UJAE Unions for Jobs And the Environment

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U.S. Environmental Protection Agency July 8, 2011
EPA Docket Center
Mailcode 2822-T
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

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 vitally affected by U.S. EPA's decisions on the proposed Mercury and Air Toxics Standards ("MATS") rule referenced above.

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 <u>all</u> 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 PM2.5 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 PM2.5 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 ≥ 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 NOx emissions. Meeting these standards typically would require a wet or dry flue gas scrubber for SO2 control, selective catalytic reduction ("SCR") for NOx 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 NOx 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 PM2.5 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 PM2.5	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 PM2.5 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:

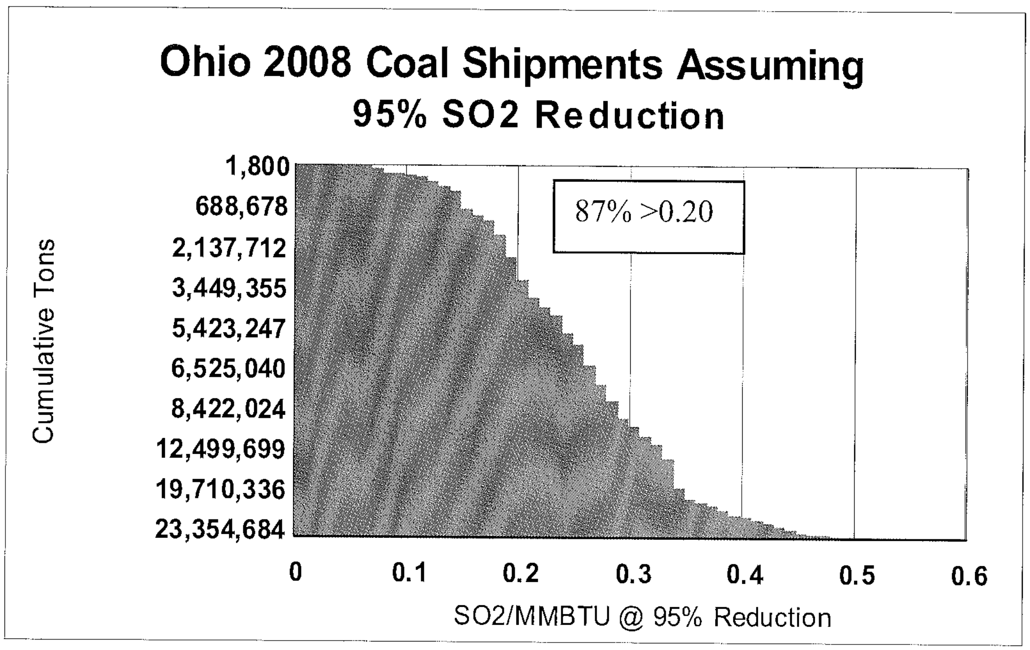
Well-controlled Units Not Meeting HCL Floor of 0.002 lb/mmbtu

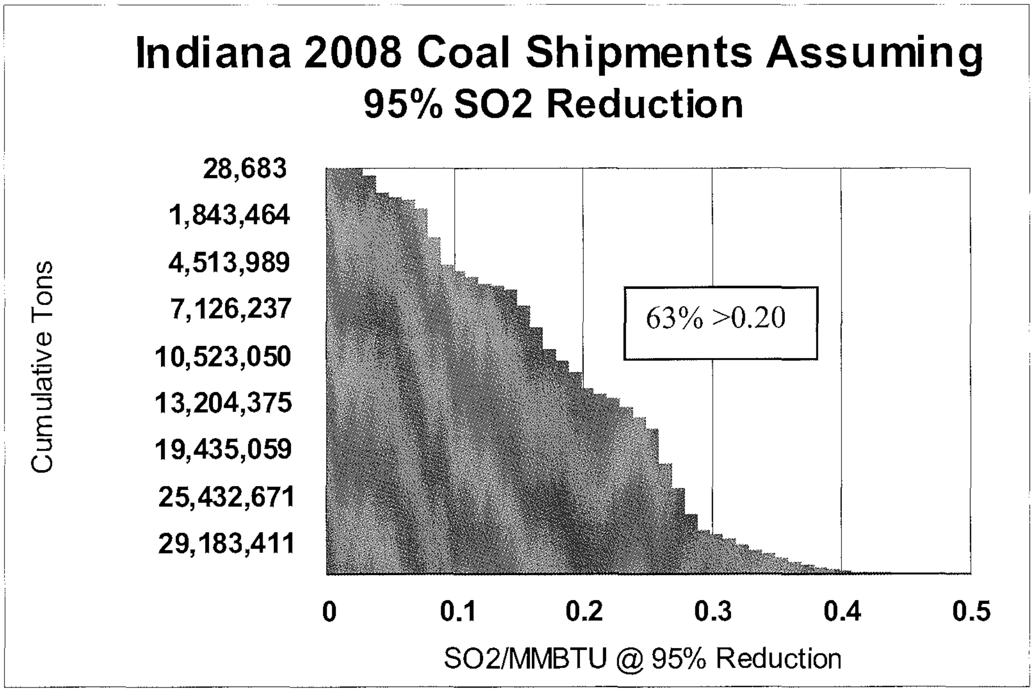
Unit	State	Fuel	Controls	SO2 emissions
Big Bend 01	FL	BIT	FGD, ESP	n.a.
Cogentrix 1	VA	BIT	SD, FF	0.72 lb/mmbtu
Reid Gardner 1	NV	BIT	Venturi, FF	0.06 lb/mmbtu
Asheville 1	NC	BIT	NEW BW, SCR. ESP	0.05 lb/mmbtu
Arapahoe 4	CO	SUB	DSI, FF	0.38 lb/mmbtu
Big Bend 2	FL	BIT	FGD, SCR, ESP	n.a.
Gavin 1	OH	BIT	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.

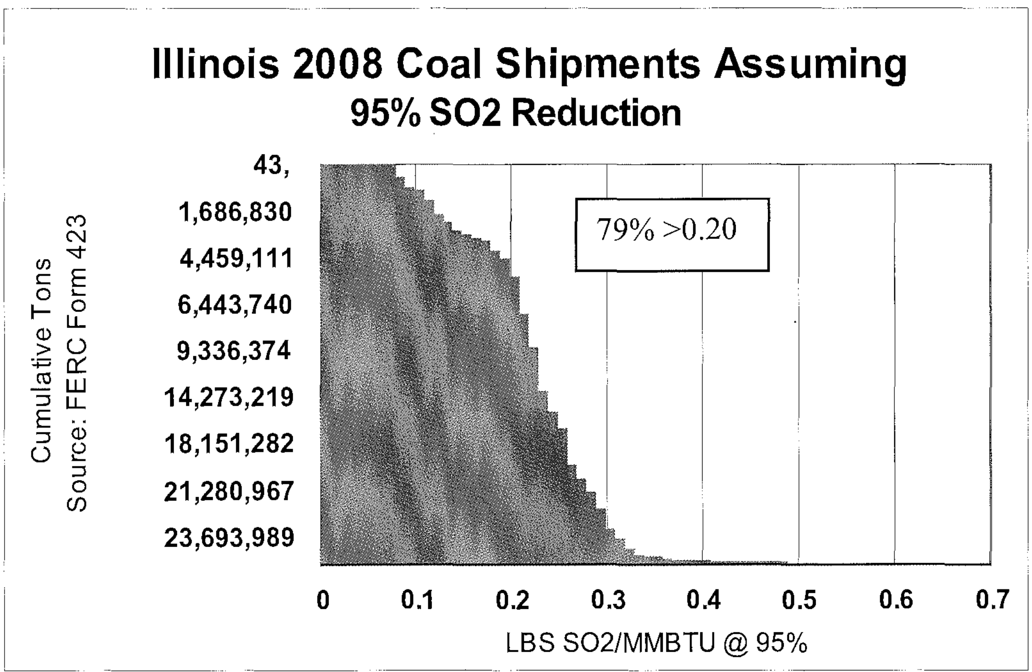
Source: Derived from EPA ICR Database (November 2010) and Responses to Labor Questions (Attachment 1, Plants Meeting Existing Source HCL Standard, June 2011.)

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

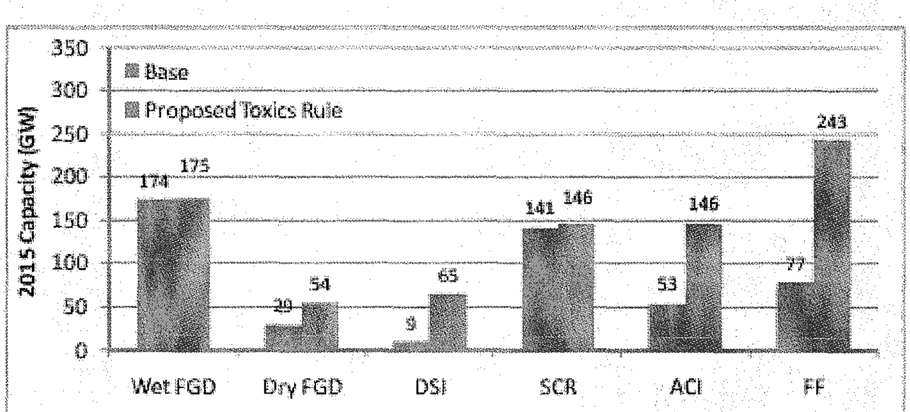
Source	Rules	Capacity retired (GW)	Timeframe
FBR Capital Markets (4/13/11)	MATS	35-50+GW (depends on DSI use)	2015
Credit Suisse* (4/11)	MATS/TR	~60 GW (base case)	2015-17
Bipartisan Policy Ctr. (6/13/11)	MATS/TR/ 316(b)	15-18 GW net	2015
NERA/ACCCE (6/11)	MATS/TR	48 GW net of 5 GW BAU	2016
AEP** (4/11)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

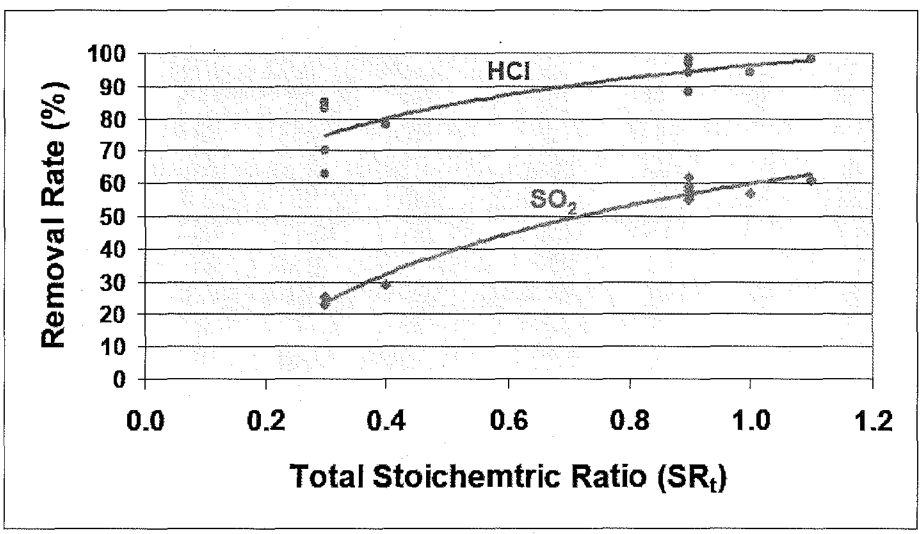
Source: Integrated Planning Model run by EPA, 2011.

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 NOx 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 NOx in response to future revisions of the NAAQS:

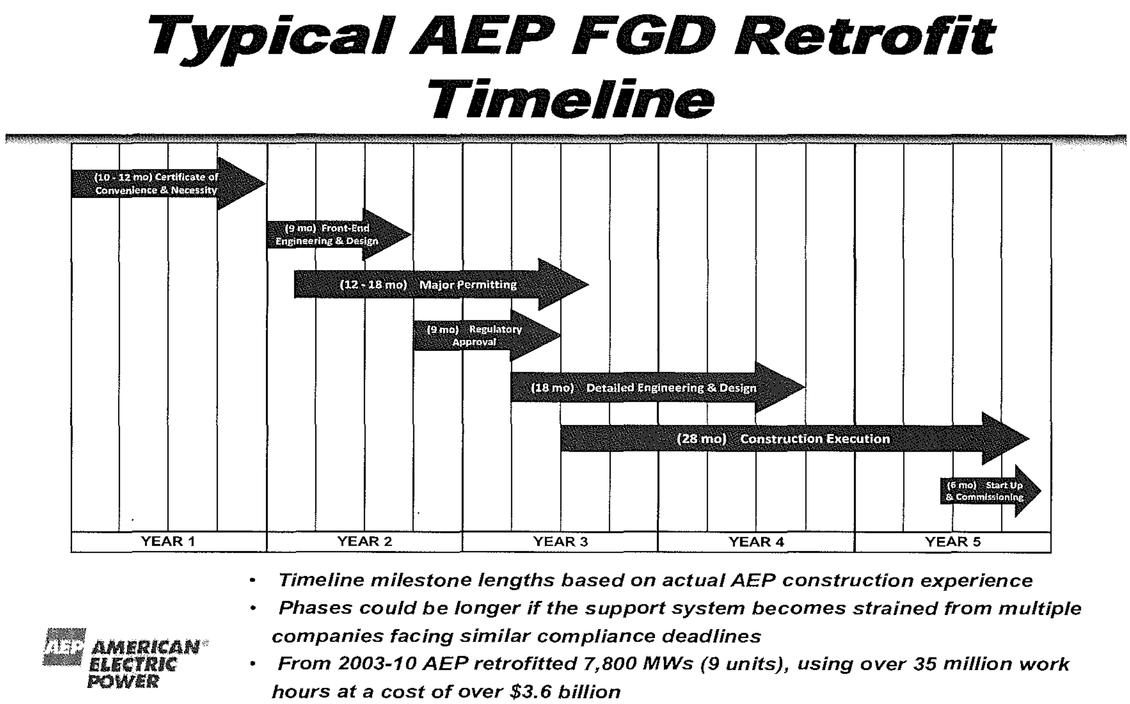
> Ongoing reviews of the ozone and PM2.5 NAAQS could result in revised NAAQS. To address any new NAAQS, EPA would propose interstate transport determinations in future notices. Such proposals could require greater emissions reductions from states covered by this proposal and/or require reductions from 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 NOx 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 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 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.



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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[i] *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.
[ii] *Id.*, at 14.
[iii] *See*, US EPA, *Technical Support Document, Employment Estimates of Direct Labor in Response to the Proposed Toxics Rule in 2015* (March 2011) at 3.
[iv] *See* Attachment 1, Coal Production Summary, data for "Other Northern Appalachia." This category includes a small amount of coal production in Maryland, but primarily represents Ohio production.
[v] U.S. EPA, *Final Regulatory Impact Analysis of the Utility Toxics Rule, supra,* at Table 5-8.
[vi] *Id.*, at 3-90.
[vii] *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 SO_2.
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. ..."
[viii] *Id.*
[ix] The RIA notes that some 55% of the estimated PM-related mortality benefits occur at ambient levels between 7.5 and 10 ug/m3, well below the 15 ug/m3 annual PM2.5 standard, and below the 11-13 ug/m3 levels under consideration for the next revision of the primary PM2.5 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 PM2.5 level of 10 μg/m3 (the LML of the Laden et al. 2006 study); about 85% occur at or above an annual mean PM2.5 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 PM2.5 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 PM2.5 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, 1010) 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)

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

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

Emissions

Units meeting existing source hg limit 1.2 lb/TBTU

54081	Spruance Genco, LLC	VA	GEN2	coal - bituminous	2.63E-09	DFGD, FF
54081	Spruance Genco, LLC	VA	GEN3	coal - bituminous	4.69E-09	DFGD, FF
527	Nucla	CO	001	coal - bituminous	5.33E-09	FBC, SNCR, FF
10043	Logan Generating Plant	NJ	Unit1	coal - bituminous	5.33E-09	SCR, DFGD, FF
3130	Seward	PA	SEW-1	coal refuse (culm or gob)	6.35E-09	FBC, SNCR, FF
2527	AES Greenidge	NY	Unit 4	coal - bituminous, pet coke	6.46E-09	SCR, ACI, DFGD, FF
54035	Roanoke Valley I	NC	Boiler 1	coal - bituminous	7.26E-09	DFGD, FF
2526	AES Westover, LLC	NY	8	coal - bituminous	8.15E-09	SCR, DFGD, FF
50976	Indiantown Cogeneration, L.P.	FL	001	coal - bituminous	8.54E-09	SCR, DFGD, FF
50888	Northampton Generating Company, L.P.	PA	GEN1	coal refuse (culm or gob)	1.04E-08	FBC, SNCR, FF
54755	Roanoke Valley II	NC	Boiler 2	coal - bituminous	1.08E-08	SNCR, DFGD, FF
10673	AES Hawaii	HI	001	coal - bituminous	1.17E-08	FBC, SNCR, FF
54081	Spruance Genco, LLC	VA	GEN4	coal - bituminous	1.18E-08	DFGD, FF
10603	Ebensburg Power Company	PA	EPC01	coal refuse (culm or gob)	1.25E-08	FBC, FF, WFGD
10673	AES Hawaii	HI	002	coal - bituminous	1.30E-08	FBC, SNCR, FF
10143	Colver Power Project	PA	AAB01	coal refuse (culm or gob)	1.46E-08	FBC, SNCR, FF
54304	Birchwood Power Facility	VA	1A	coal - bituminous	1.55E-08	SCR, DFGD, FF
10672	Cedar Bay Generating Company L.P.	FL	CBB1	coal - bituminous	1.90E-08	FBC, DFGD, SNCR, FF
4042	Valley	WI	VAPP-B1	coal - bituminous	1.93E-08	FF, WFGD
10566	Chambers Cogeneration LP	NJ	Boil 1	coal - bituminous	1.93E-08	SCR, DFGD, FF
2324	Reid Gardner	NV	1	coal - bituminous	2.01E-08	FF, WFGD
7213	Clover	VA	Unit 1	coal - bituminous	2.02E-08	FF, WFGD
4042	Valley	WI	VAPP-B3	coal - bituminous	2.09E-08	FF, WFGD
10672	Cedar Bay Generating Company L.P.	FL	CBA1	coal - bituminous	2.22E-08	FBC, DFGD, SNCR, FF
10678	AES Warrior Run Cogeneration Facility	MD	BLR1	coal - bituminous	2.34E-08	FBC, SNCR, FF
10672	Cedar Bay Generating Company L.P.	FL	CBC1	coal - bituminous	2.65E-08	DFGD, SNCR, FF
4042	Valley	WI	VAPP-B2	coal - bituminous	2.74E-08	FF, WFGD
469	Cherokee	CO	Unit 3	coal - bituminous	2.81E-08	DFGD, FF
2378	BL England	NJ	2 Coal w or w/o TDF	coal - bituminous	2.96E-08	SNCR, ACI, ESP, WFGD

