). EPA listed coal- and oil-fired power plants as a source category on December 20, 2000. Thus, EPA was required to promulgate emission standards for these sources by December 20, 2002. The emission limits must reflect the maximum degree of reduction in hazardous air pollutant (HAP) emissions achievable for similar sources.

The Clean Air Act also requires existing sources to comply with a final MACT standard as expeditiously as practicable, but no later than 3 years after the effective date of such standard. Thus, if EPA had followed Clean Air Act deadlines, these power plants would have complied with the MACT standards by Dec. 20, 2005. In these circumstances, any argument that the utilities have not had enough time to prepare for the new standards simply is without merit. States and utilities have had ample time to prepare for regulation of power plant HAP emissions

and the replacement of old dirty plants with cleaner plants should be encouraged. For these and the following reasons, Maryland supports EPA's promulgation and implementation of the proposed Utility MACT.

In 2006, Maryland enacted the Healthy Air Act. The Healthy Air Act required major reductions in mercury emissions to be phased in at Maryland power plants starting in 2010 with additional reductions in 2013. The Healthy Air Act impacts Maryland's largest coal-burning power plants, which account for over 95% of the state's power plant emissions. Facilities covered include: Constellation Energy Group's Brandon Shores, Crane, and Wagner plants; GenOn's Chalk Point, Morgantown and Dickerson plants; and First Energy's R. Paul Smith Plant located in Washington County, Maryland.

At full implementation, the Healthy Air Act will reduce mercury emissions by 90 percent. In fact, data from the last four quarters submitted by these coal-fired plants in Maryland show mercury emissions have already been reduced by 88 percent (953 pounds per year to 110 pounds per year) without affecting reliability.

The reason for Maryland's introduction of these stringent controls is because mercury is a hazardous neurotoxin that accumulates in the environment and particularly in aquatic wildlife. According to EPA data on mercury deposition, Maryland ranks among the states most severely affected by concentrated mercury. As a result of mercury deposition in Maryland, waters throughout Maryland are designated as impaired because of mercury concentrations in fish tissue, where mercury accumulates. The problem is particularly acute in western Maryland, where virtually every freshwater lake or impoundment is impaired. Mercury concentrations in fish tissue in Deep Creek Lake, Savage River Reservoir, and Big Piney Reservoir average almost double safe concentrations. Ten species of fish are subject to mercury consumption advisories in

Maryland, and large fish in nearly all Maryland lakes and impoundments are impaired for mercury.

Scientists agree that atmospheric deposition is the dominant source of mercury loading to the aquatic environment. According to multiple EPA studies, coal-fired electric utilities are the largest anthropogenic source of mercury air emissions in the United States. In the atmosphere, mercury is transported by wind and reaches waters either through direct deposition or as runoff from the land after a storm event. In the water, natural biological processes can transform the mercury into methylmercury, a highly toxic form. Small organisms and plants take up the methylmercury as they feed. Animals that are higher up the food chain, such as fish, bioaccumulate mercury when they eat plants, food organisms or other fish containing mercury. In turn, humans accumulate mercury when they consume contaminated fish. The higher up the food chain, the higher are the levels of mercury.

The bad news is that a large amount of Maryland's mercury pollution continues to come from out of state. This is because air pollution does not stop at a State's borders. Specifically, out-of-state power plant emissions account for approximately 97 percent of total mercury deposition in representative Maryland lakes and impoundments and as much as 50 to 70 percent of the air pollution in Maryland. While Maryland power plants have invested more than \$2 billion in pollution controls to comply with Maryland's Healthy Air Act, similar investments have not been made in upwind states. Additionally, other out-of-state mercury emissions impact Maryland's waters. For example, PPG Industries Inc.'s Natrium facility, which is approximately 72 miles west of the West Virginia/Maryland border, emits airborne mercury that is carried by prevailing winds into Maryland and is deposited onto the land and into the waters of Maryland, particularly in western Maryland. The State of Maryland entered into a settlement agreement

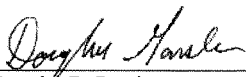
with PPG to reduce mercury emissions to no more than 150 pounds per year by 2011 and no more than 145 pounds per year by 2013 - an 87.5% reduction from 2004 emission levels.

That's why we strongly support proposals from the Environmental Protection Agency to set stricter air pollution limits. The federal rules, specifically the Utility MACT, would begin to level the playing field and ensure that appropriate controls are required across the country. As Maryland develops new strategies and increases enforcement efforts to clean up Maryland's air and water, Maryland may be forced to continue to look at pollution sources, including power plants, emanating outside the State unless and until EPA acts to reduce them on a nationwide basis.


The good news from the Healthy Air Act is not limited to cleaner Maryland air and water, however. In addition to reducing the amount of mercury emissions in the Maryland's air and deposited in Maryland waters, the requirements of the Healthy Air Act have helped create jobs in Maryland. Two examples from reports received by the Maryland Department of the Environment show an increase in jobs related to implementation of the Healthy Air Act. For example, the total number of permanent jobs created at GenOn plants in Maryland due to the Healthy Air Act was about 50 and the number of temporary construction jobs averaged about 880, with peaks of as many as 1600. Similarly, at Constellation Group's Brandon Shores plant, during peak construction to install its new air quality control system 1,385 personnel were on site at one time. These jobs included skilled craft and construction workers including boilermakers, steamfitters, pipefitters, operating engineers, millwrights, ironworkers, electricians and master electricians, as well as carpenters, teamsters, and laborers.

The bottom line is that what has been good for Maryland can be good for the entire country and without assistance from EPA in the form of stricter national mercury emissions

controls, the clean air and clean water accomplishments in Maryland will be diminished and Maryland will be forced to continue its uphill battle against pollution sources from outside its borders.



Douglas F. Gansler, Attorney General
State of Maryland



Robert M. Summers, Secretary
Maryland Department of the Environment



Unions for Jobs And the Environment

Address: PO Box 56173, Washington, DC 20040-6173 Voice and Fax: 301-585-5828 Email: ujae@rcn.com Website: www.ujae.org

Member Unions

Brotherhood of Locomotive
Engineers and Trainmen, IBT
Brotherhood of Maintenance of
Way Employees Division, IBT
International Brotherhood
of Boilermakers,
Iron Ship Builders,
Blacksmiths, Forgers
and Helpers
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Transportation & Communications
International Union
United Association
of Plumbers and Pipe Fitters
International Association
of Bridge, Structural, Ornamental
and Reinforcing Iron Workers
United Food and Commercial
Workers International Union
United Mine Workers
of America
United Transportation Union
Utility Workers Union
of America

President
Bill Banig
Vice-President
Jim Hunter
Secretary-Treasurer
Bill Cunningham
General Counsel
Gene Trisko

U.S. Environmental Protection Agency
EPA Docket Center
Mailcode 2822-T
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

July 8, 2011

Re: EPA-HQ-OAR-2009-0234; EPA-HQ-OAR-2011-0044
National Emission Standards for Hazardous Air Pollutants
From Coal and Oil-Fired Electric Utility Steam Generating
Units and Standards of Performance for Fossil-Fuel-Fired
Electric Utility, Industrial-Commercial-Institutional, and
Small Industrial-Commercial-Institutional Steam
Generating Units, 76 FR 24976 (May 3, 2011)

Ladies & gentlemen:

These comments are submitted on behalf of Unions for Jobs and the
Environment (UJAE), a §501(c)(4) organization of national and
international labor unions.

UJAE's member unions represent more than 3.2 million workers in
electric power, transportation, coal mining, construction and other
industries. UJAE members' jobs and economic wellbeing will be
vitaly affected by U.S. EPA's decisions on the proposed Mercury
and Air Toxics Standards ("MATS") rule referenced above.