492	Martin Drake	CO	Unit 7 - Coal	coal - subbituminous, bituminous	3.11E-08	FF, WFGD
469	Cherokee	CO	Unit 4	coal - bituminous	3.17E-08	DFGD, FF
10566	Chambers Cogeneration LP	NJ	Boil 2	coal - bituminous	3.38E-08	SCR, DFGD, FF
2451	San Juan	NM	Unit 4	coal - subbituminous	3.43E-08	ACI, FF, WFGD
50974	Scrubgrass Generating Company L.P.	PA	Gen 1	coal refuse (culm or gob)	3.53E-08	FBC, SNCR, FF, DFGD
492	Martin Drake	CO	Unit 5 - Coal	coal - subbituminous	3.75E-08	FF, WFGD
50776	Panther Creek Energy Facility	PA	BG1	coal refuse (culm or gob)	4.13E-08	FBC, SNCR, FF
50776	Panther Creek Energy Facility	PA	BG2	coal refuse (culm or gob)	4.13E-08	FBC, SNCR, FF
3280	Canadys Steam	SC	CAN003	coal - bituminous	4.34E-08	FF, WFGD
477	Valmont	CO	Unit 5	coal - bituminous	4.39E-08	DFGD, FF
3287	McMeekin	SC	MCM002	coal - bituminous	4.53E-08	FF, WFGD
10771	Hopewell	VA	1 & 2	coal - bituminous	4.59E-08	SNCR, MC, DFGD, FF
2451	San Juan	NM	Unit 3	coal - subbituminous	4.68E-08	ACI, FF, WFGD
7213	Clover	VA	Unit 2	coal - bituminous	4.87E-08	SNCR, FF, WFGD
2408	PSEG Mercer Generating Station	NJ	MERU1E1PT1OS1-Coal	coal - bituminous	5.91E-08	ESP, SCR, ACI, FF
54144	Piney Creek Project	PA	BRBRI	coal - bituminous, synfuel	6.10E-08	FBC, SNCR, FF
2451	San Juan	NM	Unit 2	coal - subbituminous	6.10E-08	ACI, FF, WFGD
6021	Craig	CO	C2	coal - subbituminous	6.79E-08	FF, WFGD
7210	Cope	SC	COP001	coal - bituminous	7.05E-08	SCR, DFGD, FF
6041	H L Spurlock Station	KY	Unit 03	coal - bituminous	7.20E-08	FBC, SNCR, DFGD, FF
4042	Valley	WI	VAPP-B4	coal - bituminous	7.34E-08	FF, WFGD
56068	Elm Road Generating Station	WI	ERGS-B1	coal - bituminous	7.53E-08	SCR, FF, WFGD, WESP
3287	McMeekin	SC	MCM001	coal - bituminous	8.85E-08	FF, WFGD
2408	PSEG Mercer Generating Station	NJ	MERU2E2PT2OS1-Coal	coal - bituminous	8.94E-08	ESP, SCR, ACI, FF
568	Bridgeport Station	CT	BHSEMU3OS2-Coal	coal - bituminous	9.01E-08	ESP, ACI, FF
6021	Craig	CO	C1	coal - subbituminous	1.13E-07	FF, WFGD
963	Dallman	IL	34	coal - bituminous	1.16E-07	SCR, FF, WFGD, WESP
2384	Deepwater	NJ	Coal-firing	coal - bituminous	1.17E-07	DSI, SNCR, FF
568	Bridgeport Station	CT	BHSEMU3OS3-#2	coal - subbituminous	1.22E-07	ESP, ACI, FF
52007	Mecklenburg Power Station	VA	Unit 1 & 2	coal - bituminous	1.25E-07	DFGD, FF
52007	Mecklenburg Power Station	VA	Unit 1 & 2	coal - bituminous	1.25E-07	DFGD, FF
2712	Roxboro Steam Electric Plant	NC	Rox_Cfg_1b	coal - bituminous	1.29E-07	SCR, ESP, WFGD
2451	San Juan	NM	Unit 1	coal - subbituminous	1.31E-07	ACI, FF, WFGD
6082	AES Somerset LLC	NY	001	coal - bituminous	1.32E-07	SCR, DSI, ESP, WFGD
130	Cross	SC	C1	coal - bituminous	1.50E-07	SCR, ESP, WFGD

2712	Roxboro Steam Electric Plant	NC	Rox_Cfg_2c	coal - bituminous	1.51E-07	SCR, ESP, WFGD
891	Havana	IL	Boiler 9	coal - bituminous	1.60E-07	ESP, SCR, ACI, DFGD, FF
892	Hennepin Power Station	IL	001	coal - subbituminous	1.62E-07	ESP, ACI, FF
892	Hennepin Power Station	IL	002	coal - subbituminous	1.62E-07	ESP, ACI, FF
10377	James River Cogeneration Co	VA	UNIT2	coal - bituminous	1.70E-07	DFGD, FF
6041	H L Spurlock Station	KY	Unit 04	coal - bituminous	1.71E-07	FBC, SNCR, DFGD, FF
1613	Somerset Station	MA	Unit 8	coal - bituminous	1.75E-07	SNCR, ESP
602	Brandon Shores	MD	002	coal - bituminous	1.85E-07	SCR, ESP, ACI, DSI, FF, WFGD
8219	Ray D Nixon	CO	Unit 1	coal - subbituminous	2.16E-07	FF
10343	Foster Wheeler Mt Carmel Cogen	PA	SG-101	coal refuse (culm or gob)	2.25E-07	FBC, FF
3775	Clinch River	VA	CR-1	coal - bituminous	2.27E-07	SNCR, ESP
130	Cross	SC	C3	coal - bituminous	2.29E-07	SCR, ESP, WFGD
525	Hayden	CO	Unit 1	coal - bituminous	2.45E-07	DFGD, FF
10641	Cambria Cogen	PA	001	coal refuse (culm or gob)	2.63E-07	FBC, SNCR, FF
130	Cross	SC	C4	coal - bituminous	2.77E-07	SCR, ESP, WFGD
10774	Southampton Power Station	VA	Unit 1 & 2	coal - bituminous	2.80E-07	MC, DFGD, FF
10641	Cambria Cogen	PA	002	coal refuse (culm or gob)	2.85E-07	FBC, SNCR, FF
6137	A. B. Brown Generating Station	IN	1Config	coal - subbituminous	3.10E-07	SCR, FF, WFGD
2277	Sheldon Station	NE	U2	coal - subbituminous	3.31E-07	FF
2535	AES Cayuga, LLC	NY	Unit_1	coal - bituminous	3.37E-07	SCR, ESP, WFGD
525	Hayden	CO	Unit 2	coal - bituminous	3.45E-07	DFGD, FF
883	Waukegan	IL	WK8CONFIG	coal - subbituminous	3.69E-07	ACI, ESP
963	Dallman	IL	32	coal - bituminous	3.71E-07	SCR, ESP, WFGD
963	Dallman	IL	31	coal - bituminous	3.74E-07	SCR, ESP, WFGD
897	Vermilion		001	coal - subbituminous	3.97E-07	ESP, ACI, FF
897	Vermilion		002	coal - subbituminous	3.97E-07	ESP, ACI, FF
1626	Salem Harbor	MA	Unit 1	coal - bituminous	3.98E-07	SNCR, ESP
1073	Prairie Creek	IA	Unit 3	coal - subbituminous	4.15E-07	ESP
708	Hammond	GA	Unit 1	coal - bituminous	4.25E-07	ESP, WFGD
708	Hammond	GA	Unit 2	coal - bituminous	4.25E-07	ESP, WFGD
708	Hammond	GA	Unit 3	coal - bituminous	4.25E-07	ESP, WFGD
708	Hammond	GA	Unit 4	coal - bituminous	4.25E-07	SCR, ESP, WFGD
492	Martin Drake	CO	Unit 6 - Coal	coal - subbituminous, bit	4.53E-07	FF
47	Colbert	AL	4	coal - subbituminous, bit	4.84E-07	ESP

3152	Sunbury Generation LP	PA	Boiler 4	coal - bituminous	4.85E-07	ESP
470	Comanche	CO	Unit 2	coal - subbituminous	4.88E-07	ACI, DFGD, FF
2324	Reid Gardner	NV	4	coal - bituminous	4.90E-07	FF, WFGD
8224	North Valmy	NV	2	coal - subbituminous	5.00E-07	DFGD, FF
6041	H L Spurlock Station	KY	Unit 01	coal - bituminous	5.22E-07	ESP, SCR, WFGD, WESP
3946	Willow Island	WV	Unit 2	coal - subbituminous, bit	5.53E-07	ESP
6018	East Bend Station	KY	2	coal - bituminous	6.51E-07	DSI, ESP, SCR, WFGD
470	Comanche	CO	Unit 1	coal - subbituminous	6.55E-07	ACI, DFGD, FF
3251	HB Robinson / Darlington Electric Power Plant	SC	Rob_Cfg_1	coal - bituminous	6.60E-07	ESP
2706	Asheville Steam Electric Plant	NC	Ash_Cfg_1d	coal - bituminous	6.70E-07	SCR, ESP, WFGD
988	Tanners Creek	IN	TC-4	coal - subbituminous, bit	6.76E-07	ESP
1710	Consumers Energy - J.H. Campbell	MI	JHC1-Conf	coal - subbituminous	6.88E-07	ESP
1710	Consumers Energy - J.H. Campbell	MI	JHC2-Conf	coal - subbituminous, bit	6.88E-07	ESP
2098	Lake Road	MO	6	coal - subbituminous, bit	7.07E-07	ESP
10151	Grant Town Power Plant	WV	GEN1	coal refuse (culm or gob)	7.12E-07	FBC, SNCR, DFGD, FF
1082	Walter Scott Jr. Energy Center	IA	4	coal - subbituminous	7.20E-07	SCR, ACI, DFGD, FF
2718	G G Allen	NC	3-2009-FGDIN	coal - bituminous	7.38E-07	SNCR, ESP, WFGD
2718	G G Allen	NC	4-2009-FGDIN	coal - bituminous	7.38E-07	SNCR, ESP, WFGD
884	Will County	IL	WC4CONFIG	coal - subbituminous	7.50E-07	ACI, ESP
874	Joliet 9	IL	JOL5 CONFIG	coal - subbituminous	7.53E-07	ACI, ESP
2480	Danskammer Generating Station	NY	3	coal - bituminous	7.53E-07	ESP
6085	R.M. Schahfer	IN	R.M.0014	coal - subbituminous	7.97E-07	SCR, ESP
87	Escalante	NM	1	coal - subbituminous	8.06E-07	FF, WFGD
1047	Lansing	IA	Unit 3	coal - bituminous	8.37E-07	ESP
6113	Gibson	IN	2-2007-FGDIN	coal - bituminous	8.46E-07	SCR, DSI, ESP, WFGD
10743	Morgantown Energy Facility	WV	Unit 1&2	coal - bituminous	8.58E-07	FBC, FF
3946	Willow Island	WV	Unit 1	coal - bituminous	8.59E-07	ESP
56224	TS Power Plant	NV	TSPower	coal - subbituminous	8.67E-07	SCR, ACI, DFGD, FF
55749	Hardin Generator Project	MT	PC1	coal - bituminous	8.83E-07	SCR, ACI, DFGD, FF
6113	Gibson	IN	1-2007-FGDIN	coal - bituminous	8.83E-07	SCR, DSI, ESP, WFGD
641	Crist	FL	Unit 4	coal - bituminous	8.91E-07	SNCR, ESP, WFGD
641	Crist	FL	Unit 5	coal - bituminous	8.91E-07	SNCR, ESP, WFGD
641	Crist	FL	Unit 6	coal - bituminous	8.91E-07	SNCR, ESP, WFGD
641	Crist	FL	Unit 7	coal - bituminous	8.91E-07	SCR, ESP, WFGD
4078	Weston	WI	W4	coal - subbituminous	8.93E-07	SCR, ACI, DFGD, FF

136	Seminole Generating Station	FL	Unit 1	coal - bituminous	9.33E-07	SCR, ESP, DSI, WFGD
990	Harding Street	IN	70ss	coal - bituminous	9.89E-07	SCR, ESP, WFGD
4078	Weston	WI	W3	coal - subbituminous	9.91E-07	FF, ACI
136	Seminole Generating Station	FL	Unit 2	coal - bituminous	1.01E-06	SCR, ESP, DSI, WFGD
2535	AES Cayuga, LLC	NY	Unit_2	coal - bituminous	1.03E-06	ESP, WFGD
6076	Colstrip	MT	Unit3	coal - subbituminous	1.05E-06	ACI, WFGD, Venturi
963	Dallman	IL	33	coal - bituminous	1.06E-06	SCR, ESP, WFGD
8224	North Valmy	NV	1	coal - subbituminous	1.07E-06	FF
3098	Elrama Power Plant	PA	ELR1-2	coal - bituminous	1.11E-06	SNCR, MC, ESP, WFGD
3098	Elrama Power Plant	PA	ELR2-2	coal - bituminous	1.11E-06	SNCR, MC, ESP, WFGD
3098	Elrama Power Plant	PA	ELR3-2	coal - bituminous	1.11E-06	SNCR, MC, ESP, WFGD
3098	Elrama Power Plant	PA	ELR4-2	coal - bituminous	1.11E-06	SNCR, MC, ESP, WFGD
6019	W H Zimmer	OH	1	coal - bituminous	1.15E-06	DSI, SCR, ESP, WFGD
642	Scholz	FL	Unit 1	coal - bituminous	1.15E-06	ESP
642	Scholz	FL	Unit 2	coal - bituminous	1.15E-06	ESP
728	Yates	GA	Y6BR	coal - bituminous	1.17E-06	ESP
3140	PPL Brunner Island	PA	U1	coal - bituminous	1.18E-06	FF, WFGD
3140	PPL Brunner Island	PA	U2	coal - bituminous	1.18E-06	ESP, WFGD

Units meeting existing source PM limit 0.03 lb/mmbtu

7790	Bonanza Power Plant	UT	1-1	coal - bituminous	[illegible]	FF, WFGD
2554	Dunkirk Generating Plant	NY	1		2.82E-03	SNCR, DSI, FF
492	Martin Drake	CO	[illegible]	coal - subbituminous	[illegible]	FF, WFGD
568	Bridgeport Station	CT	[illegible]	coal - subbituminous	2.30E-03	ESP, ACI, FF
2712	Roxboro Steam Electric Plant	NC	Rox_Cfg_2c	coal - bituminous	3.12E-03	SCR, ESP, WFGD
8223	Springerville	AZ	4	coal - bituminous	3.73E-03	SCR, DFGD, FF
891	Havana	IL	Boiler 9	coal - bituminous	[illegible]	ESP, SCR, ACI, DFGD, FF
2554	Dunkirk Generating Plant	NY	2		[illegible]	SNCR, DSI, FF
7097	J K Spruce	TX	2	coal - bituminous	[illegible]	FF, WFGD
2324	Reid Gardner	NV	1	coal - bituminous	4.33E-03	FF, WFGD
2451	San Juan	NM	Unit 3	coal - subbituminous	4.36E-03	ACI, FF, WFGD
2712	Roxboro Steam Electric Plant	NC	Rox_Cfg_1n	coal - bituminous	[illegible]	SCR, ESP, WFGD
963	Dallman	IL	34	coal - bituminous	[illegible]	SCR, FF, WFGD, WESP
1082	Walter Scott Jr. Energy Center	IA	4	coal - subbituminous	[illegible]	SCR, ACI, DFGD, FF
4078	Weston	WI	W4	coal - subbituminous	5.28E-03	SCR, ACI, DFGD, FF
7213	Clover	VA	Unit 2	coal - bituminous	5.31E-03	SNCR, FF, WFGD
6077	Gerald Gentleman	NE	[illegible]	coal - bituminous	[illegible]	FF, WFGD
10673	AES Hawaii	HI	[illegible]	coal - bituminous	[illegible]	[illegible], SNCR, FF
641	Crist	FL	Unit 4	coal - bituminous	5.81E-03	SNCR, ESP, WFGD
641	Crist	FL	Unit 5	coal - bituminous	5.81E-03	SNCR, ESP, WFGD

641	Crist	FL	Unit 7	coal - bituminous	5.81E-03	SCR, ESP, WFGD
641	Crist	FL	Unit 6	coal - bituminous	5.81E-03	SNCR, ESP, WFGD
3845	TransAlta Centralia Generation	WA	BW21CONFIG	coal - subbituminous	5.93E-03	ESP, WFGD
6041	H L Spurlock Station	KY	Unit 03	coal - bituminous	6.00E-03	FBC, SNCR, DFGD, FF
708	Hammond	GA	Unit 4	coal - bituminous	6.07E-03	ESP, WFGD
708	Hammond	GA	Unit 1	coal - bituminous	6.07E-03	ESP, WFGD
708	Hammond	GA	Unit 2	coal - bituminous	6.07E-03	ESP, WFGD
708	Hammond	GA	Unit 3	coal - bituminous	6.07E-03	SCR, ESP, WFGD
8224	North Valmy	NV	1		6.17E-03	FF, WFGD
2451	San Juan	NM	Unit 4	coal - subbituminous	6.26E-03	ACI, FF, WFGD
6016	Duck Creek	IL	001	coal - subbituminous	6.41E-03	SCR, ESP, WFGD
60	Whelan Energy Center Unit 1 (WEC1)	NE	1	coal - subbituminous	6.56E-03	ESP
6181	J T Deely	TX	1	coal - subbituminous	6.67E-03	FF, WFGD
6181	J T Deely	TX	2	coal - subbituminous	6.67E-03	FF, WFGD
2277	Sheldon Station	NE	U2	coal - subbituminous	6.74E-03	FF
4041	South Oak Creek	WI	OCPP-B7	coal - subbituminous	6.95E-03	ESP
6021	Craig	CO	C2	coal - subbituminous	6.98E-03	FF, W
2324	Reid Gardner	NV	4		7.01E-03	FF, WFGD
50951	Sunnyside Cogen Associates	UT	Config 1	coal refuse (culm or gob)	7.25E-03	FBC, DFGD, FF
602	Brandon Shores	MD	002	coal - bituminous	7.35E-03	SCR, ESP, ACI, DSI, FF, WFGD
113	Cholla	AZ	004	coal - bituminous	7.39E-03	FF, WFGD
492	Martin Drake	CO	Unit 7 - Coal	coal - subbituminous, bit	7.49E-03	FF
1554	Herbert A. Wagner	MD	002	coal - bituminous	7.50E-03	SNCR, ACI, ESP
10673	AES Hawaii	HI	002	coal - bituminous	7.70E-03	FBC, SNCR, FF
492	Martin Drake	CO	Unit 6 - Coal		7.70E-03	FF
2718	G G Allen	NC	3-2009-FGDIN	coal - bituminous	7.82E-03	SNCR, ESP, WFGD
2718	G G Allen	NC	4-2009-FGDIN	coal - bituminous	7.82E-03	SNCR, ESP, WFGD
6041	H L Spurlock Station	KY	Unit 04	coal - bituminous	7.91E-03	FBC, SNCR, DFGD, FF
3130	Seward	PA	SEW-2	coal refuse (culm or gob)	8.13E-03	FBC, SNCR, FF
3130	Seward	PA	SEW-1	coal refuse (culm or gob)	8.13E-03	SNCR, FF
2451	San Juan	NM	Unit 1	coal - subbituminous	8.16E-03	ACI, FF, WFGD
4072	Pulliam	WI	8	coal - subbituminous	8.19E-03	ACI, ESP
3138	New Castle Plant	PA	NC4-2	coal - subbituminous, bit	8.54E-03	SNCR, ESP
2079	Hawthorn	MO	H4	coal - subbituminous, bit	8.59E-03	SCR, DFGD, FF

50776	PANTHER CREEK ENERGY FACILITY	PA	3C2	coal refuse (culm or gob)	8.78E-03	FBC, SNCR, FF
50776	PANTHER CREEK ENERGY FACILITY	PA	3C1	coal refuse (culm or gob)	8.78E-03	FBC, SNCR, FF
2451	San Juan	NM	Unit 2	coal - subbituminous	8.80E-03	ACI, FF, WFGD
113	Cholla	AZ	003	coal - bituminous	8.85E-03	FF, WFGD
4042	Valley	WI	VAPP B4	coal - bituminous	9.12E-03	FF
6021	Craig	CO	C1	coal - subbituminous	9.18E-03	FF, WFGD
2277	Sheldon Station	NE	1	coal - subbituminous	9.19E-03	[illegible]
3845	TransAlta Centralia Generation	WA	[illegible]	coal - subbituminous	9.21E-03	ESP, WFGD
6002	James H Miller Jr	AL	Unit 4	coal - subbituminous	9.40E-03	SCR, ESP, WFGD
2706	Asheville Steam Electric Plant	NC	Ash_Ofg_2	coal - bituminous	9.47E-03	SCR, ESP, WFGD
10671	AES Shady Point LLC	OK	Unit 1	coal - subbituminous, bit	1.02E-02	FBC, FF
10671	AES Shady Point LLC	OK	Unit 2	coal - subbituminous, bit	1.02E-02	FBC, FF
54144	Piney Creek Project	PA	PRRR	coal - bituminous, synfuel	1.02E-02	FBC, SNCR, FF
54081	Spruance Genco LLC	VA	GEN2	coal - bituminous	1.05E-02	DFGD, FF
6098	Big Stone	SD	001	coal - subbituminous	1.06E-02	[illegible]
7504	Neil Simpson II	WY	[illegible]	coal - subbituminous	1.07E-02	DFGD, ESP
2837	Eastlake	OH	Unit 1	coal - subbituminous, bit	1.07E-02	ESP
3788	Potomac River	VA	3	coal - bituminous	1.10E-02	DFGD, ESP
8219	Ray D Nixon	CO	Unit 1	coal - subbituminous	1.12E-02	FF
4078	Weston	WI	W3	coal - subbituminous	[illegible]	FF, ACI
1241	La Cygne	KS	2	coal - subbituminous	[illegible]	ESP
10075	Taconite Harbor Energy Center	MN	THEC3	coal - bituminous	[illegible]	DSI, ESP
983	Clifty Creek	IN	Unit 3	coal - bituminous, sub	1.10E-02	SCR, ESP
983	Clifty Creek	IN	Unit 1	coal - bituminous, sub	1.10E-02	SCR, ESP
983	Clifty Creek	IN	Unit 2	coal - bituminous, sub	1.10E-02	SCR, ESP
2706	Asheville Steam Electric Plant	NC	Ash_Ofg_1a	coal - bituminous	1.20E-02	SCR, ESP, WFGD
6041	H L Spurlock Station	KY	Unit 01	coal - bituminous	1.21E-02	SCR, ESP, WFGD, WESP
10343	Foster Wheeler Mt Carmel Cogen	PA	SG-101	coal refuse (culm or gob)	1.22E-02	FBC, FF
6021	Craig	CO	C3	coal - subbituminous	1.25E-02	DFGD, FF
2324	Reid Gardner	NV	[illegible]	coal - bituminous	[illegible]	FF, WFGD
6664	Louisa	IA	101	coal - subbituminous	[illegible]	[illegible]
130	Cross	SC	[illegible]	coal - bituminous	[illegible]	SCR, ESP, WFGD
6113	Gibson	IN	[illegible]	coal - bituminous	1.38E-02	SCR, ESP, WFGD

52071	Sandow Station	TX	5B	coal - lignite	1.38E-02	FBC, SNCR, ACI, DFGD, FF
4041	South Oak Creek	WI	OCPP-8B	coal - subbituminous	1.39E-02	ESP
2324	Reid Gardner	NV	2		1.41E-02	FF, WFGD
1710	Consumers Energy - J.H. Campbell	MI	JHC1-Conf	coal - subbituminous	1.41E-02	ESP
1710	Consumers Energy - J.H. Campbell	MI	JHC2-Conf	coal - subbituminous, bit	1.41E-02	ESP
56224	TS Power Plant	NV	TSPower	coal - subbituminous	1.42E-02	SCR, ACI, DFGD, FF
4042	Valley	WI	VAPP-B3	coal - bituminous	1.42E-02	FF
4042	Valley	WI	VAPP-B2	coal - bituminous	1.44E-02	FF
6170	Pleasant Prairie	WI	PPPPB2	coal - subbituminous	1.46E-02	SCR, ESP, WFGD
8224	North Valmy	NV	2		1.50E-02	DFGD, FF
3138	New Castle Plant	PA	NC3-2	coal - bituminous	1.50E-02	SNCR, ESP
6017	Newton	IL	002	coal - subbituminous	1.53E-02	ACI, ESP
3161	Eddystone Generating Station	PA	Unit 2	coal - bituminous	1.58E-02	SNCR, MC, ESP, Venturi, WFG
6180	Oak Grove	TX	OG1	coal - lignite	1.60E-02	SCR, ACI, FF, WFGD
6761	Rawhide	CO	Rawhide101	coal - subbituminous	1.63E-02	DFGD, FF
6113	Gibson	IN	1_2007_FGD1	coal - bituminous	1.67E-02	SCR, ESP, WFGD
3118	Conemaugh	PA	CON-1	coal - bituminous	1.68E-02	ESP, WFGD
2837	Eastlake	OH	Unit 3	coal - subbituminous, bit	1.69E-02	SNCR, ESP
3788	Potomac River	VA	2	coal - bituminous	1.70E-02	DFGD, ESP
642	Scholz	FL	Unit 1	coal - bituminous	1.75E-02	ESP
10678	AES Warrior Run Cogeneration Facility	MD	BLR1	coal - bituminous	1.80E-02	FBC, SNCR, FF
1832	Erickson Station	MI	001		1.81E-02	ESP
2107	Sioux	MO	002	coal - subbituminous, bit	1.86E-02	SNCR, ESP, WFGD
2861	Niles Plant	OH	N2-1	coal - bituminous	1.87E-02	ESP
3131	Shawville	PA	SHAW3-1	coal - bituminous	1.90E-02	ESP
3131	Shawville	PA	SHAW4-1	coal - bituminous	1.90E-02	ESP
130	Cross	SC	C3	coal - bituminous	2.00E-02	SCR, ESP, WFGD
2861	Niles Plant	OH	N1-1	coal - bituminous	2.00E-02	ESP
6077	Gerald Gentleman	NE	02	coal - bituminous	2.03E-02	FF
55479	Wygen 1	WY	WYG1Cfg	coal - subbituminous	2.04E-02	SCR, DFGD, FF
6639	R D Green	KY	2	coal - bituminous and pet coke	2.07E-02	ESP, WFGD
4259	Endicott Station	MI	1	coal - bituminous	2.17E-02	ESP, WFGD
47	Colbert	AL	3	coal - bituminous, sub	2.29E-02	ESP
3149	PPL Montour	PA	U1	coal - bituminous	2.36E-02	ESP, SCR, WFGD
1363	Cane Run	KY	CR5	coal - bituminous	2.42E-02	ESP, WFGD

50888	Northampton Generating Company L.P.	PA	GEN1	coal - refuse (culm or gob)	2.44E-02	FBC, SNCR, FF
4042	Valley	WI	VAPP B1	coal - bituminous	2.45E-02	FF
564	Stanton Energy Center	FL	2 coal	coal - bituminous	2.47E-02	SCR, ESP, WFGD
10151	Grant Town Power Plant	WV	GEN2	coal - refuse (bituminous [illegible])	2.48E-02	FBC, SNCR, DFGD, FF
52071	Sandow Station	TX	5A	coal - lignite	2.50E-02	FBC, SNCR, ACI, DFGD, FF
887	Joppa Steam	IL	1	coal - subbituminous	2.54E-02	ACI, ESP
3149	Montour	PA	U2	coal - bituminous	2.55E-02	ESP, SCR, WFGD
2836	Avon Lake	OH	A.12.2		2.57E-02	SNCR, ESP
1385	Dale Station	KY	23	coal - bituminous	[illegible]	ESP
3152	Sunbury Generation LP	PA	Boiler 2	coal - bituminous	[illegible]	FF
3098	Elrama Power Plant	PA	ELR1-2	coal - bituminous	2.59E-02	SNCR, MC, ESP, WFGD
3098	Elrama Power Plant	PA	ELR4	coal - bituminous	2.59E-02	SNCR, MC, ESP, WFGD
3098	Elrama Power Plant	PA	ELR2-2	coal - bituminous	2.59E-02	SNCR, MC, ESP, WFGD
3098	Elrama Power Plant	PA	ELR3-2	coal - bituminous	2.59E-02	SNCR, MC, ESP, WFGD
6076	Colstrip	MT	Unit3	coal - subbituminous	2.59E-02	ACI, WFGD, Venturi
6096	Nebraska City	NE	NC2	coal - bituminous	2.61E-02	SCR, ACI, DFGD, FF
10075	Taconite Harbor Energy Center	MN	THEC1	coal - bituminous	[illegible]	SNCR, DSI, ESP
1393	RS Nelson	LA	001	coal - subbituminous	2.68E-02	ESP
8223	Springerville	AZ	3	coal - subbituminous	2.78E-02	SCR, DFGD, FF
6018	East Bend Station	KY	2	coal - bituminous	2.81E-02	DSI, ESP, SCR, WFGD
884	Will County	IL	WCACON[illegible]	coal - subbituminous	2.85E-02	ACI, ESP
2094	Sibley	MO	3	coal - subbituminous, bit	2.87E-02	SCR, ESP
2094	Sibley	MO	1	coal - subbituminous, bit	2.87E-02	SNCR, ESP
2094	Sibley	MO	2	coal - subbituminous, bit	2.87E-02	SNCR, ESP
7030	Twin Oaks Power One	TX	U2	coal - lignite	2.89E-02	FBC
[illegible]	Spruance Genco, LLC	VA	GEN4	coal - bituminous	2.92E-02	DFGD
2103	PSEG Mercer Generating Station	NJ	[illegible]	coal - bituminous	[illegible]	SCR, SCR, ACI, DFGD, FF
4041	South Oak Creek	WI	OCPP-8S		2.98E-02	ESP
3161	Eddystone Generating Station	PA	Unit[illegible]	coal - bituminous	3.00E-02	SNCR, MC, ESP, WFGD
3152	Sunbury Generation LP	PA	Boiler 3A	coal - bituminous	3.02E-02	FF
3140	PPL Brunner Island	PA	U1	coal - bituminous	3.06E-02	ESP, WFGD
3140	PPL Brunner Island	PA	U2	coal - bituminous	3.06E-02	FF, WFGD
130	Cross	SC	C4	coal - bituminous	[illegible]	SCR, ESP, WFGD
10641	Cambria Cogen	PA	001	coal - refuse (culm or gob)	[illegible]	FBC, SNCR, FF

1295	Quindaro	KS	Unit 2	coal - bituminous	3.16E-02	ESP
47	Colbert	AL	4	coal - subbituminous, bit	3.26E-02	ESP
54035	Roanoke Valley I	NC	Boiler 1	coal - subbituminous, bit	3.38E-02	DFGD, FF
50974	Scrubgrass Generating Company L.P.	PA	Gen 1	coal - subbituminous, bit	3.38E-02	FBC, SNCR, FF, DFGD
3179	Hatfield's Ferry Power Station	PA	001	coal - bituminous	3.43E-02	ESP, WFGD

Units meeting existing source HCl limit 0.002 lb/mmbtu

10043	Logan Generating Plant	NJ	Unit1	bituminous	1.29E-05	SCR, DFGD, FF
54081	Spruance Genco, LLC	VA	GEN3	bituminous	1.61E-05	DFGD, FF
54081	Spruance Genco, LLC	VA	GEN2	bituminous	1.69E-05	DFGD, FF
3130	Seward	PA	SEW-1	coal refuse (culm or gob)	1.93E-05	FBC, SNCR, FF
3130	Seward	PA	SEW-2	coal refuse (culm or gob)	1.93E-05	FBC, SNCR, FF
52071	Sandow Station	TX	5A	lignite	2.12E-05	FBC, SNCR, ACI, DFGD, FF
56224	TS Power Plant	NV	TSPower	subbituminous	2.17E-05	SCR, ACI, DFGD, FF
52071	Sandow Station	TX	5B	lignite	2.55E-05	FBC, SNCR, ACI, DFGD, FF
108	HOLCOMB	KS	SGU1		2.60E-05	DFGD, FF
54755	Roanoke Valley II	NC	Boiler 2	bituminous	3.22E-05	SNCR, DFGD, FF
50976	INDIANTOWN COGENERATION L.P.	FL	001	bituminous	3.58E-05	SCR, DFGD, FF
6761	Rawhide	CO	Rawhide101	subbituminous	3.61E-05	DFGD, FF
1082	Walter Scott Jr. Energy Center	IA	4	subbituminous	3.80E-05	SCR, ACI, DFGD, FF
54081	Spruance Genco, LLC	VA	GEN4	bituminous	3.84E-05	DFGD, FF
10566	Chambers Cogeneration LP	NJ	Boil 1	bituminous	4.24E-05	SCR, DFGD, FF
4941	Navajo Generating Station	AZ	001	bituminous	5.00E-05	ESP, WFGD
10566	Chambers Cogeneration LP	NJ	Boil 2	bituminous	5.60E-05	SCR, DFGD, FF
6076	Colstrip	MT	Unit3	subbituminous	6.21E-05	ACI, WFGD, Venturi
4941	Navajo Generating Station	AZ	002	bituminous	6.67E-05	ESP, WFGD
130	Cross	SC	C3	bituminous	6.89E-05	SCR, ESP, WFGD
2079	Hawthorn	MO	5A	subbituminous, bituminous	7.21E-05	SCR, DFGD, FF
54035	Roanoke Valley I	NC	Boiler 1	bituminous	7.32E-05	DFGD, FF
6041	H L Spurlock Station	KY	Unit 03	bituminous	7.33E-05	FBC, SNCR, DFGD, FF
10771	Hopewell	VA	1 & 2	bituminous	7.34E-05	SNCR, MC, DFGD, FF
7097	J K Spruce	TX	1	bituminous	7.62E-05	FF, WFGD
56068	Elm Road Generating Station	WI	ERGS-B1	bituminous	7.64E-05	SCR, FF, WFGD, WESP
4078	Weston	WI	W4	subbituminous	7.67E-05	SCR, ACI, DFGD, FF

10774	Southampton Power Station	VA	Unit 1 & 2	bituminous	7.76E-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	PPPPB2	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	PPPPB1	subbituminous	9.66E-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		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 Spurlock 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	OG1	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	WYG1Cfg	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 (WEC1)	NE	1	subbituminous	1.62E-04	ESP
994	AES Petersburg	IN	2sa	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
3935	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	CryR_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

55076	Red Hills Generating Facility	MS	001	lignite	3.67E-04	FBC, FF
7213	Clover	VA	Unit 1	bituminous	3.73E-04	FF, WFGD
1295	Quindaro	KS	Unit 1	coal - subbituminous	3.80E-04	ESP
56319	Wygen 2	WY	WYG2Cfg	subbituminous	3.92E-04	SCR, DFGD, FF
3140	PPL Brunner Island	PA	U2	bituminous	3.98E-04	ESP, WFGD
3140	PPL Brunner Island	PA	U1	bituminous	3.98E-04	FF, WFGD
2378	BL England	NJ	2 Coal w or w/o TDF	bituminous	4.05E-04	SNCR, ACI, ESP, WFGD
3122	Homer City Station	PA	HC3CONFIG	bituminous	4.06E-04	SCR, ESP, WFGD
6064	Nearman Creek	KS	N1		4.10E-04	ESP
6204	Laramie River Station	WY	3	coal - subbituminous	4.11E-04	DFGD, ESP
3954	Mt. Storm	WV	Unit 1&2	bituminous	4.20E-04	SCR, ESP, WFGD
2324	Reid Gardner	NV	3	coal - bituminous, other non-fossil fuel (specify)	4.52E-04	FF, WFGD
2535	AES Cayuga, LLC	NY	Unit_2	bituminous	4.66E-04	ESP, WFGD
52007	Mecklenburg Power Station	VA	Unit 1 & 2	bituminous	4.86E-04	DFGD, FF
6017	Newton	IL	002	subbituminous	4.87E-04	ACI, ESP
1073	Prairie Creek	IA	Unit 2	coal - subbituminous	5.00E-04	ESP
6016	Duck Creek	IL	001	subbituminous	5.01E-04	SCR, ESP, WFGD
1893	Boswell Energy Center	MN	BEC3	subbituminous	5.13E-04	SCR, ESP, ACI, FF
1356	Ghent	KY	GH3	bituminous	5.27E-04	DSI, ESP, SCR, WFGD
6018	East Bend Station	KY	2	bituminous	5.28E-04	DSI, ESP, SCR, WFGD
874	Joliet 9	IL	JOL5 CONFIG	subbituminous	5.41E-04	ACI, ESP
3098	Elrama Power Plant	PA	ELR4-2	bituminous	5.53E-04	SNCR, MC, ESP, WFGD
3098	Elrama Power Plant	PA	ELR3-2	bituminous	5.53E-04	SNCR, MC, ESP, WFGD
3098	Elrama Power Plant	PA	ELR1-2	bituminous	5.53E-04	SNCR, MC, ESP, WFGD
3098	Elrama Power Plant	PA	ELR2-2	bituminous	5.53E-04	SNCR, MC, ESP, WFGD
995	Bailly	IN	7	bituminous	5.75E-04	SCR, ESP, WFGD
995	Bailly	IN	8	bituminous	5.75E-04	SCR, ESP, WFGD
8219	Ray D Nixon	CO	Unit 1	subbituminous	5.85E-04	FF
1073	Prairie Creek	IA	Unit 1	coal - subbituminous	6.00E-04	ESP
3944	Harrison Power Station	WV	Boiler1	bituminous	6.02E-04	SCR, ESP, WFGD
3161	Eddystone Generating Station	PA	Unit 2	bituminous	6.09E-04	SNCR, MC, ESP, Venturi, WFGD
3944	Harrison Power Station	WV	Boiler3	bituminous	6.21E-04	SCR, ESP, WFGD
8042	Belews Creek Steam Station	NC	1-2008	bituminous	6.34E-04	SCR, ESP, WFGD
3295	Urquhart	SC	URQ003	bituminous	6.39E-04	ESP
897	Vermilion		002	subbituminous	6.41E-04	ESP, ACI, FF
887	Joppa Steam	IL	1	subbituminous	6.41E-04	ACI, ESP
897	Vermilion		001	subbituminous	6.41E-04	ESP, ACI, FF

3944	Harrison Power Station	WV	Boiler2	bituminous	6.57E-04	SCR, ESP, WFGD
1943	Hoot Lake	MN	2	subbituminous	6.88E-04	ESP
1356	Ghent	KY	GH4	bituminous	6.97E-04	DSI, ESP, SCR, WFGD
1357	Green River	KY	GR04	bituminous	6.97E-04	ESP
1241	La Cygne	KS	2	subbituminous	7.31E-04	ESP
6147	Monticello	TX	2	lignite	7.49E-04	SNCR, ACI, FF, ESP
1295	Quindaro	KS	Unit 2	bituminous	7.63E-04	ESP
54304	Birchwood Power Facility	VA	1A	bituminous	8.67E-04	SCR, DFGD, FF
6019	W H Zimmer	OH	1	bituminous	8.78E-04	DSI, SCR, ESP, WFGD
990	Harding Street	IN	70ss	bituminous	9.10E-04	SCR, ESP, WFGD
2554	Dunkirk Generating Plant	NY	1		9.13E-04	SNCR, DSI, FF
3181	Mitchell Power Station	PA	033	coal - bituminous	9.38E-04	ESP, WFGD
883	Waukegan	IL	WK8CONFIG	subbituminous	9.41E-04	ACI, ESP
2554	Dunkirk Generating Plant	NY	4		9.67E-04	SNCR, DSI, FF
564	Stanton Energy Center	FL	2 coal	coal - bituminous	1.05E-03	SCR, ESP, WFGD
2718	G G Allen	NC	3-2009-FGDIN	bituminous	1.06E-03	SNCR, ESP, WFGD
2718	G G Allen	NC	4-2009-FGDIN	bituminous	1.06E-03	SNCR, ESP, WFGD
3788	Potomac River	VA	4	coal - bituminous	1.13E-03	DSI, ESP
2718	G G Allen	NC	2-2009	bituminous	1.14E-03	SNCR, ESP, WFGD
2718	G G Allen	NC	5-2009	bituminous	1.14E-03	SNCR, ESP, WFGD
2718	G G Allen	NC	1-2009	bituminous	1.14E-03	SNCR, ESP, WFGD
4072	Pulliam	WI	8	subbituminous	1.18E-03	ACI, ESP
1374	Elmer Smith Station	KY	Unit002	bituminous, petroleum coke	1.34E-03	SNCR, ESP, WFGD
1374	Elmer Smith Station	KY	Unit001	bituminous, petroleum coke	1.34E-03	SCR, ESP, WFGD
492	Martin Drake	CO	Unit 7 - Coal	subbituminous, bituminous	1.47E-03	FF
861	Coffeen	IL	001	subbituminous	1.52E-03	SCR, ESP, WFGD
3403	Gallatin	TN	2	subbituminous	1.56E-03	ESP
10849	Silver Bay Power	MN	GEN1	subbituminous	1.66E-03	FF
54081	Spruance Genco, LLC	VA	GEN1	bituminous	1.77E-03	DFGD, FF
3788	Potomac River	VA	1	coal - bituminous	1.81E-03	DSI, ESP
10673	AES Hawaii	HI	002	bituminous	1.83E-03	FBC, SNCR, FF
6098	Big Stone	SD	001	subbituminous	1.83E-03	FF
568	Bridgeport Station	CT	BHSEMU3OS3-#2	subbituminous	1.90E-03	ESP, ACI, FF
492	Martin Drake	CO	Unit 5 - Coal	subbituminous	2.03E-03	FF
1626	Salem Harbor	MA	Unit 1	bituminous	2.04E-03	SNCR, ESP
3845	TransAlta Centralia Generation	WA	BW21CONFIG	subbituminous	2.12E-03	ESP, WFGD
3845	TransAlta Centralia Generation	WA	BW22CONFIG	subbituminous	2.29E-03	ESP, WFGD

Lignite units -- existing sources

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

					Emissions (lb/MMBtu)	
LIG units meeting existing source Hg limit 4 lb/TBTU						
52071	Sandow Station	TX	5B	coal - lignite	1.02E-06	FBC, SCR, ACI, DFGD, FF
6180	Oak Grove	TX	OG1	coal - lignite	1.11E-06	SCR, ACI, FF, WFGD
52071	Sandow Station	TX	5A	coal - lignite	1.45E-06	FBC, SCR, ACI, DFGD, FF
LIG units meeting existing source PM limit 0.03 lb/mmbtu						
52071	Sandow Station	TX	5B	coal - lignite	1.38E-02	FBC, SNCR, ACI, DFGD, FF
6180	Oak Grove	TX	OG1	coal - lignite	1.60E-02	SCR, ACI, FF, WFGD
52071	Sandow Station	TX	5A	coal - lignite	[illegible]	FBC, SNCR, ACI, DFGD, FF
7030	Twin Oaks Power One	TX	U2	coal - lignite	[illegible]	FBC, FF
LIG units meeting existing source HCl limit 0.002 lb/mmbtu						
52071	Sandow Station	TX	5A	lignite	2.12E-05	FBC, SNCR, ACI, DFGD, FF
52071	Sandow Station	TX	5B	lignite	2.55E-05	FBC, SNCR, ACI, DFGD, FF
6180	Oak Grove	TX	OG1	lignite	1.20E-04	SCR, ACI, FF, WFGD
55076	Red Hills Generating Facility	MS	002	lignite	3.67E-04	FBC, FF
55076	Red Hills Generating Facility	MS	001	lignite	3.67E-04	FBC, FF
6147	Monticello	TX	2	lignite	7.49E-04	SNCR, ACI, FF, ESP