Virginia DEO
Orders Issued Between January 1, 2010 and November 1, 2011

Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated / Closed Date	Civil Charges	SEP Offset	Action
Lafarge Building Materials Inc	State Air Pollution Control Board	AIR	Tidewater	60159	Installation and operation of pneumatic railcar cement materials unloading system without permit	1/7/2010	3/25/2010	\$8,850.00		Consent Order
Crown Orchard Company L.P., L.P. for Crown Orchard Unpermitted Facility	Virginia Waste Management Board	WASTE	Valley	none	existence of waste piles containing household garbage, glass, plastics, fluorescent light bulbs, batteries, tires, appliances, and miscellaneous solid waste without permit to operate a solid waste landfill	1/10/2010	2/3/2010	\$9,551.00		Consent Order
A & G Coal Corporation	State Air Pollution Control Board	AIR	Southwest	11561	Failure to submit information and apply for relocation of portable screen unit prior to movement of unit	1/11/2010	3/14/2010	\$2,160.00		Consent Order
James Madison University Executive Compliance Agreement for Hazardous Waste Generating Facilities	Director's Authority Executive Compliance Agreement	WASTE	Valley	VAD077929198 VAD58267262	transportation of waste to and operation of a hazardous waste accumulation area at unregistered sites	1/25/2010	4/27/2011	\$0.00		Consent Order
Zion Crossroads Recycling Park, LLC for Van Der Linde Recycling	State Air Pollution Control Board	AIR	Valley	81621	Installation and operation without permit of 70-ton permit capacity horizontal waste grinder powered by diesel engine	1/28/2010	2/18/2010	\$4,420.00		Consent Order
Mr. Michael Westmoreland D B A West Imports Metal Recyclers for West Imports Metal Recyclers - Amendment to order of January 22, 2008	Virginia Waste Management Board	WASTE	Blue Ridge	VAR000516047	To provide financial assurance for both the clean closure and contingent closure plans is financially burdensome to the extent that Mr. Westmoreland might not fulfill both plans	2/16/2010	2/25/2011	\$0.00		Consent Order
Georgia-Pacific Wood Products LLC	Virginia Waste Management Board	WASTE	Blue Ridge	VAR00000	roll-off container used by GP to ship hazardous fly ash not marked, manifested, handled in accordance with regulations	2/24/2010	3/19/2010	\$11,000.00		Consent Order
Padgett Manufacturing Co. for Madgett Manufacturing	State Air Pollution Control Board	AIR	Valley	80930	records demonstrating compliance with SOP and NSR permits either not current or not available for review	3/11/2010	9/3/2010	\$0.00		Consent Order
Greystone of Virginia, Inc. for Greystone Toano Facility	State Air Pollution Control Board	AIR	Tidewater	61127	Unable to demonstrate that it had conducted initial performance test for chromium electroplating system Line 3 of Proto 1	3/17/2010	5/19/2010	\$7,094.00		Consent Order

Virginia DEQ
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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated / Closed Date	Civil Charges SEP Offer	Action
PolyOne Engineered Films, Inc	Virginia Waste Management Board	WASTE	Valley	none	did not fully comply with VSWMR	3/17/2010		\$0.00	Consent Order
Wayne Freeze, Jr	State Water Control Board	WATER	Valley	VPG260106	failure to submit poultry waste records	3/18/2010		\$2,000.00	Consent Order
Glenwood South, L.L.C. for Indian River Subdivision	State Water Control Board	WATER	Tidewater	WP4-03-1081	unauthorized impacts - significant alteration and degradation of wetlands and discharge of fill material impacted portions of the wetland areas	3/18/2010	7/26/2010	\$24,852.00	Consent Order
Howard Hughes Medical Institute	State Water Control Board	WATER	Northern Virginia	WP4-03-1537	discharge of number 2 diesel fuel at Juchela Farm, approximately 600 gallons of fuel entered a storm drain inlet and flowed into an unnamed tributary of the Potomac River	3/18/2010	3/8/2011	\$16,718.00	Consent Order
Shore Landvest, Inc. db/a Sunset Beach Resort	State Water Control Board	WATER	Tidewater	GW0039200	ground water withdrawal without renewed permit	3/18/2010	6/1/2011	\$32,000.00	Consent Order
City of Bedford for City of Bedford Wastewater Treatment Plant	State Water Control Board	WATER	Blue Ridge	VA0022390	unauthorized discharges	3/19/2010		\$0.00	Consent Order
Crug - New Castle Public Service Authority for Crug - New Castle PSA Wastewater Treatment Plant	State Water Control Board	WATER	Blue Ridge	VA0064599	unauthorized discharges	3/19/2010		\$0.00	Consent Order
Dare to Care Charities, Inc for Dare to Care Charities, Inc Wastewater Treatment Plant	State Water Control Board	WATER	Blue Ridge	VA0066909	Exceed discharge limitations	3/19/2010		\$7,000.00	Consent Order
L. Wayne Hunt for Haven Hollow Farm	State Water Control Board	WATER	Blue Ridge	VPG270013	use of disposal pit for routine disposal of daily poultry mortalities	3/19/2010	6/4/2010	\$1,250.00	Consent Order
Summit Development Company, Inc for Tall Oaks Crossing Parcel	State Water Control Board	WATER	Blue Ridge	none	750 linear feet of channel filled with earth and rock without permit	3/19/2010		\$22,750.00	Consent Order
Fountainhead Land Company, LLC for Ballyhack Golf Club	State Water Control Board	WATER	Blue Ridge	WP4-07-2708	1700 linear feet of unnamed tributary to Back Creek impacted by discharge of sediment	3/22/2010		\$44,600.00	Consent Order
United States Army and Alliant Technologies Inc. for Radford Army Ammunition Plant	State Air Pollution Control Board	AIR	Blue Ridge	20656	stack report demonstrated excess lead emissions	3/22/2010	5/13/2010	\$20,387.50	Consent Order

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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated / Closed Date	Civil Charge	SEP Offset	Action
Omega Protein, Inc	State Air Pollution Control Board	AIR	Piedmont	40278	scrubber material removed from scrubbers during 2008 off-season, failure to maintain and operate scrubbers	3/26/2010		\$22,045.00		Consent Order
Augusta County Service Authority for Augusta Regional Landfill Expansion Project	State Water Control Board	WATER	Valley	07-0609	no record of preconstruction monitoring reports	3/29/2010		\$8,685.00		Consent Order
Bath County Service Authority for Hot Springs Regional STP	State Water Control Board	WATER	Valley	VA0066303	unpermitted discharge due to pump station overflow and unauthorized discharges of solids	3/29/2010		\$ 2,646.00		Consent Order
W Boutros and Company for Anne Marie Estates	State Water Control Board	WATER	Valley	WP4-05-1080	failure to complete the final compensatory mitigation plan	3/29/2010		\$8,919.00		Consent Order
Alderman Railcar Services, Inc	State Air Pollution Control Board	AIR	Blue Ridge	32086	Two spray bays and shot blasting bay constructed and in operation without permit to construct and operate or modification and operation of source	4/5/2010		\$3,777.00		Consent Order
Department of Behavioral Health and Developmental Services and Southwestern Virginia Mental Health Institute	Director's Authority Executive Compliance Agreement	WASTE	Southwest	none	contaminated medical waste disposed at a solid waste management landfill	4/6/2010		\$0.00		Consent Order
Solite, LLC	State Air Pollution Control Board	AIR	Blue Ridge	30200	failure to maintain periodic monitoring records	4/7/2010	4/13/2010	\$10,140.00		Consent Order
Trex Company, Inc	State Air Pollution Control Board	AIR	Valley	81164	stack test report indicated a formaldehyde short term emission result exceeded emissions limits	4/19/2010	4/19/2011	\$9,919.00		Consent Order
BGF Industries, Inc	Virginia Waste Management Board	WASTE	Blue Ridge	VAD119071314	failure to label hazardous waste container; absence of a written job description for an employee responsible for hazardous waste management	4/26/2010	6/17/2010	\$3,850.00		Consent Order
Oilfield Pipe & Supply, Inc - Amendment to an Order by Consent	Virginia Waste Management Board	WASTE	Piedmont	VAD988196747	improper labeling of drums of wheelabrator waste, failure to document weekly inspections of hazardous waste accumulation areas	5/10/2010		\$9,814.00		Consent Order
Strongwell Corporation for Highlands Division	State Air Pollution Control Board	AIR	Southwest	11207	construction and operation of a manual surface coating process without first obtaining permit or providing notification	5/14/2010	6/26/2010	\$6,415.00		Consent Order