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

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

Units meeting new source Hg limit 0.013 lb GWh; 0.0185 LB/TBTU

					Emissions (lb/MMBtu)	
54081	Spruance Genco, LLC	VA	GEN2	coal - bituminous	2.63E-09	DFGD, FF
54081	Spruance Genco, LLC	VA	GEN3	coal - bituminous	4.69E-09	DFGD, FF
527	Nucla	CO	001	coal - bituminous	5.33E-09	FBC, SNCR, FF
10043	Logan Generating Plant	NJ	Unit1	coal - bituminous	5.33E-09	SCR, DFGD, FF
3130	Seward	PA	SEW-1	coal refuse (culm or gob)	6.35E-09	FBC, SNCR, FF
2527	AES Greenidge	NY	Unit 4	coal - bituminous, petroleum coke	6.46E-09	SCR, ACI, DFGD, FF
54035	Roanoke Valley I	NC	Boiler 1	coal - bituminous	7.26E-09	DFGD, FF
2526	AES Westover, LLC	NY	8	coal - bituminous	8.15E-09	SCR, DFGD, FF
50976	Indiantown Cogeneration, L.P.	FL	001	coal - bituminous	8.54E-09	SCR, DFGD, FF
50888	Northampton Generating Company, L.P.	PA	GEN1	coal refuse (culm or gob)	1.04E-08	FBC, SNCR, FF
54755	Roanoke Valley II	NC	Boiler 2	coal - bituminous	1.08E-08	SNCR, DFGD, FF
10673	AES Hawaii	HI	001	coal - bituminous	1.17E-08	FBC, SNCR, FF
54081	Spruance Genco, LLC	VA	GEN4	coal - bituminous	1.18E-08	DFGD, FF
10603	Ebensburg Power Company	PA	EPC01	coal refuse (culm or gob)	1.25E-08	FBC, FF, WFGD
10673	AES Hawaii	HI	002	coal - bituminous	1.30E-08	FBC, SNCR, FF
10143	Colver Power Project	PA	AAB01	coal refuse (culm or gob)	1.46E-08	FBC, SNCR, FF
54304	Birchwood Power Facility	VA	1A	coal - bituminous	1.55E-08	SCR, DFGD, FF

Units meeting new source PM limit 0.05 lb/MWh

7790	Bonanza Power Plant	UT	1-1	coal - bituminous	[illegible]	FF, WFGD
10673	AES Hawaii	HI	001	coal - bituminous	[illegible]	FBC, SNCR, FF
2554	Dunkirk Generating Plant	NY	1		3.05E-02	SNCR, DSI, FF
492	Martin Drake	CO	[illegible]	coal - subbituminous	3.19E-02	FF, WFGD
568	Bridgeport Station	CT	[illegible]	coal - subbituminous	3.35E-02	ESP, ACI, FF
2712	Roxboro Steam Electric Plant	NC	[illegible]	coal - bituminous	[illegible]	SCR, ESP, WFGD
8223	Springerville	AZ	4	coal - bituminous	3.49E-02	SCR, DFGD, FF
10673	AES Hawaii	HI	002	coal - bituminous	3.58E-02	FBC, SNCR, FF
2554	Dunkirk Generating Plant	NY	4		3.62E-02	SNCR, DSI, FF
891	Havana	IL	[illegible]	coal - subbituminous	4.00E-02	ESP, SCR, ACI, DFGD, FF
963	Dallman	IL	34	coal - bituminous	4.20E-02	SCR, FF, WFGD, WESP
7097	J K Spruce	TX	1	coal - bituminous	4.24E-02	FF, WFGD
1082	Walter Scott Jr. Energy Center	IA	4	coal - subbituminous	4.57E-02	SCR, ACI, DFGD, FF
2451	San Juan	NM	Unit 3	coal - subbituminous	4.62E-02	ACI, FF, WFGD
2324	Reid Gardner	NV	1	coal - bituminous	4.74E-02	FF, WFGD
4078	Weston	WI	4A	coal - subbituminous	4.76E-02	SCR, ACI, DFGD, FF
2712	Roxboro Steam Electric Plant	NC	[illegible]	coal - bituminous	[illegible]	SCR, ESP, WFGD
6041	H L Spurlock Station	KY	Unit 04	coal - bituminous	5.00E-02	FBC, SNCR, DFGD, FF

Units meeting new source HCl limit 0.3 lb GWh

10043	Logan Generating Plant	NJ	Unit1	bituminous	1.13E-04	SCR, DFGD, FF
56224	TS Power Plant	NV	TSPower	subbituminous	1.89E-04	SCR, ACI, DFGD, FF
3130	Seward	PA	SEW-1	coal refuse (culm or gob)	2.04E-04	FBC, SNCR, FF
3130	Seward	PA	SEW-2	coal refuse (culm or gob)	2.04E-04	FBC, SNCR, FF
10566	Chambers Cogeneration LP	NJ	Boil 1	bituminous	2.06E-04	SCR, DFGD, FF
54081	Spruance Genco, LLC	VA	GEN3	bituminous	2.11E-04	DFGD, FF
54081	Spruance Genco, LLC	VA	GEN2	bituminous	2.21E-04	DFGD, FF
52071	Sandow Station	TX	5A	lignite	2.22E-04	FBC, SNCR, ACI, DFGD, FF
108	HOLCOMB	KS	SGU1		2.28E-04	DFGD, FF
52071	Sandow Station	TX	5B	lignite	2.68E-04	FBC, SNCR, ACI, DFGD, FF
10566	Chambers Cogeneration LP	NJ	Boil 2	bituminous	2.73E-04	SCR, DFGD, FF
6761	Rawhide	CO	Rawhide101	subbituminous	3.31E-04	DFGD, FF
50976	INDIANTOWN COGENERATION L.P.	FL	001	bituminous	3.39E-04	SCR, DFGD, FF
1082	Walter Scott Jr. Energy Center	IA	4	subbituminous	3.43E-04	SCR, ACI, DFGD, FF

Coal Production in the Base Case and the MAT Standard 1/

Source: US EPA response to labor questions

Basin	Supply Region	Coal Production (Million Tons) 2015 Scenario Base	2015 Scenario MATS	2020 Scenario Base	2020 Scenario MATS
Central Appalachia		57	56	47	49
Dakota Lignite		31	23	31	23
East Interior-Illinois					
	Illinois	*102*	*110*	*103*	*106*
	Indiana	*47*	*54*	*49*	*56*
	West Kentucky	*42*	*47*	*39*	*40*
East Interior-Illinois Total		191	211	191	203
Gulf Lignite		46	31	57	34
Northern Appalachia					
	Pennsylvania	*71*	*68*	*70*	*69*
	Northern West Virginia	*64*	*64*	*65*	*65*
	Other Northern App	*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 powe In 2015, for example, total delieveries 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 PM2.5 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 PM2.5	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 PM2.5 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

SORT ON FILTERABLE PM LB/MMBTU TOP 130, SEPARATE CALC FOR SPRAY DRYER UNITS

ORIS code	Plant Name	State	Unit	Unit Type	Mwe	Fuel	Filterable Particulate lb/MMBtu
50976	INDIANTOWN COGENERATION L.P.	FL	001	Conventional Boiler	361	bituminous	3.22182E-06
10566	Chambers Cogeneration LP	NJ	Boil 2	Conventional Boiler	285	bituminous	0.000152814
2554	Dunkirk Generating Plant	NY	1	Conventional Boiler	85	subbituminous	0.000244259
2277	Sheldon Station	NE	U2	Conventional Boiler	141	subbituminous	0.000459465
492	Martin Drake	CO	Unit 5 - Coal	Conventional Boiler	55	subbituminous	0.000468805
1626	Salem Harbor	MA	Unit 1	Conventional Boiler	81.419	bituminous	0.000490371
10566	Chambers Cogeneration LP	NJ	Boil 1	Conventional Boiler	285	bituminous	0.000516101
8223	Springerville	AZ	3	Conventional Boiler	450	subbituminous	0.000582115
10043	Logan Generating Plant	NJ	Unit1	Conventional Boiler	241.7	bituminous	0.000653965
52071	Sandow Station	TX	5A	Fluidized bed firing	282.35	lignite	0.000673405
2554	Dunkirk Generating Plant	NY	4	Conventional Boiler	195	subbituminous	0.000742216
8223	Springerville	AZ	4	Conventional Boiler	450	bituminous	0.000754284
6077	Gerald Gentleman	NE	U2	Conventional Boiler	750	bituminous	0.000754343
2408	PSEG Mercer Generating Station	NJ	MERU2E2PT2OS1-Coal	Conventional Boiler	343	bituminous	0.000763959
2408	PSEG Mercer Generating Station	NJ	MERU1E1PT1OS1-Coal	Conventional Boiler	343	bituminous	0.000792608
568	Bridgeport Station	CT	BHSEMU3OS3-#2	Conventional Boiler	403	subbituminous	0.000798921
55479	Wygen 1	WY	WYG1Cfg	Conventional Boiler	91	subbituminous	0.000826448
7504	Neil Simpson II	WY	NS2Cfg	Conventional Boiler	88	subbituminous	0.000926161
2277	Sheldon Station	NE	U1	Conventional Boiler	128	subbituminous	0.000936899
52071	Sandow Station	TX	5B	Fluidized bed firing	282.35	lignite	0.000987015
10673	AES Hawaii	HI	001	Fluidized bed firing	203	bituminous	0.000989205
2079	Hawthorn	MO	5A	Conventional Boiler	594	subbituminous, bituminou	0.001102527
470	Comanche	CO	Unit 2	Conventional Boiler	365	subbituminous	0.001205914
7242	Polk	FL	IGCC1	IGCC		Coal Gas	0.001329488
2451	San Juan	NM	Unit 3	Conventional Boiler	544	subbituminous	0.001355686
10673	AES Hawaii	HI	002	Fluidized bed firing	203	bituminous	0.001476368
4041	South Oak Creek	WI	OCPP-B7	Conventional Boiler	656	subbituminous	0.001533257
3845	TransAlta Centralia Generation	WA	BW22CONFIG	Conventional Boiler	567	subbituminous	0.001618724
6002	James H. Miller Jr.	AL	Unit 4	Conventional Boiler	723	subbituminous	0.001720932
6181	J T Deely	TX	1	Conventional Boiler	450	subbituminous	0.00191776
6181	J T Deely	TX	2	Conventional Boiler	450	subbituminous	0.00191776
2324	Reid Gardner	NV	1	Conventional Boiler	111	bituminous	0.001924418
2712	Roxboro Steam Electric Plant	NC	Rox_Cfg_2c	Conventional Boiler	703	bituminous	0.00198321
4078	Weston	WI	W4	Conventional Boiler	574.5	subbituminous	0.002107112
6761	Rawhide	CO	Rawhide101	Conventional Boiler	305	subbituminous	0.002283997
10377	James River Cogeneration Co	VA	UNIT2	Conventional Boiler	57.39	bituminous	0.002351656
4042	Valley	WI	VAPP-B3	Conventional Boiler	144	bituminous	0.002364782
4042	Valley	WI	VAPP-B4	Conventional Boiler	144	bituminous	0.002401932
7213	Clover	VA	Unit 2	Conventional Boiler	434	bituminous	0.002546508
7097	J K Spruce	TX	1	Conventional Boiler	580	bituminous	0.002720865
2712	Roxboro Steam Electric Plant	NC	Rox_Cfg_1b	Conventional Boiler	385	bituminous	0.002809266
113	Cholla	AZ	003	Conventional Boiler	305	bituminous	0.00292396
7213	Clover	VA	Unit 1	Conventional Boiler	431	bituminous	0.002967102
2706	Asheville Steam Electric Plant	NC	Ash_Cfg_1d	Conventional Boiler	207	bituminous	0.003019083
990	Harding Street	IN	70ss	Conventional Boiler	463	bituminous	0.003164283
2451	San Juan	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	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 Centralia 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	subbituminous, bituminou	0.003347233
1082	Walter Scott Jr. Energy Center	IA	4	Conventional Boiler	850	subbituminous	0.003376519
50951	Sunnyside Cogen Associates	UT	Config 1	Fluidized bed firing	60	bituminous	0.003559268
2706	Asheville Steam Electric Plant	NC	Ash_Cfg_2	Conventional Boiler	204	bituminous	0.00358456
7210	Cope	SC	COP001	Conventional Boiler	441	bituminous	0.003615434
113	Cholla	AZ	004	Conventional Boiler	425	bituminous	0.003650438
6041	H L Spurlock Station	KY	Unit 01	Conventional Boiler	344	bituminous	0.003683891
6098	Big Stone	SD	001	Conventional Boiler	495	subbituminous	0.00372546
2451	San Juan	NM	Unit 1	Conventional Boiler	370	subbituminous	0.003768873
6113	Gibson	IN	2-2007-FGDIN	Conventional Boiler	661	bituminous	0.003831711
6077	Gerald Gentleman	NE	U1	Conventional Boiler	715	bituminous	0.003844861
525	Hayden	CO	Unit 1	Conventional Boiler	202	bituminous	0.003875147
54144	Piney Creek Project	PA	BRBRI	Fluidized bed firing	36	bituminous, synfuel	0.003914725
642	Scholz	FL	Unit 1	Conventional Boiler	49	bituminous	0.004007074
492	Martin Drake	CO	Unit 7 - Coal	Conventional Boiler	141	subbituminous, bituminou	0.004089401
2718	G G Allen	NC	3-2009-FGDIN	Conventional Boiler	281.5	bituminous	0.004111389
2718	G G Allen	NC	4-2009-FGDIN	Conventional Boiler	297.3	bituminous	0.004111389
6021	Craig	CO	C1	Conventional Boiler	456	subbituminous	0.004138105
60	Whelan Energy Center Unit 1 (WEC1)	NE	1	Conventional Boiler	83.6	subbituminous	0.004145432
4072	Pulliam	WI	8	Conventional Boiler	137.9	subbituminous	0.004188705
3287	McMeekin	SC	MCM002	Conventional Boiler	132	bituminous	0.004483634
6664	Louisa	IA	101	Conventional Boiler	805	subbituminous	0.00451197
6021	Craig	CO	C2	Conventional Boiler	456	subbituminous	0.004567804
2451	San Juan	NM	Unit 2	Conventional Boiler	370	subbituminous	0.004678915
10672	Cedar Bay Generating Company L.P.	FL	CBB1	Fluidized bed firing	280	bituminous	0.005076287
1241	La Cygne	KS	2	Conventional Boiler	685	subbituminous	0.0053594
10641	Cambria Cogen	PA	001	Fluidized bed firing	49	coal refuse (culm or gob),	0.005402253
4042	Valley	WI	VAPP-B1	Conventional Boiler	144	bituminous	0.00544296
10075	Taconite Harbor Energy Center	MN	THEC2	Conventional Boiler	79.2	bituminous	0.005465569
2837	Eastlake	OH	Unit 3	Conventional Boiler	144	subbituminous, bituminou	0.005547744
1250	Lawrence Energy Center	KS	3	Conventional Boiler	58	bituminous	0.005586536
56224	TS Power Plant	NV	TSPower	Conventional Boiler	242	subbituminous	0.005606642
2837	Eastlake	OH	Unit 1	Conventional Boiler	144	subbituminous, bituminou	0.005672501
892	Hennepin Power Station	IL	001	Conventional Boiler	75	subbituminous	0.005803682
892	Hennepin Power Station	IL	002	Conventional Boiler	234	subbituminous	0.005803682
6113	Gibson	IN	1-2007-FGDIN	Conventional Boiler	661	bituminous	0.005864761
10641	Cambria Cogen	PA	002	Fluidized bed firing	49	coal refuse (culm or gob),	0.00598177
988	Tanners Creek	IN	TC-4	Conventional Boiler	579.7	subbituminous, bituminou	0.006095802
6041	H L Spurlock Station	KY	Unit 04	Fluidized bed firing	300	bituminous	0.00621273
10672	Cedar Bay Generating Company L.P.	FL	CBA1	Fluidized bed firing	280	bituminous	0.006312691

6041	H L Spurlock Station	KY	Unit 03	Fluidized bed firing	300	bituminous	0.006538349
4078	Weston	WI	W3	Conventional Boiler	365.6	subbituminous	0.006634459
3287	McMeekin	SC	MCM001	Conventional Boiler	135	bituminous	0.00664733
1832	Erickson Station	MI	001	Conventional Boiler	165	subbituminous	0.007150867
50776	PANTHER CREEK ENERGY FACILITY	PA	BG1	Fluidized bed firing	46.5	coal refuse (culm or gob)	0.007767398
50776	PANTHER CREEK ENERGY FACILITY	PA	BG2	Fluidized bed firing	46.5	coal refuse (culm or gob)	0.007767398
4042	Valley	WI	VAPP-B2	Conventional Boiler	144	bituminous	0.008325625
6180	Oak Grove	TX	OG1	Conventional Boiler	817	lignite	0.008430549
54081	Spruance Genco, LLC	VA	GEN2	Conventional Boiler	57.4	bituminous	0.008442147
6018	East Bend Station	KY	2	Conventional Boiler	650.72464	bituminous	0.008720334
50888	Northampton Generating Company, L.P.	PA	GEN1	Fluidized bed firing	121	coal refuse (culm or gob)	0.008801082
525	Hayden	CO	Unit 2	Conventional Boiler	285	bituminous	0.009042558
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	Sibley	MO	1	Conventional Boiler	55	subbituminous, bituminou	0.00919947
2094	Sibley	MO	2	Conventional Boiler	51	subbituminous, bituminou	0.00919947
2094	Sibley	MO	3	Conventional Boiler	419	subbituminous, bituminou	0.00919947
10774	Southampton Power Station	VA	Unit 1 & 2	Conventional Boiler	136	bituminous	0.009333655
6139	Welsh	TX	WE-1	Conventional Boiler	558	subbituminous	0.009345364
6019	W H Zimmer	OH	1	Conventional Boiler	1408	bituminous	0.009397308
6096	Nebraska City	NE	NC2	Conventional Boiler		bituminous	0.009491134
991	Eagle Valley	IN	6	Conventional Boiler	105	bituminous	0.009499313
3942	Albright Power Station	WV	Unit_2	Conventional Boiler	81	bituminous	0.009957435
10678	AES Warrior Run Cogeneration Facility	MD	BLR1	Fluidized bed firing	202	bituminous	0.010695038
3149	PPL Montour	PA	U1	Conventional Boiler	797	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	Birchwood Power Facility	VA	1A	Conventional Boiler	222	bituminous	0.01096467
1710	Consumers Energy - J.H. Campbell	MI	JHC1-Conf	Conventional Boiler	274	subbituminous	0.011080275
1710	Consumers Energy - J.H. Campbell	MI	JHC2-Conf	Conventional Boiler	374	subbituminous, bituminou	0.011080275
1363	Cane Run	KY	CR5	Conventional Boiler	181	bituminous	0.011256993
1393	RS Nelson	LA	001	Conventional Boiler	580	bituminous	0.011305586
47	Colbert	AL	3	Conventional Boiler	200	subbituminous, bituminou	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	Eddystone Generating Station	PA	Unit 2	Conventional Boiler	339	bituminous	0.011955073
55749	Hardin Generator Project	MT	PC1	Conventional Boiler	119	bituminous	0.012426061
10672	Cedar Bay Generating Company L.P.	FL	CBC1	Fluidized bed firing	280	bituminous	0.012776699
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

6085	R.M. Schahfer	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	U2	Conventional Boiler	792	bituminous	0.016599218
990	Harding Street	IN	60s	Conventional Boiler	112	bituminous	0.01676508
10143	Colver Power Project	PA	AAB01	Fluidized bed firing	131	coal refuse (culm or gob)	0.016939466
2161	James River Power Station	MO	Unit_5_JRPS	Conventional Boiler	105	subbituminous	0.01763734
2828	Cardinal	OH	CD-U3	Conventional Boiler	650	bituminous	0.018160635
3098	Elrama Power Plant	PA	ELR1-2	Conventional Boiler	100	bituminous	0.018448245
3098	Elrama Power Plant	PA	ELR2-2	Conventional Boiler	100	bituminous	0.018448245
3098	Elrama Power Plant	PA	ELR3-2	Conventional Boiler	125	bituminous	0.018448245
3098	Elrama 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	PG7221FA	Conventional Boiler	292	Coal Gas	0.02
10075	Taconite Harbor Energy Center	MN	THEC1	Conventional Boiler	83	bituminous	0.020078821
68029	AES Puerto Rico Cogeneration Facility	PR	Unit_1	Fluidized bed firing	255	bituminous	0.020521693
54755	Roanoke Valley II	NC	Boiler 2	Conventional Boiler	50	bituminous	0.021313779
7253	Richard Gorsuch	OH	UNIT3	Conventional Boiler	53.3	bituminous	0.021854637
10771	Hopewell	VA	1 & 2	Conventional Boiler	136	bituminous	0.023080152
564	Stanton Energy Center	FL	2 coal	Conventional Boiler	468	bituminous	0.023446742
47	Colbert	AL	4	Conventional Boiler	200	subbituminous, bituminou	0.024004814
6076	Colstrip	MT	Unit3	Conventional Boiler	805	subbituminous	0.024065709
887	Joppa Steam	IL	1	Conventional Boiler	183.3	subbituminous	0.02465892
10603	Ebensburg Power Company	PA	EPC01	Fluidized bed firing	58	coal refuse (culm or gob)	0.024684028
981	State Line	IN	Unit 3	Conventional Boiler	216	bituminous	0.024867492
3140	PPL Brunner Island	PA	U1	Conventional Boiler	330	bituminous	0.025518704
3140	PPL Brunner Island	PA	U2	Conventional Boiler	393	bituminous	0.025518704
1363	Cane Run	KY	CR4	Conventional Boiler	168	bituminous	0.025678282
2708	Cape Fear Steam Electric Plant	NC	Cap_Cfg_5b	Conventional Boiler	153	bituminous	0.026504195
54081	Spruance Genco, LLC	VA	GEN4	Conventional Boiler	57.4	bituminous	0.027134324
1295	Quindaro	KS	Unit 2	Conventional Boiler	119.8	bituminous	0.028343895
884	Will County	IL	WC4CONFIG	Conventional Boiler	542	subbituminous	0.028841612
54035	Roanoke Valley I	NC	Boiler 1	Conventional Boiler	182	bituminous	0.028970961
50974	Scrubgrass Generating Company L.P.	PA	Gen 1	Fluidized bed firing	194	coal refuse (culm or gob)	0.029396393
897	Vermilion		001	Conventional Boiler	72	subbituminous	0.031405635
897	Vermilion		002	Conventional Boiler	110	subbituminous	0.031405635
864	Meredosia	IL	005	Conventional Boiler	204	subbituminous	0.031806706
3179	Hatfield's Ferry Power Station	PA	001	Conventional Boiler	590	bituminous	0.032347344
68029	AES Puerto Rico Cogeneration Facility	PR	Unit_2	Fluidized bed firing	255	bituminous	0.033002248
2364	Merrimack Station	NH	mk2	Conventional Boiler	337	bituminous	0.033210443
54081	Spruance Genco, LLC	VA	GEN3	Conventional Boiler	57.4	bituminous	0.03566192
3403	Gallatin	TN	2	Conventional Boiler	300	subbituminous	0.039282215
2716	W.H. Weatherspoon Plant	NC	Wea_Cfg_1	Conventional Boiler	106	bituminous	0.040281828
3251	HB Robinson / Darlington Electric Power Plant	SC	Rob_Cfg_1	Conventional Boiler	187	bituminous	0.042421191
527	Nucla	CO	001	Fluidized bed firing	110	bituminous	0.043795008
6639	R D Green	KY	2	Conventional Boiler	239	bituminous, petroleum co	0.046919376
6147	Monticello	TX	2	Conventional Boiler	583	lignite	0.047417846
2840	Conesville	OH	CV-3	Conventional Boiler	165	bituminous	0.04907183
883	Waukegan	IL	WK8CONFIG	Conventional Boiler	383	subbituminous	0.051663935

3775	Clinch River	VA	CR-1	Conventional Boiler	230	bituminous	0.053120161
874	Joliet 9	IL	JOL5 CONFIG	Conventional Boiler	326	subbituminous	0.058706273
1218	Fair Station	IA	U2	Conventional Boiler	44	bituminous	0.064561084
3942	Albright Power Station	WV	Unit_1	Conventional Boiler	81	bituminous	0.069563254
1943	Hoot Lake	MN	2	Conventional Boiler	60.7	subbituminous	0.081055211
997	Michigan City	IN	12	Conventional Boiler	495	subbituminous	0.100311455
1010	Wabash River	IN	4	Conventional Boiler	90	bituminous	0.109932669
1010	Wabash River	IN	6	Conventional Boiler	342	bituminous	0.109932669
2098	Lake Road	MO	6	Conventional Boiler	99	subbituminous, bituminou	0.129258594
2732	Riverbend	NC	7	Conventional Boiler	99.5	bituminous	0.133995648
3295	Urquhart	SC	URQ003	Conventional Boiler	103	bituminous	0.146477458
628	Crystal River Power Plant	FL	CryR_Cfg_1	Conventional Boiler	400	bituminous	0.147045932

	SPRAY DRYER SO2 UNITS						Filterable Particulate lb/MMBtu
50976	INDIANTOWN COGENERATION L.P.	FL	001	Conventional Boiler	361	bituminous	3.22182E-06
10566	Chambers Cogeneration LP	NJ	Boil 2	Conventional Boiler	285	bituminous	0.000152814
10566	Chambers Cogeneration LP	NJ	Boil 1	Conventional Boiler	285	bituminous	0.000516101
8223	Springerville	AZ	3	Conventional Boiler	450	subbituminous	0.000582115
10043	Logan Generating Plant	NJ	Unit1	Conventional Boiler	241.7	bituminous	0.000653965
8223	Springerville	AZ	4	Conventional Boiler	450	bituminous	0.000754284
55479	Wygen 1	WY	WYG1Cfg	Conventional Boiler	91	subbituminous	0.000826448
2079	Hawthorn	MO	5A	Conventional Boiler	594	subbituminous, bituminou	0.001102527
470	Comanche	CO	Unit 2	Conventional Boiler	365	subbituminous	0.001205914
4078	Weston	WI	W4	Conventional Boiler	574.5	subbituminous	0.002107112
10377	James River Cogeneration Co	VA	UNIT2	Conventional Boiler	57.39	bituminous	0.002351656
525	Hayden	CO	Unit 1	Conventional Boiler	202	bituminous	0.003875147
56224	TS Power Plant	NV	TSPower	Conventional Boiler	242	subbituminous	0.005606642
54081	Spruance Genco, LLC	VA	GEN2	Conventional Boiler	57.4	bituminous	0.008442147
525	Hayden	CO	Unit 2	Conventional Boiler	285	bituminous	0.009042558
6017	Newton	IL	002	Conventional Boiler	620	subbituminous	0.009115777
10774	Southampton Power Station	VA	Unit 1 & 2	Conventional Boiler	136	bituminous	0.009333655
6096	Nebraska City	NE	NC2	Conventional Boiler		bituminous	0.009491134
54081	Spruance Genco, LLC	VA	GEN1	Conventional Boiler	57.4	bituminous	0.010850449
54304	Birchwood Power Facility	VA	1A	Conventional Boiler	222	bituminous	0.01096467
54755	Roanoke Valley II	NC	Boiler 2	Conventional Boiler	50	bituminous	0.021313779
10771	Hopewell	VA	1 & 2	Conventional Boiler	136	bituminous	0.023080152
54081	Spruance Genco, LLC	VA	GEN4	Conventional Boiler	57.4	bituminous	0.027134324
884	Will County	IL	WC4CONFIG	Conventional Boiler	542	subbituminous	0.028841612
54035	Roanoke Valley I	NC	Boiler 1	Conventional Boiler	182	bituminous	0.028970961
68029	AES Puerto Rico Cogeneration Facility	PR	Unit_2	Fluidized bed firing	255	bituminous	0.033002248
54081	Spruance Genco, LLC	VA	GEN3	Conventional Boiler	57.4	bituminous	0.03566192
	AVG SPRAY DRYERS					AVG SPRAY DRYERS	0.010554938
	STD DEV					STD DEV	0.011535941
	AVG DIFF VS TOP 130					AVG DIFF VS TOP 130	2.276608099

Filterable Particulate MW lb/MW	Filterable PM2_5 lb/MMBtu	Filterable PM2_5 MW lb/MW	PM2_5 Condensible Particulate lb/MMBtu	PM2_5 Condensible Particulate MW lb/MW	control_group_1
3.05414E-05	9.71748E-07	9.23164E-06	0.008125908	0.077006393	NOx control
0.002125556	0.000152814	0.002125556	0.008749983	0.121633718	NOx control
0.000374165	0.000496105	0.000757928	0.00247635	0.003780148	NOx control
0.004887542	0.000227005	0.002414763	0.006038436	0.064233688	PM control
0.004744906	0.001240514	0.012555588	0.002606714	0.026383278	PM control
0.004472651	0.000142716	0.001281409	0.078162559	0.719291821	NOx control
0.010286407	0.000516101	0.010286407	0.005419961	0.11054002	NOx control
0.005135115	0.000215699	0.001902784	0.027252813	0.240410209	NOx control
0.006184321	0.000653965	0.006184321	0.011139346	0.105340957	NOx control
0.002978337	9.3059E-05	0.0004128	0.024004854	0.107159965	NOx control
0.002076337	0.000252162	0.000744078	0.002717992	0.007617552	NOx control
0.00670065	0.000390372	0.003467854	0.002929143	0.02602093	NOx control
0.011180871	0.000433869	0.006563023	0.019498194	0.293604729	PM control
0.007201508	0.001171907	0.011049977	0.045765637	0.428502412	PM control
0.007241344	0.001352697	0.012359712	0.029530437	0.269681271	PM control
0.008419505	0.001082504	0.01142129	0.002890879	0.030556877	PM control
0.009331211			0.019626976	0.221572601	NOx control
0.010402813			0.010035598	0.112602184	SO2 control
0.009966237	0.00053102	0.005648711	0.008027449	0.085391759	PM control
0.003941869	0.000263154	0.001058167	0.013012919	0.050844409	NOx control
0.007156271	0.000402262	0.002889418	0.004710525	0.034045729	NOx control
0.010361597	0.000732519	0.006884244	0.007722669	0.072578	NOx control
0.011224531	0.000466943	0.004352677			Other control
	0.003767762		0.012784113		Other control
0.013944754			0.003007136	0.030921608	Other control
0.01137212	0.000244671	0.001884155	0.005809992	0.044863012	NOx control
0.014905859	0.001507717	0.014679463	0.005641818	0.054108583	PM control
0.017756403			0.007686909	0.08660374	PM control
0.016011502	0.000839663	0.007810396	0.007683842	0.071426601	NOx control
0.018068195	0.000293711	0.002780911	0.005567745	0.05266601	PM control
	0.000293711		0.005567745		PM control
0.018479358	0.001032086	0.009907247	0.002404772	0.023077059	PM control
0.018251791			0.001492902	0.013732223	NOx control
0.017352696	0.000306611	0.002520491	0.004740533	0.039111411	NOx control
0.019792884	0.000247382	0.002143785	0.014167947	0.122777981	SO2 control
0.034209133					SO2 control
0.02247079	0.00104575	0.009945174	0.011770216	0.111769335	PM control
0.021922251	0.001205426	0.010943887	0.005818417	0.052994111	PM control
0.025012985			0.002767945	0.027098777	NOx control
0.028943124			0.002631263	0.02798999	PM control
0.026641939			0.00214605	0.020347178	NOx control
0.031682212			0.005927409	0.064209413	PM control
0.027242652			0.032007124	0.290981335	PM control
0.032115411			0.009197023	0.097833068	NOx control
0.046366225	0.001099917	0.016183192	0.059141028	0.866809415	NOx control
0.032758998			0.0030674	0.031476159	Other control
0.034342102			0.003982551	0.042364268	NOx control

			0.003982551		NOx control
			0.003982551		NOx control
			0.003982551		NOx control
0.030362041			0.004270453	0.040296912	PM control
			0.004270453		PM control
			0.004270453		PM control
			0.004270453		NOx control
0.040502526			0.003141905	0.038951299	NOx control
0.035881203			0.002650088	0.029022555	PM control
			0.004026817		NOx control
0.023453199	0.0036364	0.025479316	0.015287171	0.107113258	NOx control
0.028313833	0.000661088	0.005541623	0.001684806	0.014072406	NOx control
0.037861606	4.10037E-05	0.000436175	0.002623223	0.027904456	NOx control
0.038130654			0.006302543	0.067043118	NOx control
0.030723751	0.001645084	0.014029482	0.028384975	0.241410015	NOx control
0.036033976			0.003742833	0.036947295	PM control
0.036930576			0.008440988	0.084707825	PM control
0.03978784	0.001651224	0.017587799	0.007543449	0.080566092	PM control
0.03822461			0.004394383	0.044568642	Other control
0.03975347			0.009930801	0.103087759	NOx control
0.058641692	0.000266177	0.004092525	0.004768942	0.073123375	PM control
0.043163211	0.000714702	0.007957563			SO2 control
	0.006802258		0.006302937		NOx control
0.042625136	0.001557126	0.016563887	0.013529254	0.143917055	PM control
0.042086621	0.001123598	0.01156366	0.003399077	0.034982052	PM control
0.063661661			0.003711815	0.056827729	NOx control
			0.003711815		NOx control
0.043045149			0.005040579	0.05243281	PM control
0.046204178	0.001772575	0.019756775	0.002388954	0.026626815	PM control
0.04028966	0.001600094	0.01537894	0.005750971	0.055438235	Other control
	0.002565931		0.007318075		PM control
0.037126981	0.000584506	0.004809641	0.008946517	0.073616885	SO2 control
0.048614196			0.002413257	0.025688816	PM control
0.04597036			0.004119651	0.040470791	Other control
0.053998854	2.12711E-06	2.26271E-05			SO2 control
0.052626795	0.004119819	0.040464023	0.00670322	0.065875009	PM control
	0.000252561		0.025936111		NOx control
0.070481613	0.002595875	0.033614333	0.017077262	0.221135742	PM control
0.058458363	0.004151002	0.043495772	0.005942976	0.062359856	NOx control
					NOx control
0.057936874	0.002419455	0.025096121	0.010776058	0.111640524	PM control
0.048413518	0.002506823	0.022091934			NOx control
0.049800237					PM control
0.064408991	0.001457383	0.016206189	0.005209448	0.057800057	PM control
	0.001457383		0.005209448		PM control
0.050245282			0.010824748	0.092767523	NOx control
	0.000629298		0.036426731		NOx control
0.064843924	0.004413887	0.0469526			PM control
0.053918753	0.004481398	0.039010587	0.016521243	0.144324687	NOx control
0.067151071	7.54982E-07	8.0311E-06			SO2 control

0.059696965	0.003793829	0.034640858	0.007454873	0.068105676	NOx control
0.060329399	0.000972982	0.00884764	0.008574467	0.077861961	PM control
0.052842635	0.000828726	0.006583935	0.181088637	1.440427133	PM control
	0.003035225		0.007801483		PM control
0.082625471	0.003132062	0.033317223	0.00152969	0.016272038	NOx control
	0.003132062		0.00152969		NOx control
0.098205709	0.002200514	0.025905207	0.012427741	0.147937241	PM control
0.08967972			0.007530235	0.080102662	NOx control
0.118557617	0.003342161	0.046935762	0.002069917	0.029068955	SO2 control
0.079079263			0.019626212	0.177958312	Other control
0.086313171	0.001337835	0.013149603	0.015627155	0.152706545	NOx control
0.090091028	0.000321831	0.00320897			SO2 control
0.096828565	0.005097954	0.054229339	0.014881918	0.158305977	PM control
0.084814188	0.00582916	0.054235147	0.006137749	0.057106294	Other control
0.099262236	0.00378435	0.040820696	0.019463059	0.210327812	NOx control
	0.00378435		0.019463059		NOx control
	0.00378435		0.019463059		NOx control
0.12289047	0.0011907	0.015389433	0.003067854	0.044370198	PM control
0.099411045	0.003885108	0.041327725			PM control
			0.040903937		Other control
0.083946169	0.002105176	0.018614707	0.01513107	0.133778241	NOx control
0.077263078	0.002945759	0.023959458	0.031516959	0.256344571	PM control
0.121978581	0.011667973	0.144501321			PM control
0.107643061	0.013584815	0.136727988	0.013726578	0.138154804	NOx control
0.081346897			0.018108495	0.137636776	PM control
0.094493782	0.003620754	0.031613955	0.006973714	0.061013984	NOx control
	0.003620754		0.006973714		NOx control
0.183451505	0.002050983	0.034676522			SO2 control
0.097494821	0.002793633	0.025001699	0.012035569	0.106319914	NOx control
0.117866103	0.007991343	0.085007676	0.003016786	0.032090976	PM control
	0.007991343		0.003016786		PM control
0.119822241			0.012913343	0.138130062	PM control
0.124141299	0.001575379	0.017321194	0.01548301	0.170069422	PM control
	0.003771844		0.018207151		PM control
0.045474907	0.00212343	0.019857924	0.012206896	0.120744938	
0.036232695	0.002402763	0.026022516	0.019493335	0.186378495	
0.11382457	0.008428131	0.082065264	0.002741402	0.026600785	PM control
0.153887989			0.004356422	0.056067806	NOx control
0.123601219	0.001654098	0.016519979	0.069592054	0.6899776	NOx control
0.135911768	1.03811E-06	1.10428E-05			SO2 control
0.135232604	0.012700515	0.13311984	0.012799113	0.134100014	PM control
0.119853836	0.004427545	0.039950393	0.004933686	0.044517375	PM control
	0.004427545		0.004933686		PM control
0.121117552	0.003469345	0.030364807	0.018501389	0.161930027	PM control
0.128148577	0.0024134	0.022072042	0.011744737	0.107412915	PM control
0.146820362			0.026288852	0.261921315	NOx control
			0.026288852		NOx control

0.185794231	0.011467024	0.139601331	0.019773968	0.233651361	NOx control
0.148755231	0.001458397	0.014029148			PM control
0.148755231	0.001458397	0.014029148			PM control
0.135361476			0.012554616	0.102725158	PM control
0.162578767	0.009714551	0.094206517	0.041355487	0.401043365	NOx control
0.160754047	0.001858151	0.017742851			NOx control
0.182386609	0.022187313	0.229435424	0.039311571	0.405600278	PM control
0.19318323	0.009795632	0.10420075			PM control
0.196242674			0.007674071	0.081632707	NOx control
			0.007674071		NOx control
			0.007674071		NOx control
			0.007674071		NOx control
0.249850261	0.001246314	0.016550698	0.006091205	0.081302501	NOx control
0.186285046	0.014474237	0.138934942	0.026103212	0.250692813	PM control
0.214018691	0.00471	0.050349934	0.013766667	0.14708653	
0.229703725	0.013380343	0.152667678	0.007199183	0.081994604	NOx control
0.181100918	0.003840833	0.033894782	0.042705274	0.376867756	NOx control
0.205770113	0.009590569	0.092702884	0.019222158	0.185580201	NOx control
0.232478069	0.004140989	0.044049654	0.036417208	0.387387006	PM control
0.261090357	0.00293546	0.033206002	0.057096093	0.645845396	NOx control
			0.002267748		NOx control
0.255294364	0.00892534	0.095037563	0.020231776	0.214842733	PM control
0.223838542			0.002883834	0.026800211	Other control
0.248095492	0.016757672	0.168600366	0.003618252	0.036403539	Other control
0.333795268	0.005400264	0.073067866			PM control
0.227563089	0.004215036	0.038564798	0.005448423	0.049816927	PM control
0.430331019			0.005557543	0.093718839	PM control
			0.005557543		PM control
0.252237486			0.01730163	0.168257756	PM control
0.20430116	0.011649669	0.089548156	0.01553658	0.118823217	NOx control
0.488963881	0.004486935	0.080855118	0.002022799	0.03645108	SO2 control
0.354044681			0.005162607	0.063873498	PM control
0.284259837	0.012747638	0.126391703	0.00535438	0.05325274	Other control
0.254290911	0.01499512	0.131878013	0.009008996	0.079231924	SO2 control
0.205653278	0.003828821	0.026868274	0.004387567	0.030684418	NOx control
0.317145884	0.017353174	0.175114881	0.020619189	0.212695606	PM control
	0.017353174		0.020619189		PM control
0.313014154	0.011667317	0.114819663	0.004777393	0.047014977	Other control
			0.001949275		PM control
0.294504749	0.002218252	0.019795185	0.068850212	0.614404036	NOx control
0.301759432			0.057911121	0.525406718	NOx control
0.678244272	0.002533279	0.048179744	0.002181504	0.041489431	SO2 control
0.357771971	0.002880156	0.026224144	0.010177592	0.092673886	PM control
0.018608607	0.00640117	0.002967033	0.061925012	0.028297446	PM control
0.392615275	0.0159928	0.14807232	0.073857003	0.683313144	PM control
0.506525589	0.007757405	0.089722162	0.003810182	0.044064394	NOx control
0.471547882			0.012588918	0.126520816	PM control
0.504405977	0.052869572	0.562398554	0.03206923	0.341135513	NOx control
0.52200018	0.008116492	0.086338956			PM control
0.595994696	0.018488706	0.213782312	0.011758282	0.135868222	Other control