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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated / Closed Date	Civil Charges SEP Offset	Action
Bon Secours - DePaul Medical Center, Inc	State Air Pollution Control Board	AIR	Tidewater	8/16/2001	annual throughput records of natural gas for boilers were not being calculated monthly as sum of each consecutive 12-mo. Period	5/20/2010	7/11/2010	\$1,950.00	Consent Order
Lynchburg Steel Company, LLC for Lynchburg Steel Company, LLC's Facility in Monroeville, Virginia	Virginia Waste Management Board	WASTE	Blue Ridge	VAD053183059	change in status to LQG without first notifying DEQ	5/25/2010	7/25/2010	\$17,407.00	Consent Order
City of Manassas/Virginia Municipal Electric Association	State Air Pollution Control Board	AIR	Northern Virg	71977	Failure to submit Title V Semi-Annual Compliance Monitoring Report	5/26/2010	7/14/2010	\$2,574.00	Consent Order
Rock-Tenn Converting Company	Virginia Waste Management Board	WASTE	Blue Ridge	511	Failure to have proper financial assurance	5/26/2010	8/29/2010	\$9,450.00	Consent Order
Mid-Atlantic Materials, Inc. for the Hayfield Sand and Gravel Plant	State Air Pollution Control Board	AIR	Northern Virg	40891	Unable to produce records demonstrating calculation of annual production of sand and gravel, failure to conduct VEE test within time period specified	6/2/2010	9/24/2010	\$9,503.00	Consent Order
ITT Corporation	Virginia Waste Management Board	WASTE	Blue Ridge	VAD003123072	Acceptance of hazardous waste from an off-site generator without permit	6/9/2010	6/25/2010	\$1,800.00	Consent Order
Blue Ridge Crushing & Screening, LLC	State Air Pollution Control Board	AIR	Northern Virg	41069	Failure to submit to DEQ crusher's actual start-up date & notification to DEQ of relocation of crusher	6/10/2010	2/2/2011	\$11,607.00	Consent Order
Evergreen Country Club, Inc. for Evergreen Country Club Sewage Treatment Plant	State Water Control Board	WATER	Northern Virg	VA0087891	exceeded discharge limitations	6/22/2010		\$7,500.00	Consent Order
Fairfax County School Board for Gunston Elementary School Sewage Treatment Plant	State Water Control Board	WATER	Northern Virg	VA0023299	exceedances of maximum and average concentration of permit effluent limits	6/22/2010		\$4,850.00	Consent Order
Mr. Kurt A. Lorenz	State Water Control Board	WATER	Tidewater	none	failure to secure permit for land clearing activity, unauthorized impacts to wetlands and discharge of pollutants	6/22/2010		\$22,750.00	Consent Order

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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated / Closed Date	Civil Charges / SEP Offset	Action
Prince William County Service Authority for the H. L. Mooney Wastewater Treatment Works and the Prince William County Service Authority Sanitary Sewer System	State Water Control Board	WATER	Northern Virginia	VA0025101	actively pumping sewage out of multiple areas of the Service Authority's sanitary sewer collection system during a storm event	6/22/2010		\$ 25,320.00	Consent Order
Royal Fumigation Inc. for Royal Fumigation Suffolk	State Air Pollution Control Board	AIR	Tidewater	61579	Lack of notification re dates of construction and startup information regarding fumigation using hazardous methyl bromide on-site	6/22/2010		\$51,270.00	Consent Order
Salt Ponds Marina Resort, LLC for UST Facility at 11 Ivory Gull Crescent, Hampton, Virginia	State Water Control Board	WATER	Tidewater	5-041443	Failure to notify DEQ of change of ownership of two USTs	6/22/2010	8/19/2011	\$13,465.00	Consent Order
Shine Transportation, Inc. Stafford County Board of Supervisors for the Aquia Wastewater Treatment Plant	State Water Control Board	WATER	Northern Virginia	none	discharge of diesel/fuel oil - 5,500 gal - into storm drain in median of Dulles Greenway, which led directly to an unnamed tributary of Sycolin Creek	6/22/2010		\$17,000.00	Consent Order
United States Department of the Navy for Naval Air Station Oceana - Dam Neck Annex	State Water Control Board	WATER	Northern Virginia	VA0060968	sewer collection system experienced unauthorized discharge events	6/22/2010	2/5/2011	\$43,225.00	Consent Order
Western Industries-North, LLC for Western Fumigation, Suffolk	State Air Pollution Control Board	AIR	Tidewater	61580	Unauthorized discharge of approximately 240,000 gallons of liquid heat-exchange medium from broken pipe	6/22/2010		\$0.00	Consent Order
Belvedere Station Land Trust for Belvedere Development	State Water Control Board	WATER	Valley	WP4-06-2581	Lack of notification re dates of construction and startup information regarding fumigation using hazardous methyl bromide on-site	6/22/2010		\$51,270.00	Consent Order
Evergreen Land Company for Mountain Valley Farm Subdivision	State Water Control Board	WATER	Valley	WP4-08-0177	failure to submit semi-annual construction monitoring report, failure to have protective mechanism for the compensation sites	6/24/2010		\$7,911.00	Consent Order
Imperial Transport of Tenn., Inc.	State Water Control Board	WATER	Southwest	IR 2010-S-0051	inadequate eds controls, construction of the cross vane and weirs at impact #1 not complete	6/24/2010		\$8,236.00	Consent Order
Town of Stanley	State Water Control Board	WATER	Valley	VA0064394	discharge of off-road diesel fuel - 7,400 gal experiences significant inflow and infiltration events	6/24/2010		\$11,100.00	Consent Order
								\$12,285.00	Consent Order

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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violations(s)	Executed	Terminated / Closed Date	Civil Charges	SEP Offset	Action
Tavares Concrete Co., Inc. for Tavares Concrete	State Air Pollution Control Board	AIR	Northern Virg	733278	failure to notify DEQ of actual date of relocation of emission unit, failure to perform VEEs for initial compliance determination for Komatsu BR 550JG crusher within 180 days of startup	6/24/2010	10/1/2010	\$12,803.60		Consent Order
City of Waynesboro for Waynesboro STP	State Water Control Board	WATER	Valley	VA00035151	Although Waynesboro has completed the requirements in Appendix A of 2004 Amendment, City continues to experience I & II events	6/24/2010		\$7,706.00		Consent Order
Town of Brookfield for Falling River Lagoon STP and Staunton River Lagoon STP	State Water Control Board	WATER	Blue Ridge	VA0022250	exceeded permit effluent limits and failed to meet compliance deadlines and monitoring, response, or reporting requirements	6/25/2010	5/26/2011	\$0.00		Consent Order
Ferrum Water and Sewage Authority for Town of Ferrum Sewage Treatment Plant	State Water Control Board	WATER	Blue Ridge	VA0029254	exceeded permit effluent limitations	6/25/2010		\$2,200.00		Consent Order
Manakin Water and Sewerage Corporation for Manakin Farms Lagoon	State Water Control Board	WATER	Piedmont	VA0027910	Exceeded permit discharge limitations	6/25/2010		\$0.00		Consent Order
Town of Surry	State Water Control Board	WATER	Piedmont	VA0061646	Exceeded permit discharge limitations materials in expansion area not managed in commodity-like fashion, Dept. had not received the COA documents or updated financial assurance, dense growth of large woody vegetation on side slopes and top area of active unit	6/25/2010		\$7,020.00		Consent Order
Thomas Bros., L.C. for Thomas Brothers Debris Landfill	Virginia Waste Management Board	WASTE	Blue Ridge	445		6/25/2010	2/24/2011	\$14,560.00		Consent Order
Alliant Technologies, Inc. (Operator) for Radford Army Ammunition Plant	State Water Control Board	WATER	Blue Ridge	VA00000248	exceeded discharge limitations	6/25/2010	10/23/2011	\$3,300.00		Consent Order
Western Virginia Water Authority for Falling Creek Water Filtration Plant	State Water Control Board	WATER	Blue Ridge	VA0001465	exceeded copper permit limitations	6/25/2010	11/4/2010	\$3,500.00		Consent Order
Blue Ridge Solvents & Coatings, Inc.	State Air Pollution Control Board	AIR	Blue Ridge	30229	mixing tanks in production area were uncovered, failure to maintain records	6/28/2010	4/26/2011	\$7,826.00		Consent Order

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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated / Closed Date	Civil Charges SEP Offset	Action
Johnston Memorial Hospital, Inc	Virginia Waste Management Board	WASTE	Southwest	IR-2010-S-2166	contaminated medical waste disposed at a solid waste management landfill	7/8/2010		\$9,000.00	Consent Order
Merck Sharp & Dohme Corp for State Air Pollution Control Board	State Air Pollution Control Board	AIR	Valley	80524	combined HAP emissions exceeded quantity used to define a significant modification in condition IV E 4(a) and (b) of Merck's Title V permit	7/21/2010	8/16/2010	\$16,705.00	Consent Order
Celanese Acetate, LLC	State Air Pollution Control Board	AIR	Blue Ridge	20304	131 valves not monitored in 9/2007 or 9/2008 in the anhydride manufacturing process unit	8/5/2010	1/31/2011	\$15,715.70	Consent Order
Essel Propack America LLC for Essel Propack Graphics	Virginia Waste Management Board	WASTE	Blue Ridge	VAR000517474	Failure to properly label hazardous waste containers of waste ink and solvent, failure to perform weekly inspections of its containers of hazardous waste in its <180-day storage area	8/9/2010	9/20/2010	\$19,110.00	Consent Order
Norfolk Naval Shipyard	Virginia Waste Management Board	WASTE	Tidewater	VA1170024813	containers of hazardous waste transported from NNSY to Norfolk Station Norfolk without a uniform hazardous waste manifest	8/12/2010	10/17/2010	\$8,400.00	Consent Order
Sampson Coatings, Inc	Virginia Waste Management Board	WASTE	Piedmont	VAD003109600	filters containing used paint solids and sludge were air dried in open containers, incorrect information on manifests	8/16/2010	12/10/2010	\$17,500.00	Consent Order
TPC University, L C for TPC University	State Air Pollution Control Board	AIR	Northern Virg	73617	failure to conduct initial performance testing and VEE	8/16/2010	2/4/2011	\$8,645.60	Consent Order
Quality Culvert, Inc	State Air Pollution Control Board	AIR	Piedmont	52300	construction and operation without permit	8/17/2010	9/16/2010	\$13,897.00	Consent Order
Southeastern Public Service Authority of Virginia and Wheelabrator Portsmouth Inc for Wheelabrator Portsmouth Municipal Waste Combustion Facility Formerly Southeastern Public Service Authority of Virginia	State Air Pollution Control Board	AIR	Tidewater	61018	permit limit exceedences	8/25/2010		\$60,620.00	Consent Order