0.613514285	0.023948458	0.276594064			NOx control
0.605709862	0.016483593	0.170348973	0.004481863	0.046204261	Other control
0.754868718	0.037517319	0.438271495	0.103398825	1.209275685	Other control
0.773178462	0.015582093	0.177251112	0.066484701	0.758699516	PM control
1.027802367	0.020864521	0.266093075	0.001830993	0.02335141	PM control
1.067060219	0.035118521	0.373572257	0.069913538	0.743703252	NOx control
1.16940561	0.055643877	0.591910139	0.090850039	0.966414676	PM control
	0.055643877		0.090850039		PM control
0.902666789	0.032430239	0.226736262	0.006608792	0.046040494	PM control
	0.055666691		0.084503611		NOx control
1.528120985	0.085762173	0.894546595	0.113679653	1.185772569	PM control
1.371121061	0.027181057	0.253448152	0.024276795	0.226367536	PM control

Filterable Particulate MW lb/MW	Filterable PM2_5 lb/MMBtu	Filterable PM2_5 MW lb/MW	PM2_5 Condensible Particulate lb/MMBtu	PM2_5 Condensible Particulate MW lb/MW	
3.05414E-05	9.71748E-07	9.23164E-06	0.008125908	0.077006393	NOx control
0.002125556	0.000152814	0.002125556	0.008749983	0.121633718	NOx control
0.010286407	0.000516101	0.010286407	0.005419961	0.11054002	NOx control
0.005135115	0.000215699	0.001902784	0.027252813	0.240410209	NOx control
0.006184321	0.000653965	0.006184321	0.011139346	0.105340957	NOx control
0.00670065	0.000390372	0.003467854	0.002929143	0.02602093	NOx control
0.009331211			0.019626976	0.221572601	NOx control
0.010361597	0.000732519	0.006884244	0.007722669	0.072578	NOx control
0.011224531	0.000466943	0.004352677			Other control
0.017352696	0.000306611	0.002520491	0.004740533	0.039111411	NOx control
0.034209133					SO2 control
0.043163211	0.000714702	0.007957563			SO2 control
0.048413518	0.002506823	0.022091934			NOx control
0.118557617	0.003342161	0.046935762	0.002069917	0.029068955	SO2 control
0.090091028	0.000321831	0.00320897			SO2 control
0.084814188	0.00582916	0.054235147	0.006137749	0.057106294	Other control
0.12289047	0.0011907	0.015389433	0.003067854	0.044370198	PM control
0.083946169	0.002105176	0.018614707	0.01513107	0.133778241	NOx control
0.183451505	0.002050983	0.034676522			SO2 control
0.097494821	0.002793633	0.025001699	0.012035569	0.106319914	NOx control
0.205770113	0.009590569	0.092702884	0.019222158	0.185580201	NOx control
0.261090357	0.00293546	0.033206002	0.057096093	0.645845396	NOx control
0.488963881	0.004486935	0.080855118	0.002022799	0.03645108	SO2 control
0.284259837	0.012747638	0.126391703	0.00535438	0.05325274	Other control
0.254290911	0.01499512	0.131878013	0.009008996	0.079231924	SO2 control
0.294504749	0.002218252	0.019795185	0.068850212	0.614404036	NOx control
0.678244272	0.002533279	0.048179744	0.002181504	0.041489431	SO2 control
0.127884756	0.002951937	0.031954158	0.01418503	0.144814888	
0.164215186	0.003943599	0.03826498	0.017610827	0.172408761	
2.812204861	1.390173875	1.609138902	1.162050592	1.199345421	

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 Noncatalytic Reduction		Other control	Dry sorbent injection	
Fabric Filter, pulse	2/1/2000			
Fabric Filter, reverse air	5/1/1998			
Selective Noncatalytic Reduction	8/1/1993	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	7/1/1984
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 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	8/1/1991	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	8/1/1968	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	8/1/2009
Selective Noncatalytic Reduction		PM control	Other (specify): Bag House	
Selective Catalytic Reduction	5/1/2001	SO2 control	Spray dryer type	5/1/2001
Activated carbon injection		SO2 control	Spray dryer type	7/1/2008
Other (specify): Syngas PM scrubbing	10/1/1996			
Activated carbon injection	4/1/2008	PM control	Fabric Filter, pulse	3/1/2008
Selective Noncatalytic Reduction		PM control	Other (specify): Bag House	
Electrostatic precipitator, cold side, w/o flue gas conditioning	7/1/1992			
Electrostatic precipitator, hot side, w/o flue gas conditioning	12/1/1971	SO2 control	Spray type	10/1/2001
Selective Catalytic Reduction	3/1/2003	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	3/1/1991
Fabric Filter, reverse air	5/1/2007			
Fabric Filter, reverse air	4/1/2006			
Fabric Filter, pulse	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			
Fabric Filter, pulse	6/1/1995			
Selective Noncatalytic Reduction	3/1/2003	PM control	Fabric Filter, reverse air	5/1/2003
Fabric Filter, reverse air	7/1/1992	SO2 control	Spray type	12/1/1992
Selective Catalytic Reduction	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	6/14/2007	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	11/17/2005
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

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	4/1/1969	SO2 control	Spray type	5/1/2008
Electrostatic precipitator, cold side, w/ flue gas conditioning	12/1/1968	SO2 control	Spray type	5/1/2008
Selective Catalytic Reduction	5/1/2002	PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	12/1/1970
Selective Catalytic Reduction	6/1/2003	PM control	Other (specify): Cold Side ESP	3/1/2009
Electrostatic precipitator, hot side, w/o flue gas conditioning	1/1/1972	SO2 control	Spray type	6/1/2002
Other (specify): Burners Out of Service		NOx control	Selective Catalytic Reduction	
Other (specify): RRI/SNCR		PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	
Selective Catalytic Reduction	2/1/2007	Other control	Activated carbon injection	2/1/2007
Other (specify): CFB	1/1/1993	SO2 control	Other (specify): Limestone Sorbent Injection	1/1/1993
Selective Catalytic Reduction	6/14/2006	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1971
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
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/2003	NOx control	Selective Catalytic Reduction	5/1/2003
Fabric Filter, pulse	12/1/2007			
Activated carbon injection	6/1/2009	PM control	Fabric Filter, pulse	10/1/2008
Selective Catalytic Reduction	12/1/2001	Other control	Other (specify): Soda Ash Injection for SO3 mitigation	6/1/2004
Fabric Filter, reverse air	12/1/2000			
Spray dryer type	12/1/1998	PM control	Fabric Filter, reverse air	12/1/1998
Selective Noncatalytic Reduction	8/1/2002	PM control	Fabric Filter, pulse	11/1/1992
Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1974			
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
Selective Noncatalytic Reduction	6/1/2006	PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	2/1/1999
Fabric Filter, pulse	11/1/2003	SO2 control	Spray type	7/1/1980
Electrostatic precipitator, cold side, w/o flue gas conditioning				
Activated carbon injection		PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	12/1/1964
Other (specify): Baghouse	11/1/1992			
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	3/1/1977			
Selective Noncatalytic Reduction		PM control	Other (specify): Fabric Filter	
Fabric Filter, pulse	6/1/1994			
	1/1/2007	Other control	Dry sorbent injection	1/1/2007
Selective Noncatalytic Reduction	10/1/1999	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1980
Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1977			
Selective Catalytic Reduction	3/1/2008	Other control	Activated carbon injection	3/1/2008
Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1979			
Other (specify): Cold Side ESP	8/1/1972	Other control	Activated carbon injection	12/1/2009
Other (specify): Cold Side ESP	6/1/1974	Other control	Activated carbon injection	6/1/2009
Selective Catalytic Reduction	4/1/2005	Other control	Other (specify): Soda Ash Injection for SO3 mitigation	6/1/2004
Selective Noncatalytic Reduction		PM control	Other (specify): Fabric Filter	
Electrostatic precipitator, cold side, w/o flue gas conditioning	11/1/1977			
Selective Noncatalytic Reduction	4/1/2009	SO2 control	Other (specify): Dry Lime Scrubber	4/1/2009
Circulating Dry Scrubber	1/1/1994	NOx control	Selective Noncatalytic Reduction	1/1/1994

Selective Noncatalytic Reduction	3/1/2005	SO2 control	Other (specify): Dry Lime Scrubber	3/1/2005
Fabric Filter, pulse	5/1/2001	Other control	Activated carbon injection	
Other (specify): Baghouse	4/1/1993			
Other (specify): ESP	1/1/1998			
Selective Noncatalytic Reduction	10/1/1992	PM control	Fabric Filter, pulse	10/1/1992
Selective Noncatalytic Reduction	10/1/1992	PM control	Fabric Filter, pulse	10/1/1992
Fabric Filter, pulse	6/1/1994			
Selective Catalytic Reduction	8/1/2009	Other control	Activated carbon injection	8/1/2009
Spray dryer type	5/1/1992	SO2 control	Spray dryer type	5/1/1992
Dry sorbent injection	1/1/2005	PM control	Electrostatic precipitator, hot side, w/ flue gas conditioning	1/1/1981
Selective Noncatalytic Reduction	8/1/1995	PM control	Fabric Filter, pulse	8/1/1995
Spray dryer type	6/1/1999	PM control	Fabric Filter, reverse air	6/1/1999
Fabric Filter, pulse	1/1/1992	PM control	Fabric Filter, pulse	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	Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1990
Selective Catalytic Reduction	1/1/2009	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	4/1/1993
Multiple cyclone	3/1/1992	PM control	Multiple cyclone	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
Electrostatic precipitator, cold side, w/o flue gas conditioning	12/1/1971			
Electrostatic precipitator, cold side, w/o flue gas conditioning				
Selective Noncatalytic Reduction		PM control	Fabric Filter, pulse	
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/2001	NOx control	Selective Catalytic Reduction	5/1/2001
Selective Noncatalytic Reduction	3/1/2004	PM control	Fabric Filter, pulse	3/1/2004
Selective Noncatalytic Reduction	3/1/2004	PM control	Fabric Filter, pulse	3/1/2004
Spray dryer type	5/1/1992	SO2 control	Spray dryer type	5/1/1992
Selective Catalytic Reduction	10/1/1996	SO2 control	Spray dryer type	10/1/1996
Electrostatic precipitator, cold side, w/o flue gas conditioning	7/1/2001			
Electrostatic precipitator, cold side, w/ flue gas conditioning	12/1/1978			
Electrostatic precipitator, cold side, w/o flue gas conditioning	3/1/1966	SO2 control	Spray type	5/1/1978
Other (specify): ESP				
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1990			
Electrostatic precipitator, cold side, w/o flue gas conditioning	7/1/1991			
Selective Noncatalytic Reduction	6/1/2003	PM control	Multiple cyclone	11/1/1960
Selective Catalytic Reduction	4/1/2006	Other control	Activated carbon injection	1/1/2010
Circulating Dry Scrubber	1/1/1994	NOx control	Selective Noncatalytic Reduction	1/1/1994
Electrostatic precipitator, cold side, w/ flue gas conditioning				
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
Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1960	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	3/1/1977
Fabric Filter, reverse air	8/1/1990			
Other (specify): Baghouse	7/1/1998			
Selective Catalytic Reduction	5/1/2004	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	12/1/1993
Selective Noncatalytic Reduction	5/1/2004	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1993

Selective Catalytic Reduction	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			
Other (specify): Fabric Filter Baghouse	5/1/2002			
Electrostatic precipitator, cold side, w/o flue gas conditioning	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	5/1/1995	PM control	Fabric Filter, pulse	5/1/1995
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1970	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1994
Electrostatic precipitator, hot 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	6/1/1952
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
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 sorbent injection	1/1/2008
Selective Noncatalytic Reduction		SO2 control	Spray dryer type	
Selective Noncatalytic Reduction	6/1/1995	SO2 control	Spray dryer type	6/1/1995
Electrostatic precipitator, hot side, w/o flue gas conditioning	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
Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1991			
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	11/1/1990			
Fabric Filter, pulse	1/1/1999			
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 type	12/1/1976
Selective Noncatalytic Reduction	5/1/2006	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	11/1/1973
Spray dryer type	5/1/1992	SO2 control	Spray dryer type	5/1/1992
Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1986			
Activated carbon injection	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 Desulferization	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	9/1/1978			
Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1975	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
Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1977			
Activated carbon injection	7/1/2008	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	7/1/1962

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/o 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				
Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1972			
Selective Catalytic Reduction	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		SO2 control	Spray dryer type	7/1/2008
Selective Catalytic Reduction	7/1/2008	Other control	Activated carbon injection	7/1/2008
Spray dryer type	5/1/2008	SO2 control	Spray dryer type	5/1/2008
Spray dryer type	12/1/1998	PM control	Fabric Filter, reverse air	12/1/1998
Selective Catalytic Reduction	3/1/2008	Other control	Activated carbon injection	3/1/2008
Spray dryer type	5/1/1992	SO2 control	Spray dryer type	5/1/1992
Spray dryer type	6/1/1999	PM control	Fabric Filter, reverse air	6/1/1999
Other (specify): Flue gas conditioning	4/1/2001	Other control	Activated carbon injection	
Multiple cyclone	3/1/1992	PM control	Multiple cyclone	3/1/1992
Selective Catalytic Reduction	5/1/2009	Other control	Activated carbon injection	5/1/2009
Spray dryer type	5/1/1992	SO2 control	Spray dryer type	5/1/1992
Selective Catalytic Reduction	10/1/1996	SO2 control	Spray dryer type	10/1/1996
Selective Noncatalytic Reduction	6/1/1995	SO2 control	Spray dryer type	6/1/1995
Selective Noncatalytic Reduction	4/1/1992	NOx control	Selective Noncatalytic Reduction	4/1/1992
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	5/1/1994	PM control	Fabric Filter, reverse air	5/1/1994
Selective Noncatalytic Reduction		SO2 control	Spray dryer type	
Spray dryer type	5/1/1992	SO2 control	Spray dryer type	5/1/1992

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	3/1/1994		
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	Activated carbon injection	1/1/2007	PM control	Fabric Filter, pulse
PM control	Fabric Filter, pulse	1/1/2008		
PM control	Fabric Filter, pulse	4/1/2003		
SO2 control	Circulating Dry Scrubber	7/1/2009	PM control	Fabric Filter, pulse
PM control	Fabric Filter, pulse	5/1/2001		
PM control	Fabric Filter, reverse air	12/1/1991		
SO2 control	Spray type	5/1/1998		
SO2 control	Spray type	1/1/2010		
SO2 control	Other (specify): New B&W Spray and Tray Design	4/20/2007		
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 type	5/1/2003		
SO2 control	Other (specify): New B&W Spray and Tray Design	12/1/2008		
SO2 control	Other (specify): New B&W Spray and Tray Design	11/17/2005		
SO2 control	Spray type	12/1/2007		
SO2 control	Spray type	4/1/1998		
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/1976	SO2 control	Spray type

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

PM control	Other (specify): Pulse Jet Fabric Filter	3/1/2005		
PM control	Fabric Filter, pulse	8/1/2009	SO2 control	Spray type
PM control	Fabric Filter, pulse	5/1/1992	PM control	Fabric Filter, pulse
NOx control	Selective Catalytic Reduction	1/1/2002	SO2 control	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	Dry sorbent injection	5/1/2004	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning
SO2 control	Spray dryer type	5/1/2009	PM control	Fabric Filter, pulse
SO2 control	Tray type	5/1/2008		
PM control	Fabric Filter, pulse	5/1/1992	PM control	Fabric Filter, pulse
PM control	Fabric Filter, reverse air	10/1/1996		
PM control	Electrostatic precipitator, hot side, w/o flue gas conditioning	11/1/1960	PM control	PM scrubber - Venturi
SO2 control	Other (specify): Flue Gas Desulfurization	4/1/2006	PM control	Fabric Filter, pulse
PM control	Fabric Filter, pulse	1/1/1994		
SO2 control	Spray type	1/1/1995		
SO2 control	Spray type	1/1/1995		

SO2 control	Tray type	3/1/2008		
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1952	SO2 control	Venturi type
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	3/1/1953	SO2 control	Venturi type
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	11/1/1954	SO2 control	Venturi type
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	11/1/1960	SO2 control	Venturi type
SO2 control	Circulating Dry Scrubber	7/1/1992	SO2 control	Circulating Dry Scrubber
PM control	Other (specify): ESP conversion hot-side to cold-side	1/1/2008		
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning			
PM control	Fabric Filter, pulse	6/1/1995		
PM control	Multiple cyclone	4/1/1992	PM control	Multiple cyclone
SO2 control	Spray type	6/1/1996		
PM control	PM scrubber - Venturi	1/1/1984		
PM control	Fabric Filter, pulse	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	5/1/2007		
PM control	Other (specify): Bag House	5/1/2007		
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning			
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	Fabric Filter, pulse	5/1/1992	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

PM control	Fabric Filter, pulse	12/1/1995		
PM control	Fabric Filter, reverse air	3/1/1994		
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		
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	Fabric Filter, pulse
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, pulse	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

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							

4/1/2009

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						

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

SORTED ON FILTERABLE PM LB MMBTU EXCLUDING UNITS WITH NO SO2 CONTROLS (FGD, SPRAY DRYERS, ETC.) OR ACI FOR MERCURY

ORIS code	Plant Name	State	Unit	Unit Type	Mwe	Fuel	Filterable Particulate LB MMBTU
50976	INDIANTOWN COGENERATION L.P.	FL	001	Conventional Boiler	361	bituminous	3.22182E-06
10566	Chambers Cogeneration LP	NJ	Boil 2	Conventional Boiler	285	bituminous	0.000152814
2554	Dunkirk Generating Plant	NY	1	Conventional Boiler	85	subbituminous	0.000244259
1626	Salem Harbor	MA	Unit 1	Conventional Boiler	81.419	bituminous	0.000490371
10566	Chambers Cogeneration LP	NJ	Boil 1	Conventional Boiler	285	bituminous	0.000516101
8223	Springerville	AZ	3	Conventional Boiler	450	subbituminous	0.000582115
10043	Logan Generating Plant	NJ	Unit1	Conventional Boiler	241.7	bituminous	0.000653965
52071	Sandow Station	TX	5A	Fluidized bed firing	282.35	lignite	0.000673405
2554	Dunkirk Generating Plant	NY	4	Conventional Boiler	195	subbituminous	0.000742216
8223	Springerville	AZ	4	Conventional Boiler	450	bituminous	0.000754284
6077	Gerald Gentleman	NE	U2	Conventional Boiler	750	bituminous	0.000754343
2408	PSEG Mercer Generating Station	NJ	MERU2E2PT2OS1-Coal	Conventional Boiler	343	bituminous	0.000763959
2408	PSEG Mercer Generating Station	NJ	MERU1E1PT1OS1-Coal	Conventional Boiler	343	bituminous	0.000792608
568	Bridgeport Station	CT	BHSEMU3OS3-#2	Conventional Boiler	403	subbituminous	0.000798921
55479	Wygen 1	WY	WYG1Cfg	Conventional Boiler	91	subbituminous	0.000826448
7504	Neil Simpson II	WY	NS2Cfg	Conventional Boiler	88	subbituminous	0.000926161
2277	Sheldon Station	NE	U1	Conventional Boiler	128	subbituminous	0.000936899
52071	Sandow Station	TX	5B	Fluidized bed firing	282.35	lignite	0.000987015
2079	Hawthorn	MO	5A	Conventional Boiler	594	subbituminous, bituminou	0.001102527
470	Comanche	CO	Unit 2	Conventional Boiler	365	subbituminous	0.001205914
7242	Polk	FL	IGCC1	IGCC		Coal Gas	0.001329488
2451	San Juan	NM	Unit 3	Conventional Boiler	544	subbituminous	0.001355686
3845	TransAlta Centralia Generation	WA	BW22CONFIG	Conventional Boiler	567	subbituminous	0.001618724
2324	Reid Gardner	NV	1	Conventional Boiler	111	bituminous	0.001924418
2712	Roxboro Steam Electric Plant	NC	Rox_Cfg_2c	Conventional Boiler	703	bituminous	0.00198321
4078	Weston	WI	W4	Conventional Boiler	574.5	subbituminous	0.002107112
6761	Rawhide	CO	Rawhide101	Conventional Boiler	305	subbituminous	0.002283997
10377	James River Cogeneration Co	VA	UNIT2	Conventional Boiler	57.39	bituminous	0.002351656
4042	Valley	WI	VAPP-B4	Conventional Boiler	144	bituminous	0.002401932
7097	J K Spruce	TX	1	Conventional Boiler	580	bituminous	0.002720865
113	Cholla	AZ	003	Conventional Boiler	305	bituminous	0.00292396
7213	Clover	VA	Unit 1	Conventional Boiler	431	bituminous	0.002967102
2706	Asheville Steam Electric Plant	NC	Ash_Cfg_1d	Conventional Boiler	207	bituminous	0.003019083
990	Harding Street	IN	70ss	Conventional Boiler	463	bituminous	0.003164283
2451	San Juan	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	82	bituminous	0.003228408
641	Crist	FL	Unit 6	Conventional Boiler	320	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 Centralia 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	subbituminous, bituminou	0.003347233
1082	Walter Scott Jr. Energy Center	IA	4	Conventional Boiler	850	subbituminous	0.003376519
50951	Sunnyside Cogen Associates	UT	Config 1	Fluidized bed firing	60	bituminous	0.003559268