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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated / Closed Date	Civil Charges	SEP Offset	Action
Qwest Communications Company, LLC	State Air Pollution Control Board	AIR	Northern Virginia	73293	Failure to submit notification of actual installation of diesel generators, failure to conduct VEE for one of two units	9/2/2010	11/3/2010	\$5,040.00		Consent Order
Reckitt Benckiser Inc.	State Air Pollution Control Board	AIR	Northern Virginia	None	sale of product (Air Wick Freshmatic Ultra Air Freshener) containing volatile organic compounds in excess of the limits specified in table 45-3A	9/9/2010	2/3/2011	\$0.00		Consent Order
The Amelia Lumber Company, Incorporated for Amelia Lumber	Virginia Waste Management Board	WASTE	Piedmont	VAD003113438	Failure to perform assessment of sump's integrity, failure to maintain records re drip pad cleaning	9/17/2010		\$37,663.00		Consent Order
Phillip P. Jackson for Unpermitted Landfill at 941 Newman's Neck Road	Virginia Waste Management Board	WASTE	Piedmont	none	disposal of solid waste without permit	9/17/2010		\$0.00		Consent Order
Blue Ridge Fiberboard, Inc. for an unpermitted wood ash industrial landfill, formerly the Knight-Celotex Industrial Landfill Facility located in Danville, Pymaterra County	Virginia Waste Management Board	WASTE	Blue Ridge	none	transference of post-closure care	9/22/2010		\$0.00		Consent Order
Carry-On Trailer, Inc.	Virginia Waste Management Board	WASTE	Piedmont	VAR000507731	Unreported discharges of paint spills	9/22/2010	4/18/2011	\$13,500.00		Consent Order
Mr. David Powroznik and Commonwealth Concrete, L.L.C.	State Air Pollution Control Board	AIR	Piedmont	52166	failure to maintain and operate controls associated with cement silo and truck loading; excess particulate emissions from baghouse vent	9/22/2010	11/23/2010	\$7,571.00		Consent Order
Commonwealth Laminating & Coating Inc.	State Air Pollution Control Board	AIR	Blue Ridge	30972	Failure to maintain wet scrubber efficiency rate of at least 95%	9/23/2010		\$22,692.00		Consent Order
Delta Star, Inc.	State Air Pollution Control Board	AIR	Blue Ridge	30239	records not kept on monthly or rolling 12 mo basis, failure to submit 2009 annual update report	9/24/2010		\$2,812.00		Consent Order
Town of Albemarle for Albemarle Wastewater Treatment Plant	State Water Control Board	WATER	Piedmont	VA0026816	Discharge limit exceedances	9/27/2010		\$3,780.00		Consent Order

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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated / Closed Date	Civil Charge	SEP Offset	Action
Arlington County Board for Arlington County WPCP	State Water Control Board	WATER	Northern Virg	VA0025143	Unauthorized discharge of partially treated sewage	9/27/2010	2/4/2011	\$87,590.00		Consent Order
Town of Cape Charles Wastewater Treatment Plant	State Water Control Board	WATER	Tidewater	VA0021288	deficiencies in the operation and maintenance of the facility, exceeding discharge limitations	9/27/2010		\$9,030.00		Consent Order
Courtney Development, Inc. Dominion Campground, Inc. Amendment to Consent Order Issued July 1, 2003	State Water Control Board	WATER	Piedmont	01-0081	sediment discharge	9/27/2010		\$9,555.00		Consent Order
	State Water Control Board	WATER	Northern Virg	VA0091014	Exceeded permit discharge limitations	9/27/2010		\$6,090.00		Consent Order
Eagle Transport of Virginia, Inc.	State Water Control Board	WATER	Southwest	IR 2010-S-0081	Sept 9, 2009, discharge of non-highway use diesel fuel - 2,801 gal	9/27/2010		\$28,117.00		Consent Order
Halifax County Service Authority for Maple Avenue WWTP	State Water Control Board	WATER	Blue Ridge	VA0020362	exceeded discharge limitations	9/27/2010		\$0.00		Consent Order
IMTT-Virginia for IMTT-Virginia Chesapeake Terminal	State Water Control Board	WATER	Tidewater	5026420	overflow of heavy fuel oil from storage tank 503	9/27/2010	12/5/2010	\$1,300.00		Consent Order
KmX Chemical Corp Lunsburg County for Lunsburg County Administrative Complex STP	State Water Control Board	WATER	Tidewater	VAR050491	unpermitted discharge	9/27/2010		\$9,100.00		Consent Order
	State Water Control Board	WATER	Blue Ridge	VA0091391	Exceed discharge limitations quarterly visual examinations of storm water quality not performed in 3rd qr of 2008 or 3rd qr 2009 site map did not identify all storm water outfalls	9/27/2010	12/30/2010	\$0.00		Consent Order
Metro Used Auto Parts, Inc. for 5209 Sondej Avenue Facility	State Water Control Board	WATER	Tidewater	VAR050149	water outfalls	9/27/2010		\$4,060.00		Consent Order
North Carolina & Virginia Railroad Company, LLC	State Water Control Board	WATER	Tidewater	IR 2010-T-2653	discharge of 1,000 gallons of diesel fuel into the Intracoastal Waterway	9/27/2010	12/2/2010	\$15,099.00		Consent Order
					method of release detection identification inconsistent, four USTs not registered in Rahim's ownership, unable to provide documentation that testing of cathodic protection system had been performed within 3 yrs					
Rahim Corp. for Hi and Buy	State Water Control Board	WATER	Piedmont	4-007383		9/27/2010		\$13,900.00		Consent Order
George W. Kemper IV - Wint Kemper Farm	State Water Control Board	WATER	Valley	VPG260648	improper storage of poultry waste	9/29/2010	1/25/2011	\$1,000.00		Consent Order

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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violations(s)	Executed	Terminated / Closed Date	Civil Charges	SEP Offset	Action
Town of Monterey for Monterey STP Amendment to order issued June 28, 2007	State Water Control Board	WATER	Valley	VA0023281	violations of the 2007 order's CBOD concentration average and CBOD concentration maximum interim effluent limitations in Jan 2008	9/29/2010		\$0.00		Consent Order
Commander, Navy Region Mid-Atlantic	Virginia Waste Management Board	WASTE	Tidewater	VA6170061463	exceedance of 90-day storage period for hazardous waste paint	9/30/2010	11/16/2010	\$8,610.00		Consent Order
Mike Leech for M & M Grocery	State Water Control Board	WATER	Blue Ridge	2-010834	UST not registered at time of inspection, documentation of release detection on pressurized piping not provided, overflow prevention devices not installed	10/1/2010		\$12,000.00		Consent Order
Roanoke Electric Steel Corporation dba Steel Dynamics - Roanoke Bar Division	State Water Control Board	WATER	Blue Ridge	VA0001589	Failure to submit complex VPDES permit application on or before 6 mo. prior to permit expiration date	10/1/2010	5/22/2011	\$15,600.00		Consent Order
BFI Waste Systems of Virginia L.L.C. for Old Dominion Landfill - Amendment to order issued March 24, 2004	State Water Control Board	WATER	Piedmont	VA0091499	permit effluent limitation exceedances	10/4/2010		\$13,100.00		Consent Order
Hull Street Express, Inc dba Chappenhams BP	State Air Pollution Control Board	AIR	Piedmont	51751	Stage I system was coaxial, not certified in VA to remove, destroy or prevent discharge of at least 99% VOC emissions, State II system upgraded and placed in service without testing/certification	10/4/2010		\$6,184.00		Consent Order
Atlantic Industrial Services, Inc.	Virginia Waste Management Board	WASTE	Piedmont	VAD98055577	transporting of hazardous waste with expired permit	10/6/2010	12/7/2010	\$3,500.00		Consent Order
Fauquier Hospital Incorporated for Fauquier Hospital	State Air Pollution Control Board	AIR	Northern Virginia	40736	failure to obtain fuel certification from fuel supplier, failure to submit semi-annual fuel reports	10/6/2010	1/21/2011	\$10,904.40		Consent Order
Lahumum L.L.C. for Airport BP	State Water Control Board	WATER	Piedmont	4-003671	cathodic protection equip. operation records not available, several release detection failures discovered by suspected release not reported	10/6/2010	1/4/2011	\$6,000.00		Consent Order

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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated / Closed Date	Civil Charges	SEP Offset	Action
Norfolk Redevelopment and Housing Authority for Young Terrace Housing Central Heat Plant	State Air Pollution Control Board	AIR	Tidewater	60844	construction without permit	10/7/2010	12/11/2010	\$4,778.00		Consent Order
Southern Concrete Products, LLC	State Air Pollution Control Board	AIR	Tidewater	60200	construction without permit	10/8/2010	12/11/2010	\$6,292.00		Consent Order
Pragmatic Environmental Solutions Company	Virginia Waste Management Board	WASTE	Blue Ridge	VAR000517185	failure to obtain RCRA Subtitle C site of form as a SQG of hazardous waste, containers of hazardous waste placed haphazardly between other materials	10/18/2010		\$7,100.00		Consent Order
County of Sussex, Virginia for Gin Hill Sanitary Landfill (SWP 193) and Robinson Road Sanitary Landfill (SWP 107) Amendment to order issued September 26, 2006	Virginia Waste Management Board	WASTE	Piedmont	SWP 193	groundwater exceedances	10/19/2010		\$0.00		Consent Order
Samuel Aman	State Water Control Board	WATER	Blue Ridge	none	construction activity and channel grading in Spruce Run, a perennial stream -- which resulted in impacts to an adjacent wetland -- no permit applications filed	10/20/2010		\$48,750.00	\$36,562.50	Consent Order
Kelmar Incorporated	Virginia Waste Management Board	WASTE	Northern Virg	VAD058592387	failure to complete a waste determination of the paint booth filters and solvent rags, failure to properly dispose of hazardous waste	10/28/2010	12/2/2010	\$4,716.00		Consent Order
Brunswick Waste Management Facility, LLC for the Brunswick Landfill	Virginia Waste Management Board	WASTE	Piedmont	SWP 583	unauthorized discharge of water from sedimentation basin to state waters via basin outfall	10/29/2010		\$6,000.00		Consent Order
Spotsylvania County for Chancellor Closed Landfill	Virginia Waste Management Board	WASTE	Northern Virg	503	leachate leaked from and ponded around one of the facility's leachate holding tanks and seeped into the nearby creek	10/29/2010	12/2/2010	\$6,300.00		Consent Order
Griffin Pipe Products Co., Inc.	Virginia Waste Management Board	WASTE	Blue Ridge	VAD065417008	failure to manifest a hazardous waste shipment and did not mark containers with words 'hazardous waste'	11/2/2010	12/13/2010	\$8,000.00		Consent Order
Prince William Concrete Recyclers, Inc.	State Air Pollution Control Board	AIR	Northern Virg	73722	construction and operation of plant without permit	11/2/2010		\$3,500.00		Consent Order

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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violations(s)	Executed	Terminated / Closed Date	Civil Charges	SEP Offset	Action
Gary Fitzgerald Property	WASTE	SOLID	Valley			11/5/2010		\$0.00	\$0.00	1186 Order
Adams Construction Company for State Air Pollution Control Board	State Air Pollution Control Board	AIR	Blue Ridge	30955	wet suppression for haul roads and stockpiles not applied VEE conducted that documented opacity above 20%	11/15/2010	1/3/2011	\$5,652.00		Consent Order
MW Manufacturers Incorporated Town of Culpeper for the Town of Culpeper Wastewater Treatment Plant	State Air Pollution Control Board	AIR	Blue Ridge	30386	installation of new spray booth without permit modification	11/18/2010	12/1/2011	\$7,142.00		Consent Order
State Water Control Board	State Water Control Board	WATER	Northern Virg	VA0061590	exceeded discharge limitations	12/9/2010	5/31/2011	\$13,550.00		Consent Order
Town of Kenbridge for Kenbridge State Water Control Board	State Water Control Board	WATER	Blue Ridge	VA0026239	Permit limit exceedences, process control pumps and chlorine scales not repaired or replaced, unpermitted discharge to state waters	12/9/2010		\$39,000.00	\$29,250.00	Consent Order
Loudoun County Sanitation Authority dba Loudoun Water for Courland Rural Village WRF	State Water Control Board	WATER	Northern Virg	VPA00010	reclaimed water being deliver to non-system storage pond without CTO	12/9/2010		\$14,215.00		Consent Order
Winchester Homes, Inc. for Glenhaven South Subdivision	State Water Control Board	WATER	Northern Virg	WP4-05-1068	unauthorized impacts to approximately 390 lf of unnamed tributary of Mine Run	12/9/2010		\$20,100.00		Consent Order
American Marine Group, Inc	State Water Control Board	WATER	Tidewater	IR 2010-T-2376	Discharge of diesel fuel in the waters near boatyard -400 gal	12/10/2010		\$7,361.00		Consent Order
B & J Enterprises L.C. For Blacksburg Country Club STP	State Water Control Board	WATER	Blue Ridge	VA0027481	exceeded discharge limitations	12/10/2010		\$11,583.00		Consent Order
Brasscome, Inc. for Oak Hall Ready-Mix Facility	State Water Control Board	WATER	Tidewater	VAG110265	failure to develop a facility SWP3 and to perform quarterly visual examinations of storm water quality	12/10/2010		\$5,670.00		Consent Order
Carrollton Used Auto Parts, Inc	State Water Control Board	WATER	Tidewater	VAR050280		12/10/2010		\$4,660.00		Consent Order
va Joe's Auto Parts Harrisonburg-Rockingham Regional Sewer Authority for North River WWTF	State Water Control Board	WATER	Valley	VA0060640	unauthorized discharge from grit chamber which entered the North River	12/10/2010		\$10,500.00		Consent Order
Bandy LLC	State Water Control Board	WATER	Blue Ridge	none	excavation and discharge of fill material without permit	12/13/2010		\$9,750.00		Consent Order
James River Petroleum	Water	Oil Spill	PRO			12/13/2010		\$28,850.00		Order

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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated / Closed Date	Civil Charges	SEP Offset	Action
Town of Clifton Forge Amendment to Consent Order Issued June 5, 2006	State Water Control Board	WATER	Blue Ridge	VA0022772	request for extension of the December 31st deadline of the order for completing the CAP	12/14/2010		\$0.00		Consent Order
Dare to Care Charities, Inc. for Wastewater Treatment Plant Amendment to Order Issued March 19, 2010	State Water Control Board	WATER	Blue Ridge	VA0060909	request for extension of the December 31st deadline of the order for completing construction & operation of in-ground wastewater treatment system and decommissioning of the plant	12/14/2010		\$0.00		Consent Order
Dommon Packaging, Inc.	Virginia Waste Management Board	WASTE	Piedmont	VAD980714588	shipment of hazardous waste without hazardous waste manifests	12/14/2010	6/23/2011	\$9,450.00		Consent Order
Getty Petroleum Marketing Inc. for Getty Mart 71173	State Water Control Board	WATER	Piedmont	4-002293	release detection failures	12/14/2010	4/4/2011	\$2,600.00		Consent Order
Henrico County for the Henrico County 911 Training Center	State Water Control Board	WATER	Piedmont	PC 2010-4376	diesel fuel discharge into Rocky Branch, a state water - 5,602 gal	12/14/2010		\$84,030.00	\$63,022.00	Consent Order
Consolidation Coal Company, Buchanan Plant	State Air Pollution Control Board	AIR	Southwest	10945	facility improperly located the temperature probe designated to monitor the temperature of the drying bed chamber	12/16/2010	2/24/2011	\$3,302.00		Consent Order
Greensville County Water & Sewer Authority for Town of Jarratt Wastewater Treatment Plant	State Water Control Board	WATER	Piedmont	VA0020761	failure to meet permit effluent limits	12/17/2010		\$8,700.00		Consent Order
Henrico County for Henrico County Water Reclamation Facility	State Water Control Board	WATER	Piedmont	VA0063690	unauthorized discharges from the facility's sewer collection system	12/17/2010		\$29,500.00		Consent Order
J & P Kegan, LP for Battery Brooke Parkway Facility	Virginia Waste Management Board	WASTE	Piedmont	none	leakage of hazardous substances onto surface waters in area of warehouse were electroplating had occurred	12/17/2010		\$0.00		Consent Order
Lucky Convenience Stores, Inc. for UST Facility at 607 E Laburnum Avenue	State Water Control Board	WATER	Piedmont	4-001592	discrepancies between registered facility information and operational status on the 7530 notification form	12/17/2010		\$13,600.00		Consent Order
The City of Richmond for Richmond Wastewater Treatment Plant	State Water Control Board	WATER	Piedmont	VA0063177	permit discharge limit exceedances	12/17/2010		\$14,000.00	\$12,600.00	Consent Order
Phuc Dinh and Dinh Auto Sales	Water	VPDES	TRO	VAR08117		12/22/2010		\$10,000.00		Order