7210	Cope	SC	COP001	Conventional Boiler	441	bituminous	0.003615434
113	Cholla	AZ	004	Conventional Boiler	425	bituminous	0.003650438
6098	Big Stone	SD	001	Conventional Boiler	495	subbituminous	0.00372546
2451	San Juan	NM	Unit 1	Conventional Boiler	370	subbituminous	0.003768873
6113	Gibson	IN	2-2007-FGDIN	Conventional Boiler	661	bituminous	0.003831711
525	Hayden	CO	Unit 1	Conventional Boiler	202	bituminous	0.003875147
642	Scholz	FL	Unit 1	Conventional Boiler	49	bituminous	0.004007074
492	Martin Drake	CO	Unit 7 - Coal	Conventional Boiler	141	subbituminous, bituminou	0.004089401
2718	G G Allen	NC	3-2009-FGDIN	Conventional Boiler	281.5	bituminous	0.004111389
6021	Craig	CO	C1	Conventional Boiler	456	subbituminous	0.004138105
4072	Pulliam	WI	8	Conventional Boiler	137.9	subbituminous	0.004188705
6664	Louisa	IA	101	Conventional Boiler	805	subbituminous	0.00451197
6021	Craig	CO	C2	Conventional Boiler	456	subbituminous	0.004567804
2451	San Juan	NM	Unit 2	Conventional Boiler	370	subbituminous	0.004678915
10672	Cedar Bay Generating Company L.P.	FL	CBB1	Fluidized bed firing	280	bituminous	0.005076287
10075	Taconite Harbor Energy Center	MN	THEC2	Conventional Boiler	79.2	bituminous	0.005465569
1250	Lawrence Energy Center	KS	3	Conventional Boiler	58	bituminous	0.005586536
56224	TS Power Plant	NV	TSPower	Conventional Boiler	242	subbituminous	0.005606642
892	Hennepin Power Station	IL	001	Conventional Boiler	75	subbituminous	0.005803682
892	Hennepin Power Station	IL	002	Conventional Boiler	234	subbituminous	0.005803682
6113	Gibson	IN	1-2007-FGDIN	Conventional Boiler	661	bituminous	0.005864761
6041	H L Spurlock Station	KY	Unit 04	Fluidized bed firing	300	bituminous	0.00621273
10672	Cedar Bay Generating Company L.P.	FL	CBA1	Fluidized bed firing	280	bituminous	0.006312691
6041	H L Spurlock Station	KY	Unit 03	Fluidized bed firing	300	bituminous	0.006538349
4078	Weston	WI	W3	Conventional Boiler	365.6	subbituminous	0.006634459
6180	Oak Grove	TX	OG1	Conventional Boiler	817	lignite	0.008430549
54081	Spruance Genco, LLC	VA	GEN2	Conventional Boiler	57.4	bituminous	0.008442147
6018	East Bend Station	KY	2	Conventional Boiler	650.7246	bituminous	0.008720334
525	Hayden	CO	Unit 2	Conventional Boiler	285	bituminous	0.009042558
6017	Newton	IL	002	Conventional Boiler	620	subbituminous	0.009115777
2094	Sibley	MO	3	Conventional Boiler	419	subbituminous, bituminou	0.00919947
10774	Southampton Power Station	VA	Unit 1 & 2	Conventional Boiler	136	bituminous	0.009333655
6139	Welsh	TX	WE-1	Conventional Boiler	558	subbituminous	0.009345364
6019	W H Zimmer	OH	1	Conventional Boiler	1408	bituminous	0.009397308
6096	Nebraska City	NE	NC2	Conventional Boiler		bituminous	0.009491134
10678	AES Warrior Run Cogeneration Facility	MD	BLR1	Fluidized bed firing	202	bituminous	0.010695038
54081	Spruance Genco, LLC	VA	GEN1	Conventional Boiler	57.4	bituminous	0.010850449
54304	Birchwood Power Facility	VA	1A	Conventional Boiler	222	bituminous	0.01096467
1363	Cane Run	KY	CR5	Conventional Boiler	181	bituminous	0.011256993
3161	Eddystone Generating Station	PA	Unit 2	Conventional Boiler	339	bituminous	0.011955073
55749	Hardin Generator Project	MT	PC1	Conventional Boiler	119	bituminous	0.012426061
10672	Cedar Bay Generating Company L.P.	FL	CBC1	Fluidized bed firing	280	bituminous	0.012776699
3280	Canadys Steam	SC	CAN003	Conventional Boiler	185	bituminous	0.014012014
1374	Elmer Smith Station	KY	Unit001	Conventional Boiler	444.5	bituminous, petroleum cc	0.014672216
55076	Red Hills Generating Facility	MS	002	Fluidized bed firing	250	lignite	0.015442676
3149	PPL Montour	PA	U2	Conventional Boiler	792	bituminous	0.016599218
990	Harding Street	IN	60s	Conventional Boiler	112	bituminous	0.01676508
3098	Elrama Power Plant	PA	ELR1-2	Conventional Boiler	100	bituminous	0.018448245
3098	Elrama Power Plant	PA	ELR2-2	Conventional Boiler	100	bituminous	0.018448245
3098	Elrama Power Plant	PA	ELR3-2	Conventional Boiler	125	bituminous	0.018448245

3098	Elrama 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
10075	Taconite Harbor Energy Center	MN	THEC1	Conventional Boiler	83 bituminous	0.020078821
68029	AES Puerto Rico Cogeneration Facility	PR	Unit_1	Fluidized bed firing	255 bituminous	0.020521693
54755	Roanoke Valley II	NC	Boiler 2	Conventional Boiler	50 bituminous	0.021313779
7253	Richard Gorsuch	OH	UNIT3	Conventional Boiler	53.3 bituminous	0.021854637
10771	Hopewell	VA	1 & 2	Conventional Boiler	136 bituminous	0.023080152
564	Stanton Energy Center	FL	2 coal	Conventional Boiler	468 bituminous	0.023446742
6076	Colstrip	MT	Unit3	Conventional Boiler	805 subbituminous	0.024065709
887	Joppa Steam	IL	1	Conventional Boiler	183.3 subbituminous	0.02465892
3140	PPL Brunner Island	PA	U1	Conventional Boiler	330 bituminous	0.025518704
3140	PPL Brunner Island	PA	U2	Conventional Boiler	393 bituminous	0.025518704
1363	Cane Run	KY	CR4	Conventional Boiler	168 bituminous	0.025678282
54081	Spruance Genco, LLC	VA	GEN4	Conventional Boiler	57.4 bituminous	0.027134324
884	Will County	IL	WC4CONFIG	Conventional Boiler	542 subbituminous	0.028841612
54035	Roanoke Valley I	NC	Boiler 1	Conventional Boiler	182 bituminous	0.028970961
50974	Scrubgrass Generating Company L.P.	PA	Gen 1	Fluidized bed firing	194 coal refuse (culm or gob)	0.029396393
897	Vermilion		001	Conventional Boiler	72 subbituminous	0.031405635
897	Vermilion		002	Conventional Boiler	110 subbituminous	0.031405635
864	Meredosia	IL	005	Conventional Boiler	204 subbituminous	0.031806706
3179	Hatfield's Ferry Power Station	PA	001	Conventional Boiler	590 bituminous	0.032347344
68029	AES Puerto Rico Cogeneration Facility	PR	Unit_2	Fluidized bed firing	255 bituminous	0.033002248
2364	Merrimack Station	NH	mk2	Conventional Boiler	337 bituminous	0.033210443
54081	Spruance Genco, LLC	VA	GEN3	Conventional Boiler	57.4 bituminous	0.03566192
6639	R D Green	KY	2	Conventional Boiler	239 bituminous, petroleum co	0.046919376
6147	Monticello	TX	2	Conventional Boiler	583 lignite	0.047417846
883	Waukegan	IL	WK8CONFIG	Conventional Boiler	383 subbituminous	0.051663935
874	Joliet 9	IL	JOL5 CONFIG	Conventional Boiler	326 subbituminous	0.058706273
	AVG TOP 124				AVG TOP 124	0.010844132
	ST DEV TOP 124				ST DEV TOP 124	0.012096529
	DIFF VS TOP 130 FILTERABLE SORT				DIFF VS TOP 130	2.357419935

Filterable Particulate MW	Filterable PM2_5	Filterable PM2_5 MW	PM2_5 Condensible Particulate	PM2_5 Condensible Particulate MW	control_group_1
3.05414E-05	9.71748E-07	9.23164E-06	0.008125908	0.077006393	NOx control
0.002125556	0.000152814	0.002125556	0.008749983	0.121633718	NOx control
0.000374165	0.000496105	0.000757928	0.00247635	0.003780148	NOx control
0.004472651	0.000142716	0.001281409	0.078162559	0.719291821	NOx control
0.010286407	0.000516101	0.010286407	0.005419961	0.11054002	NOx control
0.005135115	0.000215699	0.001902784	0.027252813	0.240410209	NOx control
0.006184321	0.000653965	0.006184321	0.011139346	0.105340957	NOx control
0.002978337	9.3059E-05	0.0004128	0.024004854	0.107159965	NOx control
0.002076337	0.000252162	0.000744078	0.002717992	0.007617552	NOx control
0.00670065	0.000390372	0.003467854	0.002929143	0.02602093	NOx control
0.011180871	0.000433869	0.006563023	0.019498194	0.293604729	PM control
0.007201508	0.001171907	0.011049977	0.045765637	0.428502412	PM control
0.007241344	0.001352697	0.012359712	0.029530437	0.269681271	PM control
0.008419505	0.001082504	0.01142129	0.002890879	0.030556877	PM control
0.009331211			0.019626976	0.221572601	NOx control
0.010402813			0.010035598	0.112602184	SO2 control
0.009966237	0.00053102	0.005648711	0.008027449	0.085391759	PM control
0.003941869	0.000263154	0.001058167	0.013012919	0.050844409	NOx control
0.010361597	0.000732519	0.006884244	0.007722669	0.072578	NOx control
0.011224531	0.000466943	0.004352677			Other control
	0.003767762		0.012784113		Other control
0.013944754			0.003007136	0.030921608	Other control
0.017756403			0.007686909	0.08660374	PM control
0.018479358	0.001032086	0.009907247	0.002404772	0.023077059	PM control
0.018251791			0.001492902	0.013732223	NOx control
0.017352696	0.000306611	0.002520491	0.004740533	0.039111411	NOx control
0.019792884	0.000247382	0.002143785	0.014167947	0.122777981	SO2 control
0.034209133					SO2 control
0.021922251	0.001205426	0.010943887	0.005818417	0.052994111	PM control
0.028943124			0.002631263	0.02798999	PM control
0.031682212			0.005927409	0.064209413	PM control
0.027242652			0.032007124	0.290981335	PM control
0.032115411			0.009197023	0.097833068	NOx control
0.046366225	0.001099917	0.016183192	0.059141028	0.866809415	NOx control
0.032758998			0.0030674	0.031476159	Other control
0.034342102			0.003982551	0.042364268	NOx control
			0.003982551		NOx control
			0.003982551		NOx control
0.030362041			0.004270453	0.040296912	PM control
			0.004270453		PM control
			0.004270453		PM control
			0.004270453		NOx control
0.035881203			0.002650088	0.029022555	PM control
			0.004026817		NOx control
0.023453199	0.0036364	0.025479316	0.015287171	0.107113258	NOx control
0.028313833	0.000661088	0.005541623	0.001684806	0.014072406	NOx control
0.037861606	4.10037E-05	0.000436175	0.002623223	0.027904456	NOx control

0.030723751	0.001645084	0.014029482	0.028384975	0.241410015	NOx control
0.036033976			0.003742833	0.036947295	PM control
0.03978784	0.001651224	0.017587799	0.007543449	0.080566092	PM control
0.03822461			0.004394383	0.044568642	Other control
0.03975347			0.009930801	0.103087759	NOx control
0.043163211	0.000714702	0.007957563			SO2 control
0.042625136	0.001557126	0.016563887	0.013529254	0.143917055	PM control
0.042086621	0.001123598	0.01156366	0.003399077	0.034982052	PM control
0.063661661			0.003711815	0.056827729	NOx control
0.043045149			0.005040579	0.05243281	PM control
0.04028966	0.001600094	0.01537894	0.005750971	0.055438235	Other control
0.037126981	0.000584506	0.004809641	0.008946517	0.073616885	SO2 control
0.048614196			0.002413257	0.025688816	PM control
0.04597036			0.004119651	0.040470791	Other control
0.053998854	2.12711E-06	2.26271E-05			SO2 control
0.058458363	0.004151002	0.043495772	0.005942976	0.062359856	NOx control
0.057936874	0.002419455	0.025096121	0.010776058	0.111640524	PM control
0.048413518	0.002506823	0.022091934			NOx control
0.064408991	0.001457383	0.016206189	0.005209448	0.057800057	PM control
	0.001457383		0.005209448		PM control
0.050245282			0.010824748	0.092767523	NOx control
0.053918753	0.004481398	0.039010587	0.016521243	0.144324687	NOx control
0.067151071	7.54982E-07	8.0311E-06			SO2 control
0.059696965	0.003793829	0.034640858	0.007454873	0.068105676	NOx control
0.060329399	0.000972982	0.00884764	0.008574467	0.077861961	PM control
0.08967972			0.007530235	0.080102662	NOx control
0.118557617	0.003342161	0.046935762	0.002069917	0.029068955	SO2 control
0.079079263			0.019626212	0.177958312	Other control
0.090091028	0.000321831	0.00320897			SO2 control
0.084814188	0.00582916	0.054235147	0.006137749	0.057106294	Other control
	0.00378435		0.019463059		NOx control
0.12289047	0.0011907	0.015389433	0.003067854	0.044370198	PM control
0.099411045	0.003885108	0.041327725			PM control
			0.040903937		Other control
0.083946169	0.002105176	0.018614707	0.01513107	0.133778241	NOx control
0.107643061	0.013584815	0.136727988	0.013726578	0.138154804	NOx control
0.183451505	0.002050983	0.034676522			SO2 control
0.097494821	0.002793633	0.025001699	0.012035569	0.106319914	NOx control
0.119822241			0.012913343	0.138130062	PM control
0.153887989			0.004356422	0.056067806	NOx control
0.123601219	0.001654098	0.016519979	0.069592054	0.6899776	NOx control
0.135911768	1.03811E-06	1.10428E-05			SO2 control
0.128148577	0.0024134	0.022072042	0.011744737	0.107412915	PM control
0.146820362			0.026288852	0.261921315	NOx control
0.148755231	0.001458397	0.014029148			PM control
0.135361476			0.012554616	0.102725158	PM control
0.162578767	0.009714551	0.094206517	0.041355487	0.401043365	NOx control
0.196242674			0.007674071	0.081632707	NOx control
			0.007674071		NOx control
			0.007674071		NOx control

			0.007674071		NOx control
0.249850261	0.001246314	0.016550698	0.006091205	0.081302501	NOx control
0.229703725	0.013380343	0.152667678	0.007199183	0.081994604	NOx control
0.181100918	0.003840833	0.033894782	0.042705274	0.376867756	NOx control
0.205770113	0.009590569	0.092702884	0.019222158	0.185580201	NOx control
0.232478069	0.004140989	0.044049654	0.036417208	0.387387006	PM control
0.261090357	0.00293546	0.033206002	0.057096093	0.645845396	NOx control
			0.002267748		NOx control
0.223838542			0.002883834	0.026800211	Other control
0.248095492	0.016757672	0.168600366	0.003618252	0.036403539	Other control
0.430331019			0.005557543	0.093718839	PM control
			0.005557543		PM control
0.252237486			0.01730163	0.168257756	PM control
0.488963881	0.004486935	0.080855118	0.002022799	0.03645108	SO2 control
0.284259837	0.012747638	0.126391703	0.00535438	0.05325274	Other control
0.254290911	0.01499512	0.131878013	0.009008996	0.079231924	SO2 control
0.205653278	0.003828821	0.026868274	0.004387567	0.030684418	NOx control
0.317145884	0.017353174	0.175114881	0.020619189	0.212695606	PM control
	0.017353174		0.020619189		PM control
0.313014154	0.011667317	0.114819663	0.004777393	0.047014977	Other control
			0.001949275		PM control
0.294504749	0.002218252	0.019795185	0.068850212	0.614404036	NOx control
0.301759432			0.057911121	0.525406718	NOx control
0.678244272	0.002533279	0.048179744	0.002181504	0.041489431	SO2 control
0.471547882			0.012588918	0.126520816	PM control
0.504405977	0.052869572	0.562398554	0.03206923	0.341135513	NOx control
0.595994696	0.018488706	0.213782312	0.011758282	0.135868222	Other control
0.605709862	0.016483593	0.170348973	0.004481863	0.046204261	Other control
0.113745483	0.004257858	0.042865375	0.013434891	0.141015769	
0.14208244	0.007440497	0.078863478	0.015660784	0.16798978	
			1.101220593		

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 Noncatalytic Reduction		Other control	Dry sorbent injection	
Selective Noncatalytic Reduction	8/1/1993	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	7/1/1984
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 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	8/1/1991	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	8/1/1968	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	8/1/2009
Selective Catalytic Reduction	5/1/2001	SO2 control	Spray dryer type	5/1/2001
Activated carbon injection		SO2 control	Spray dryer type	7/1/2008
Other (specify): Syngas PM scrubbing	10/1/1996			
Activated carbon injection	4/1/2008	PM control	Fabric Filter, pulse	3/1/2008
Electrostatic precipitator, hot side, w/o flue gas conditioning	12/1/1971	SO2 control	Spray type	10/1/2001
Fabric Filter, pulse	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			
Fabric Filter, reverse air	7/1/1992	SO2 control	Spray type	12/1/1992
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	6/14/2007	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	11/17/2005
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
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
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	4/1/1969	SO2 control	Spray type	5/1/2008
Electrostatic precipitator, cold side, w/ flue gas conditioning	12/1/1968	SO2 control	Spray type	5/1/2008
Selective Catalytic Reduction	5/1/2002	PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	12/1/1970
Electrostatic precipitator, hot side, w/o flue gas conditioning	1/1/1972	SO2 control	Spray type	6/1/2002
Other (specify): Burners Out of Service		NOx control	Selective Catalytic Reduction	
Other (specify): RRI/SNCR		PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning	
Selective Catalytic Reduction	2/1/2007	Other control	Activated carbon injection	2/1/2007
Other (specify): CFB	1/1/1993	SO2 control	Other (specify): Limestone Sorbent Injection	1/1/1993

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	6/1/2009	PM control	Fabric Filter, pulse	10/1/2008
Selective Catalytic Reduction	12/1/2001	Other 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	1/1/1974			
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	12/1/1964
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
	1/1/2007	Other control	Dry sorbent injection	1/1/2007
Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1977			
Selective Catalytic Reduction	3/1/2008	Other control	Activated carbon injection	3/1/2008
Other (specify): Cold Side ESP	8/1/1972	Other control	Activated carbon injection	12/1/2009
Other (specify): Cold Side ESP	6/1/1974	Other control	Activated carbon injection	6/1/2009
Selective Catalytic Reduction	4/1/2005	Other control	Other (specify): Soda Ash Injection for SO3 mitigation	6/1/2004
Selective Noncatalytic Reduction	4/1/2009	SO2 control	Other (specify): Dry Lime Scrubber	4/1/2009
Circulating Dry Scrubber	1/1/1994	NOx control	Selective Noncatalytic Reduction	1/1/1994
Selective Noncatalytic Reduction	3/1/2005	SO2 control	Other (specify): Dry Lime Scrubber	3/1/2005
Fabric Filter, pulse	5/1/2001	Other control	Activated carbon injection	
Selective Catalytic Reduction	8/1/2009	Other control	Activated carbon injection	8/1/2009
Spray dryer type	5/1/1992	SO2 control	Spray dryer type	5/1/1992
Dry sorbent injection	1/1/2005	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
Other (specify): Flue gas conditioning	4/1/2001	Other control	Activated carbon injection	
Selective Catalytic Reduction	1/1/2009	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	4/1/1993
Multiple cyclone	3/1/1992	PM control	Multiple cyclone	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
Selective Catalytic Reduction	10/1/1996	SO2 control	Spray dryer type	10/1/1996
Electrostatic precipitator, cold side, w/o flue gas conditioning	3/1/1966	SO2 control	Spray type	5/1/1978
Selective Noncatalytic Reduction	6/1/2003	PM control	Multiple cyclone	11/1/1960
Selective Catalytic Reduction	4/1/2006	Other control	Activated carbon injection	1/1/2010
Circulating Dry Scrubber	1/1/1994	NOx control	Selective Noncatalytic Reduction	1/1/1994
Other (specify): Baghouse	7/1/1998			
Selective Catalytic Reduction	5/1/2004	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	12/1/1993
Other (specify): Fabric Filter Baghouse	5/1/2002			
Electrostatic precipitator, cold side, w/o flue gas conditioning	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