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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated / Closed Date	Civil Charges	SEP Offer	Action
Wood Preservers, Inc. - Amendment to Order by Consent issued September 30, 1994, modification of Appendix A issued September 25, 1998, and December 21, 2009	Virginia Waste Management Board	WASTE	Piedmont	VAD003113750	post-closure care for hazardous waste surface impoundments closed as landfills	1/11/2011		\$0.00		Consent Order
Quest Diagnostics Incorporated for The Nichols Institute	State Air Pollution Control Board	AIR	Northern Virginia	72342	exceeded consumption limit of natural gas; exceeded emissions limits	1/18/2011	3/30/2011	\$6,011.26		Consent Order
Euro-Composites Corporation	State Air Pollution Control Board	AIR	Northern Virginia	40922	facility staff not able to present log demonstrating that afterburner combustion chamber device observed at least once per operational day	1/27/2011	6/17/2011	\$3,250.00		Consent Order
Blue Ridge Fiberboard, Inc.	State Air Pollution Control Board	AIR	Blue Ridge	30330	exceeded visible emissions limitation	1/28/2011		\$5,949.00		Consent Order
Town of Chase City Sanitary Landfill	Virginia Waste Management Board	WASTE	Blue Ridge	SWP 25	failure to submit CAP and provide assurance of financial responsibility according to 2003 order	1/31/2011		\$5,100.00		Consent Order
Louisa County Water Authority for Louisa Regional Sewage Treatment Plant	State Water Control Board	WATER	Northern Virginia	VA0067954	permit limit exceedances	2/4/2011		\$50,760.00	\$40,608.00	Consent Order
Louisa County Water Authority for Zion Crossroads WWTP	State Water Control Board	WATER	Northern Virginia	VA00690743	permit limit exceedances	2/4/2011		\$164,700.00	\$131,760.00	Consent Order
P.E.C., Inc. for Fiberglass Engineering Company - Midland Facility	Virginia Waste Management Board	WASTE	Northern Virginia	VAR000518795	improper waste determination on waste gel coat solids at point of generation, no EPA id	2/7/2011	3/30/2011	\$3,000.00		Consent Order
A N B D Inc. d/b/a Market Place Cigo	State Air Pollution Control Board	AIR	Piedmont	51707	Stage 1 and Stage II systems not removing, destroying, or preventing discharge of at least 99%/95% by weight of VOC emissions (malfunctioning)	2/10/2011		\$5,820.00		Consent Order

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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated / Closed Date	Civil Charges	SEP Offset	Action
Chemetrics, Inc. - Amendment to Consent Order Issued October 3, 2006	Virginia Waste Management Board	WASTE	Northern Virg	VAR000010165	revised Appendix A to address revised closure plan and associated schedule for closure by removal or decontamination of the sub-slab piping beneath the main building and warehouse	2/28/2011		\$0.00		Consent Order
Kinder Morgan Southeast Terminals LLC for Kinder Morgan Newington Terminal	State Air Pollution Control Board	AIR	Northern Virg	70087	annual throughput of gasoline for 2009 exceeded permit limits	2/28/2011		\$49,254.40		Consent Order
Middlesex County for Middlesex County Sanitary Landfill	Virginia Waste Management Board	WASTE	Piedmont	20	groundwater exceedances from closed landfill - GPS exceedances for arsenic and vinyl chloride	3/22/2011		\$0.00		Consent Order
Northrop Grumman Systems Corporation	State Air Pollution Control Board	AIR	Northern Virg	73813	installation and operation of diesel-driven emergency electrical generators	3/22/2011	6/17/2011	\$20,800.00		Consent Order
Norfolk Redevelopment and Housing Authority for Former Liberty Cleaners Dry Cleaning Facility	Virginia Waste Management Board	WASTE	Tidewater	VAD023843899	failure to notify DEQ of being a LQG; did not have permit to store hazardous waste at the facility; improper labeling	4/4/2011	6/18/2011	\$9,656.00		Consent Order
United States Army and Alliant Techsystems Incorporated for Radford Army Ammunition Plant	State Air Pollution Control Board	AIR	Blue Ridge	20656	emissions exceedances for Nitrogen Oxides, Carbon Monoxide	4/5/2011		\$20,304.00		Consent Order
Raymond L. Fife and Dinah H. Fife for Unpermitted Landfill	Virginia Waste Management Board	WASTE	Piedmont	none	50 yd x 40 yd site containing vegetative waste, waste wood and CDD without permit	4/8/2011	4/28/2011	\$0.00		Consent Order
Honeywell International, Inc.	State Air Pollution Control Board	AIR	Piedmont	50232	unable to produce visible emission surveys for Dec '09-Feb 2010	4/8/2011		\$363,542.00		Consent Order
The Millwork Specialist, LLC Quality Cleaners	Virginia Waste Management Board	WASTE	Piedmont	VAR0000517672	failure to make determination as to whether contents of drums were hazardous; drums leaking hazardous substances	4/8/2011		\$20,000.00		Consent Order
Francis M. Barlow, Jr. for Frog Level Farm 614	Air	Air	SWRO	11175	land clearing and filling activities resulting in unauthorized impacts to surface waters at the property	4/11/2011		\$5,200.00		1186 Order
	State Water Control Board	WATER	Northern Virg	none		4/14/2011		\$19,500.00		Consent Order

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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated / Closed Date	Civil Charges SEP Offset	Action
Aliso Inc	State Air Pollution Control Board	AIR	Tidewater	60741	new boiler installed and in operation without being listed on permit	4/15/2011	4/21/2011	\$4,778.00	Consent Order
Pilot Travel Centers, LLC for Facility ID Nos. 2-011254 and 2-011241	State Water Pollution Control Board	WATER	Central	2-011254	releases of regulated substance at Boietourt and Roanoke facilities, releases reached state waters,	4/15/2011		\$48,370.00	Consent Order
Ammat's, Inc	State Water Pollution Control Board	WATER	Southwest	IR 2011-S-044	unauthorized discharge of diesel fuel into state waters -- approximately 50 to 75 gallons of oil due to overflow of an AST	4/18/2011		\$14,276.18	Consent Order
King George Landfill, Inc for King George County Sanitary Landfill	State Air Pollution Control Board	AIR	Northern Virg	40903	permit limit exceedances of sulfur dioxide emissions	4/18/2011		\$40,000.00	Consent Order
Chesapeake Grain Company, Inc	State Water Pollution Control Board	WATER	Tidewater	VAR051797	failure to conduct annual benchmark monitoring for period ending 6/30/08 12/31/09, additional compliance deficiencies with respect to monitoring and discharge requirements	4/19/2011		\$4,116.00	Consent Order
Courtland USA, L.L.C	State Water Pollution Control Board	WATER	Tidewater	VAR050281	failures to update facility's SWP3, properly maintain facility, and to perform quarterly visual examinations of stormwater quality	4/19/2011		\$5,740.00	Consent Order
Virginia Peninsula Public Service Authority for Yard Waste Compost Facility	State Water Pollution Control Board	WATER	Tidewater	VAR051957	no permit to discharge storm water from the facility's composting operation into state waters, YPPSA failed to notify DEQ of unpermitted discharge	4/19/2011	6/25/2011	\$10,920.00	Consent Order
B & H Sales Corporation	Virginia Waste Management Board	WASTE	Tidewater	none	operating without a materials recovery facility (MRF) permit	4/25/2011		\$0.00	Consent Order
The Free Lance-Star Publishing Co for the Print Innovators Printing Facility	State Air Pollution Control Board	AIR	Northern Virg	41068	failure to observe afterburner monitoring device during each day of heated operation; failure to maintain afterburner combustion chamber temperature records	4/27/2011	8/7/2011	\$3,705.00	Consent Order
C. S. Mundy Quarries, Inc	State Air Pollution Control Board	AIR	Valley	80676	visible emissions tests evaluations not performed in accordance with permit requirements	5/2/2011	5/18/2011	\$1,122.00	Consent Order

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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated / Closed Date	Civil Charges / SEP Offset	Action
Orange County for the Orange County Sanitary Landfill	Virginia Waste Management Board	WASTE	Northern Virg	090	leachate seeps observed on sides and bases of southern and western slopes, severe erosion rills with exposed waste were observed	5/2/2011		\$7,665.00	Consent Order
GenOn Potomac River, LLC for Potomac River Generating Station (previously known as Mirant) - Amendment to Order by Consent issued to Omega Protein, Inc. - Amendment to Order by Consent issued to Omega Protein on March 26, 2010	State Air Pollution Control Board	AIR	Northern Virg	20228	real-time PM4-CEMS units not mutually available to plant operators, opacity exceedances, excess ash and SO ₂ emissions	5/6/2011		\$275,562.00	Consent Order
King George Landfill, Inc. for the King George County Sanitary Landfill	Virginia Waste Management Board	AIR	Piedmont	40278	did not meet PM permit emissions level for destruction efficiency	5/12/2011		\$0.00	Consent Order
Super Radiator Coils Limited Partnership for Super Radiator Coils	State Air Pollution Control Board	WASTE	Northern Virg	586	litter and windblown waste materials along road leading to active areas, areas of exposed waste that were neither compacted nor covered	5/23/2011		\$15,000.00	Consent Order
Blue Ridge Solvents & Coatings, Inc.	Virginia Waste Management Board	WASTE	Piedmont	50906	operation with expired permit	5/23/2011		\$4,836.00	Consent Order
Bayshore Concrete Products Corporation	State Air Pollution Control Board	AIR	Blue Ridge	VAR000503656	receipt of spent solvent without hazardous waste manifest, shipments inconsistent with manifests	5/24/2011	7/16/2011	\$8,820.00	Consent Order
Shenandoah County for Shenandoah County Sanitary Landfill	State Air Pollution Control Board	AIR	Tidewater	40086	new equipment installed and operated without being listed in the permit	5/27/2011	6/14/2011	\$4,778.00	Consent Order
Delta Star, Inc.	State Air Pollution Control Board	AIR	Valley	81401	Late submittal of semi-annual monitoring reports and 2010 annual compliance certification	5/31/2011	6/20/2011	\$4,768.00	Consent Order
Henkel-Harris Company, Incorporated, The for Henkel-Harris Company, Inc.	State Air Pollution Control Board	AIR	Blue Ridge	30239	failed to comply with requirements of Appendix A of the 9/24/2010 order	6/2/2011		\$76,332.00	Consent Order
	State Air Pollution Control Board	AIR	Valley	80004	operation of fourth DUX gun without first obtaining permit, missing or incomplete records	6/3/2011	8/3/2011	\$9,965.00	Consent Order

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Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated / Closed Date	Civil Charges SEP Offset	Action
Sumitomo Machinery Corporation of America	State Air Pollution Control Board	AIR	Tidewater	61066	construction and operation of two paint booths without a permit	6/10/2011	6/29/2011	\$8,035.00	Consent Order
Dynas America Corporation	State Air Pollution Control Board	AIR	Blue Ridge	21279	Based on number of hours the facility reported, only 68% of valid data for the semi-annual period was captured	6/17/2011	8/2/2011	\$14,040.00	Consent Order
Norcraft Companies, L P	Virginia Waste Management Board	WASTE	Blue Ridge	VAD988213153	failure to characterize spent spray booth filler waste spray streams	7/5/2011	8/24/2011	\$6,000.00	Consent Order
Town of Farmville for Town of Farmville Sanitary Landfill	Virginia Waste Management Board	WASTE	Blue Ridge	195	Violation of 2007 consent Order, Item 5 of the Appendix	7/6/2011		\$6,300.00	Consent Order
Demolition Services Incorporated	State Air Pollution Control Board	AIR	Tidewater	61605	construction and operation of a portable crusher without a permit	7/11/2011	8/4/2011	\$4,550.00	Consent Order
Dennis Arey Property	WASTE	SOLID WASTE	Valley	2008-V-0402	reported destruction efficiency of VOC's for Unit PC128 less than allowable permit conditions	7/19/2011		\$8,000.00	\$0.00 1186 Order
Federal-Mogul Corporation for Federal Mogul Friction Products	State Air Pollution Control Board	AIR	Valley	80430		7/25/2011		\$9,555.00	Consent Order
Cochran's Lumber & Millwork, Inc.	State Air Pollution Control Board	AIR	Valley	81403	construction and start-up of kiln, spray booth units prior to issuance of permit	7/26/2011	9/13/2011	\$5,078.00	Consent Order
Titan Virginia Ready-Mix LLC and Mechanicsville Concrete db/a Powhatan Ready Mix for Trian Compostella, Trian Centerville, Trian Clearbrook, Trian Sterling, Mechanicsville Concrete Chesterfield, Mechanicsville Concrete Flat Rock, Trian Prince George Ready Mix	State Water Control Board and State Air Pollution Control Board	WATER, AIR	Central	VAG110119 VAG110074 VAG110199 VAG110103 50993 51959 50383	faulty stormwater sampling and deficiencies with laboratory and monitoring procedures, air throughput exceedances, failure to maintain APC monitoring device per permit condition	8/2/2011		\$74,379.00	\$66,879.00 Consent Order

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Baltimore Tank Lines, Inc	State Water Control Board	WATER	Northern Virginia	none	fuel oil release - approximately 4,680 gallons of gasoline	8/4/2011		\$50,000.00	Consent Order
The Town of Blackstone for Blackstone WWTP	State Water Control Board	WATER	Blue Ridge	VA0025194	unpermitted discharges to State waters	8/4/2011		\$66,500.00	Consent Order
Celebrate Virginia North Community Development Authority and T.S.C. for Celebrate Virginia North	State Water Control Board	WATER	Northern Virginia	0001816	failure to submit established flow rate, discharge of fill material not authorized by the permit	8/4/2011		\$19,232.50	Consent Order
Town of Chase City for Chase City WWTP	State Water Control Board	WATER	Blue Ridge	VA0076881	exceeded effluent limitations, discharged treated wastewater to state waters	8/4/2011		\$3,710.00	Consent Order
The Town of Crewe for the Crewe Treatment Works	State Water Control Board	WATER	Central	VA0020303	effluent overflows attributed to I&I	8/4/2011		\$31,200.00	Consent Order
City of Fredericksburg for Fredericksburg Waste Water Treatment Plant	State Water Control Board	WATER	Northern Virginia	VA0025127	exceeded discharge limitations	8/4/2011		\$7,153.00	Consent Order
King George County Service Authority for the Purkins Corner Wastewater Treatment Plant and the Oakland Park Wastewater Treatment Plant	State Water Control Board	WATER	Northern Virginia	VA0070106	exceedances of permitted limits for TKN, TSS, CBOD ₅ , pH, E. Coli, Total Phosphorus, Total Recoverable Copper, Total Recoverable Lead, Total Recoverable Selenium, Total Recoverable Silver, Total Recoverable Zinc	8/4/2011		\$50,000.00	Consent Order
City of Lynchburg for Lynchburg Regional Wastewater Treatment Plant and Collection System	State Water Control Board	WATER	Blue Ridge	VA0024970	unpermitted discharges, CSOs	8/4/2011		\$38,092.00	Consent Order
Northrop Grumman Systems Corporation	State Water Control Board	WATER	Northern Virginia	none	petroleum discharge into state waters and failure to report the discharge	8/4/2011		\$7,904.25	Consent Order
SCI Virginia Funeral Services, Inc for King David Memorial Cemetery	State Water Control Board	Water	Northern Virginia	11-0165	unauthorized impacts to surface waters on the property	8/4/2011		\$17,500.00	Consent Order
TransMontaigne Operating Company L.P	State Water Control Board	WATER	Northern Virginia	none	discharge of oil to state waters and failure to immediately report the discharge	8/4/2011		\$114,385.48	Consent Order
Allegheny County Service Authority	State Water Control Board	WATER	Valley	VA0025518	Unpermitted discharges	8/5/2011		\$0.00	Consent Order

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The City of Charlottesville	State Water Control Board	WATER	Valley	VA0025518	unpermitted discharges to I&I	8/5/2011		\$0.00	Consent Order
Town of Elkton for Elkton STP - Amendment to Consent Special Order of October 20, 2008	State Water Control Board	WATER	Valley	VA0026433	Discharge limit exceedances	8/5/2011		\$3,920.00	Consent Order
Ennis Paint, Inc.	State Water Control Board	WATER	Piedmont	VAR051550	release of water contaminated with 800 gallons of paint product released to unnamed tributary of Chickahominy River	8/5/2011		\$7,110.00	Consent Order
Hercules, Incorporated	State Water Control Board	WATER	Tidewater	VA0003433	discharge exceedances	8/5/2011		\$14,014.00	Consent Order
Rivanna Water and Sewer Authority for Moores Creek Regional STP and Interceptor System	State Water Control Board	WATER	Valley	VA0025518	unpermitted discharges	8/5/2011		\$0.00	Consent Order
S.E.A. Solutions Corporation	State Water Control Board	WATER	Tidewater	VAR051837	unauthorized discharge	8/5/2011		\$29,430.00	Consent Order
Tyson Farms, Inc. for Temperanceville Complex Wastewater Treatment Plant	State Water Control Board	WATER	Tidewater	VA0004049	Discharge limit exceedances	8/5/2011	9/6/2011	\$8,330.00	Consent Order
VADATA, Inc. for Facilities IAD-1, IAD-9, IAD-7, and IAD-11	State Air Control Board	AIR	Northern Virg	73294	construction and start-up of portable generators without notification	8/5/2011		\$261,638.00	Consent Order
W. Harold Talley II, LLC for Surry Quick Stop	State Water Control Board	WATER	Piedmont	4-018991	Two USFs not registered, spill catchment basins filled with liquid and debris and fill ports not labeled	8/5/2011		\$0.00	Consent Order
Judy M. McGee and Martin E. McGee for the Gunz Grocery and Deli	State Water Control Board	WATER	Southwest	1-015321	failure of tracer tests, failure to conduct site check and failure to conduct site characterization	8/8/2011		\$3,750.00	Consent Order
Petroleum Marketers, Inc.	State Water Control Board	WATER	Blue Ridge	None	3500 gallons of spilled fuel oil drained into unnamed tributary of Goose Creek, a state water	8/9/2011	10/19/2011	\$28,003.50	Consent Order
Woodhaven Water Company, Inc. for Woodhaven Shores Water System	State Water Control Board	WATER	Piedmont	GW001000	Exceeded annual permitted withdrawal limit	8/15/2011		\$29,621.00	Consent Order

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Minters Corporation for Des Champs Laboratories	Virginia Waste Management Board	WASTE	Valley	VAR000011007	facility accumulated LQG amounts of hazardous waste and did not pay annual fee and did not notify DEQ	8/16/2011	9/23/2011	\$7,439.00	Consent Order
Roanoke Electric Steel Corporation dba Steel Dynamics - Roanoke Bar Division	Virginia Waste Management Board	WASTE	Blue Ridge	VAD003122553	hazardous waste container not labeled with words "hazardous waste," "used oil" containers not labeled, failure to notify staff of newest <90-day accumulation area	8/25/2011	11/19/2011	\$5,500.00	Consent Order
VP Family Holdings, LLC and Sterling Hardware, LLC	Virginia Waste Management Board	WASTE	Southwest	VAD000020115	post-closure care plan which includes financial assurance	9/1/2011		\$0.00	Consent Order
BP New Dominion Technology Park II, LLC for BP New Dominion Technology Park II	State Air Pollution Control Board	AIR	Northern Virginia	73369	Could not provide 12-month rolling totals of operation for two diesel engine-generator sets	9/8/2011		\$13,830.50	Consent Order
Nisewood Enterprises, Inc	State Air Pollution Control Board	AIR	Tidewater	61583	construction and operation of two paint booths without a permit	9/15/2011		\$6,000.00	Consent Order
Buckingham Slate Company, LLC	State Air Pollution Control Board	AIR	Blue Ridge	30665	no pressure gauges on primary and secondary crushers, unable to provide most recent 12 month rolling average throughput records	9/16/2011		\$7,500.00	Consent Order
Metro Machine Corp	Virginia Waste Management Board	WASTE	Tidewater	VAD990800138	shipment of waste without a uniform hazardous waste manifest, containers of hazardous waste calcium carbide did not have hazardous waste labeling or EPA waste codes	9/19/2011	10/11/2011	\$19,600.00	Consent Order
K. Hovnanian Four Seasons at Historic Virginia, LLC for Four Seasons at Historic Virginia Banker Steel Co., LLC for the Main Plant (Wylke Road facility) and South Plant (Rangoon Road facility)	State Water Control Board	WATER	Northern Virginia	00-0236	unauthorized impacts to surface waters totaling approximately 1.75 acres	9/22/2011		\$60,000.00	Consent Order
Charlotteville-Albemarle Airport Authority for Charlotteville-Albemarle Airport Runway Extension	State Water Control Board	WASTE	Blue Ridge	VAD988213146	determinations for waste streams, did not provide adequate training on proper hazardous waste handling requirements	9/23/2011	11/27/2011	\$49,700.00	Consent Order
					unpermitted discharge of fill material into untrained tributary to Jacobs Run	9/23/2011		\$12,480.00	Consent Order

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Orders Issued Between January 1, 2010 and November 1, 2011

Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated / Closed Date	Civil Charges	SEP Offset	Action
Duplin Marketing, LLC for J. L. Rose Hog Transfer Facility	State Water Control Board	WATER	Tidewater	none	unpermitted discharge from a pipe at the facility flowing into an unnamed tributary of the Nottoway River	9/23/2011		\$14,365.00		Consent Order
E.I. DuPont de Nemours and Company for DuPont James River Plant	State Water Control Board	WATER	Piedmont	VA0004880	exceeded discharge limitations	9/23/2011		\$1,820.00		Consent Order
Fluvanna County School Board for Fluvanna County High School STP	State Water Control Board	WATER	Valley	VA0030767	effluent exceedances	9/23/2011		\$3,381.00		Consent Order
Kenan Transport Company	State Water Control Board	WATER	Piedmont	none	unauthorized discharge of jet fuel at Richmond International airport -- approximately 4,650 gallons discharged to lands and state waters	9/23/2011		\$37,200.00		Consent Order
Omega Protein, Inc.	State Water Control Board	WATER	Piedmont	VA0003867	Unpermitted discharge of oil, failure to conduct water quality monitoring during refrigeration water discharges during Nov. 2009	9/23/2011		\$4,050.00		Consent Order
Route 240, LLC	State Water Control Board	WATER	Valley	none	unpermitted discharges	9/23/2011		\$9,100.00		Consent Order
Southampton County for Town of Boykins Wastewater Treatment Plant	State Water Control Board	WATER	Tidewater	VA0026417	Exceeded permit discharge limitations	9/23/2011		\$4,340.00		Consent Order
Creative Urethanes, Inc. for Creative Urethanes	State Air Pollution Control Board	AIR	Valley	81636	failure to submit written notification for date of commencement of construction, initial startup and actual startup of facility	9/26/2011	10/25/2011	\$4,160.00		Consent Order
Mr. Timothy D. Osburn for Dinwiddie Car Wash	State Water Control Board	WATER	Piedmont	VAG759043	failure to submit annual DMRs	9/29/2011		\$1,275.00		Consent Order
Rockfenn CP, LLC for the Rockfenn CP, LLC West Point Mill	State Water Control Board	WATER	Piedmont	VA0003115	several unpermitted discharges of reclaimed process water, treated effluent to Pamunkey River	9/29/2011		\$33,033.00		Consent Order
W. Harold Talley II, LLC for Gray's Creek Marina	State Water Control Board	WATER	Piedmont	VA0091308	failure to apply for a VPDES Discharge Permit, no apparent device in place to prevent wastewater from discharging into Gray's Creek	9/29/2011		\$0.00		Consent Order
Kinder Morgan Southeast Terminals LLC for Kinder Morgan Richmond Terminal 1	State Air Pollution Control Board	AIR	Piedmont	50258	missing emissions compliance data for vapor recovery system 8/3/2010-2/18/2011	10/7/2011		\$11,071.00		Consent Order

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Orders Issued Between January 1, 2010 and November 1, 2011

Order Issued To	Board	Media Program	Region	Permit or Registration No.	Violation(s)	Executed	Terminated/ Closed Date	Civil Charges	SEF Offset	Action
Aquatic Company for Aquatic Company - South Boston	State Air Pollution Control Board	AIR	Blue Ridge	30794	VOC destruction efficiency under 95%	10/13/2011		\$7,332.00		Consent Order
Mr. Michael Westmoreland - West Imports Metal Recyclers	Virginia Waste Management Board	WASTE	Blue Ridge	VAR000516047	Releases of used oil that had not been remediated	10/20/2011		\$1,287.00		Consent Order
Louisa County for the Louisa County Sanitary Landfill	Virginia Waste Management Board	WASTE	Northern Virginia	194	exposed waste on the northern and eastern sides of landfill; areas of insufficient cover around landfill	10/24/2011		\$11,070.00		Consent Order