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	
Selective Noncatalytic Reduction	6/1/1995	SO2 control	Spray dryer type	6/1/1995
Electrostatic precipitator, hot side, w/o flue gas conditioning	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 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	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 Desulferization	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 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

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	3/1/1994		
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		
	Activated carbon injection			
Other control	Activated carbon injection	1/1/2007	PM control	Fabric Filter, pulse
Other control	Fabric Filter, pulse	1/1/2007	PM control	Fabric Filter, pulse
PM control	Fabric Filter, pulse	1/1/2008		
PM control		4/1/2003		
	Circulating Dry Scrubber			
SO2 control		7/1/2009	PM control	Fabric Filter, pulse
PM control	Fabric Filter, reverse air	5/1/2001		
PM control		12/1/1991		
	Spray type			
SO2 control		5/1/1998		
	Spray type			
	Other (specify): New B&W Spray and Tray Design			
SO2 control	Spray dryer type	4/20/2007		
SO2 control		7/1/2008	PM control	Fabric Filter, pulse
	Spray dryer type			
SO2 control		5/1/2008	PM control	Fabric Filter, pulse
	Spray type			
	Other (specify): New B&W Spray and Tray Design			
	Other (specify): New B&W Spray and Tray Design			
SO2 control	Spray type	11/17/2005		
SO2 control	Spray type	12/1/2007		
SO2 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		
	Spray type			
SO2 control	Other (specify): Limestone scrubbant	5/1/2008		
	Other (specify): Hot Side ESP			
PM control	Other (specify): Wet FGD		Other control	Activated carbon injection
SO2 control	Circulating Dry Scrubber			
SO2 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		

PM control		4/1/1993		
	Other (specify): Wet Limestone Scrubber			
	Spray type			
SO2 control	Electrostatic precipitator, cold side, w/o flue gas conditioning	5/1/1998		
PM control		1/1/1991	SO2 control	Tray type
	Spray type			
SO2 control	Spray type	5/1/2009		
	Spray type			
SO2 control	Fabric Filter, pulse	5/1/1998		
PM control		1/1/1994		
PM control		1/1/2007		
	Spray dryer type			
SO2 control		3/1/2008	PM control	Fabric Filter, pulse
PM control	Other (specify): Baghouse/Fabric Filter	10/1/2008		
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	12/1/2008		
PM control		1/1/1990	SO2 control	Tray type
PM control	Fabric Filter, pulse	4/1/2009		
PM control	Other (specify): Pulse Jet Fabric Filter	1/1/1994		
PM control		3/1/2005		
PM control	Fabric Filter, pulse	8/1/2009	SO2 control	Spray type
PM control	Selective Catalytic Reduction	5/1/1992	PM control	Fabric Filter, pulse
NOx control		1/1/2002	SO2 control	Spray type
PM control				
	Spray dryer type			
SO2 control		3/1/1992	SO2 control	Spray dryer type
	Dry sorbent injection			
Other control	Spray dryer type	5/1/2004	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning
SO2 control		5/1/2009	PM control	Fabric Filter, pulse
	Tray type			
PM control	Fabric Filter, reverse air	5/1/1992	PM control	Fabric Filter, pulse
PM control		10/1/1996		
PM control	Other (specify): Flue Gas Desulfurization	11/1/1960	PM control	PM scrubber - Venturi
SO2 control	Fabric Filter, pulse	4/1/2006	PM control	Fabric Filter, pulse
PM control		1/1/1994		
	Spray type			
SO2 control	Spray type	1/1/1995		
	Tray type			
SO2 control		3/1/2008		
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	6/1/1952	SO2 control	Venturi type
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	3/1/1953	SO2 control	Venturi type
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	11/1/1954	SO2 control	Venturi type

PM control	Circulating Dry Scrubber	11/1/1960	SO_2 control	Venturi type
SO_2 control		7/1/1992	SO_2 control	Circulating Dry Scrubber
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning	1/1/2008		
PM control	Fabric Filter, pulse			
PM control		6/1/1995		
	Multiple cyclone			
PM control	Spray type	4/1/1992	PM control	Multiple cyclone
SO_2 control		6/1/1996		
PM control		1/1/1984		
PM control		5/1/1992	PM control	Fabric Filter, pulse
	Fabric Filter, pulse			
PM control	Other (specify): Bag House	6/1/1993	PM control	Fabric Filter, pulse
PM control	Other (specify): Bag House	5/1/2007		
PM control		5/1/2007		
	Electrostatic precipitator, cold side, w/o flue gas conditioning			
PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning			
PM control	Fabric Filter, pulse	11/1/1999	PM control	Electrostatic precipitator, cold side, w/o flue gas conditioning
PM control		5/1/1992	PM control	Fabric Filter, pulse
	Fabric Filter, shake and deflate			
PM control		12/1/1975	PM control	Electrostatic precipitator, cold side, w/ flue gas conditioning

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						

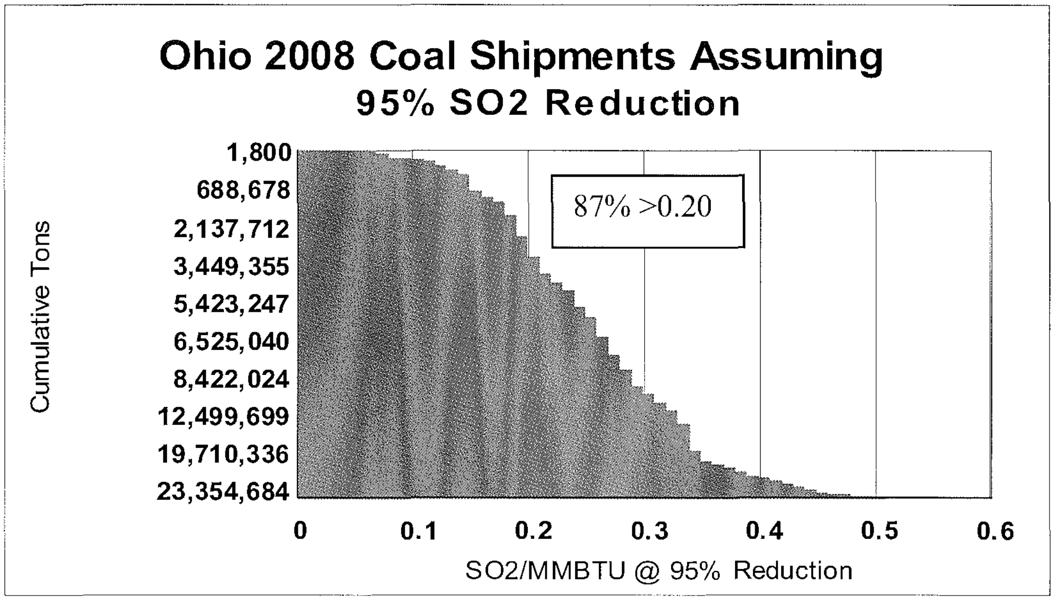
ATTACHMENT 3
4 PAGES

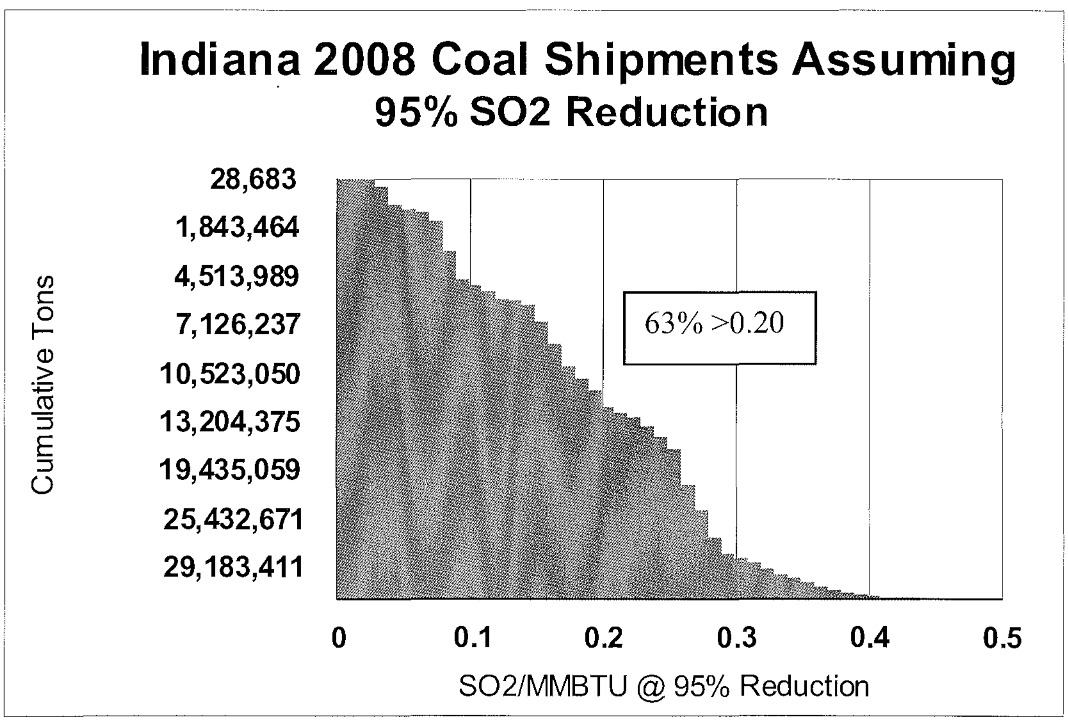
SUMMARY OF 2008 FERC FORM 423 ELECTRIC UTILITY COAL DELIVERIES
BY SULFUR CONTENT IN LBS SO2/MMBTU, WITH CALCULATED EMISSIONS
ASSUMING 95% SO2 REDUCTION BY FGD TECHNOLOGY

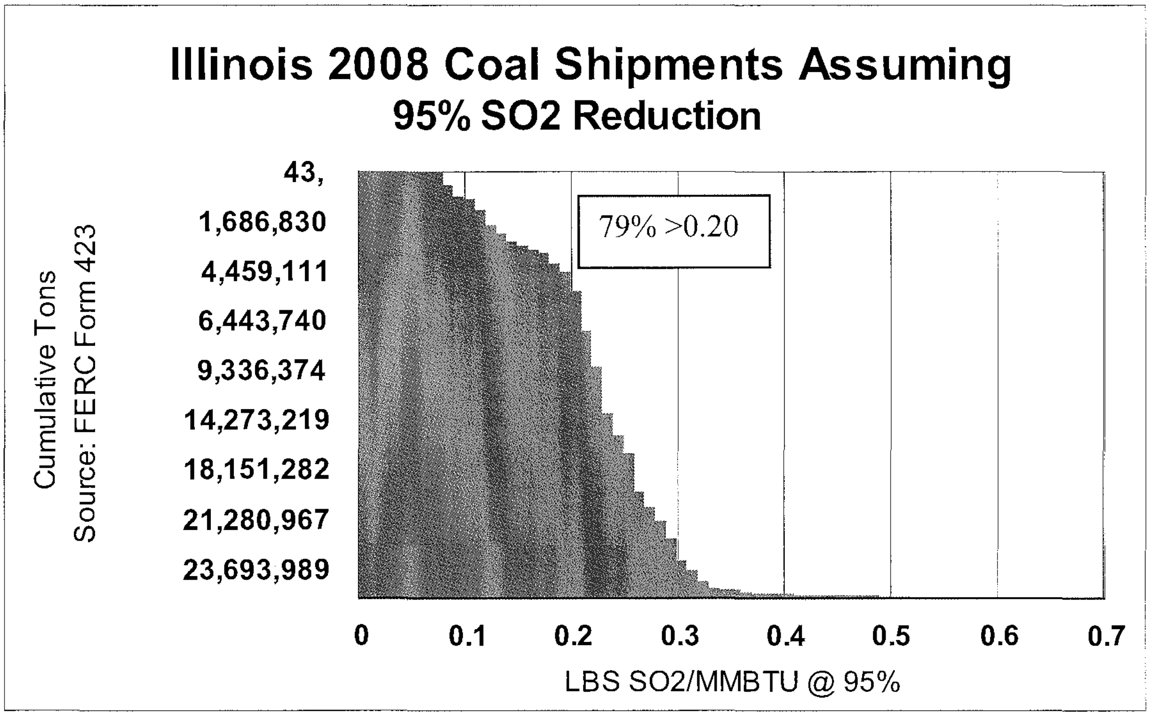
	TONS	PCT OF TONS	AVERAGE SULFUR %	AVERAGE SO2/MMBTU	AVERAGE SO2/MMBTU 95% REDUC.
0.00-0.10 LB SO2 @95%	765,169,960	73%	0.64	1.10	0.06
0.11-0.15 LB SO2 @95%	109,847,068	11%	1.57	2.57	0.13
0.16-0.20 LB SO2 @95%	43,071,975	4%	2.22	3.60	0.18
0.21-0.25 LB SO2 @95%	54,975,960	5%	2.81	4.59	0.23
0.26-0.30 LB SO2 @95%	40,034,279	4%	3.22	5.54	0.28
0.31-0.35 LB SO2 @ 95%	21,663,943	2%	3.82	6.57	0.33
>0.35 LB SO2 @ 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%			

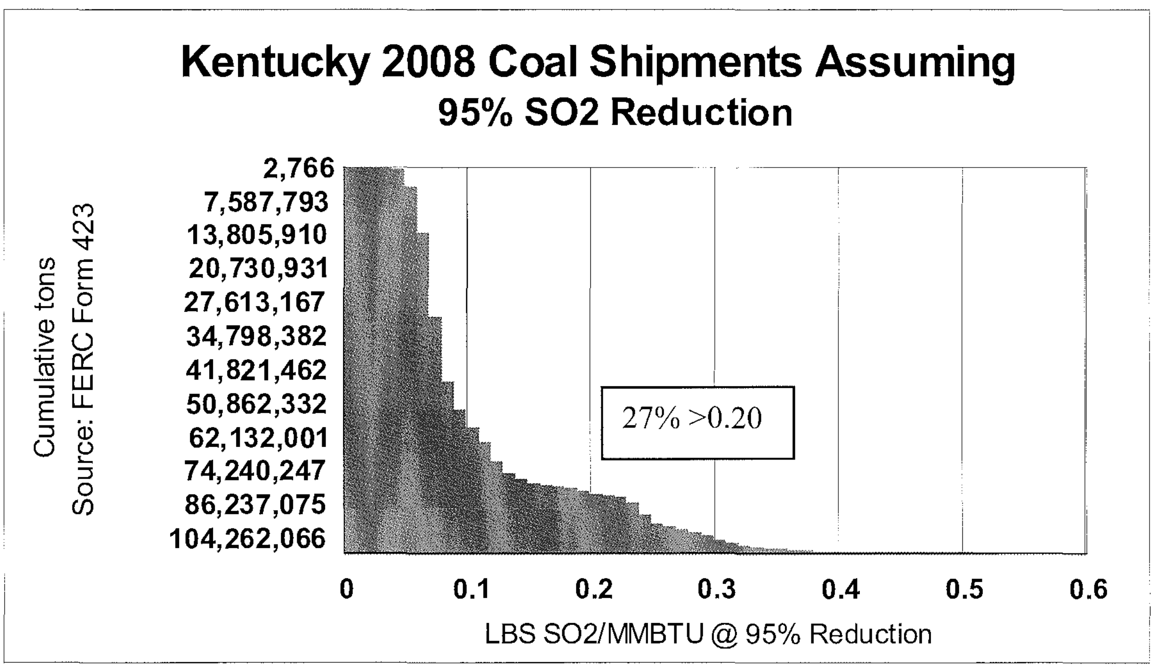
SOURCE: CALCULATED FROM FERC FORM 423 (2008).

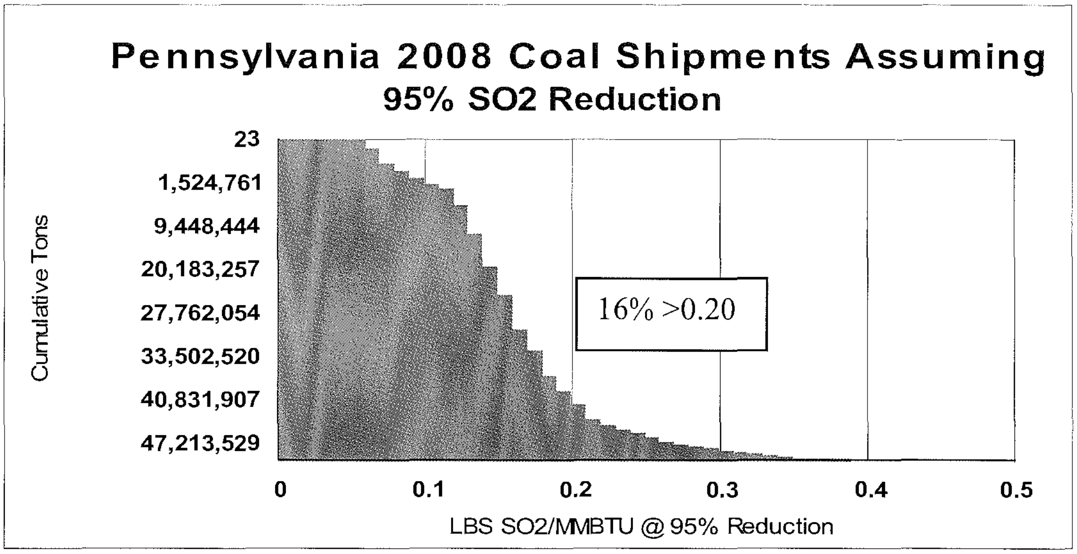
Summary State Findings for Compliance with EPA's Proposed 0.20 lb SO_2/MMBTU Alternative HCL Standard, Assuming 95% SO_2 Reduction for 2008 Coal Shipments
(Source: Derived from FERC Form 423)






Illinois 2008 Coal Shipments Assuming
95% SO2 Reduction
Cumulative Tons
Source: FERC Form 423
43,
1,686,830
4,459,111
6,443,740
9,336,374
14,273,219
18,151,282
21,280,967
23,693,989
79% >0.20
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
LBS SO2/MMBTU @ 95%


Kentucky 2008 Coal Shipments Assuming
95% SO2 Reduction
Cumulative tons
Source: FERC Form 423
2,766
7,587,793
13,805,910
20,730,931
27,613,167
34,798,382
41,821,462
50,862,332
62,132,001
74,240,247
86,237,075
104,262,066
27% >0.20
0
0.1
0.2
0.3
0.4
0.5
0.6
LBS SO2/MMBTU @ 95% Reduction


Pennsylvania 2008 Coal Shipments Assuming
95% SO2 Reduction
23
1,524,761
9,448,444
20,183,257
27,762,054
33,502,520
40,831,907
47,213,529
Cumulative Tons
16% >0.20
0
0.1
0.2
0.3
0.4
0.5
LBS SO2/MMBTU @ 95% Reduction

ATTACHMENT 4
15 PAGES

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 "UNITS AT RISK"** 25-400 MW, >40 YEARS W/O SCRUBBERS		PCT OF STATE GENERATION		EST. DIRECT COAL/UTILITY/RAIL	JOBS MULTIPLIER	EST. TOTAL DIRECT & INDIRECT
	TOTAL	COAL	# UNITS	GWH	TOTAL	COAL	JOBS AT RISK***	RIMS****	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	3.89	1,368
Florida	208,795	50,445	5	4,542	2%	9%	772	3.49	2,695
Georgia	123,085	66,934	10	7,891	6%	12%	1,341	4.07	5,460
Maryland	42,408	24,070	6	5,497	13%	23%	934	4.00	3,738
N. Carolina	111,326	62,300	22	9,798	9%	16%	1,666	3.62	6,030
S. Carolina	96,524	32,588	14	10,266	11%	32%	1,745	3.94	6,876
Virginia	69,193	25,496	21	14,322	21%	56%	2,435	4.72	11,492
West Va.	66,636	64,244	16	29,873	45%	46%	5,078	5.05	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	5.51	18,832
Kentucky	86,515	80,125	19	13,416	16%	17%	2,281	5.49	12,521
Mississippi	47,003	12,236	0	0	0%	0%	0	NA	0
Tennessee	75,319	40,645	17	20,251	27%	50%	3,443	4.42	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	NA	0
Louisiana	87,165	21,309	0	0	0%	0%	0	NA	0
Oklahoma	73,754	32,685	0	0	0%	0%	0	NA	0
Texas	379,543	129,855	0	0	0%	0%	0	NA	0
Mountain	344,476	183,030	15	9,850	3%	5%	1,675	NA	9,010
Arizona	107,415	36,506	1	783	1%	2%	133	4.3	572
Colorado	47,113	28,804	9	5,002	11%	17%	850	5.57	4,736
Idaho	12,409	70	0	0	0%	0%	0	NA	0
Montana	23,450	13,456	1	1,011	4%	8%	172	4.86	835
Nevada	35,916	6,791	0	0	0%	0%	0	NA	0
N. Mexico	37,164	26,969	0	0	0%	0%	0	NA	0
Utah	40,115	32,818	2	1,349	3%	4%	229	5.61	1,287
Wyoming	40,895	37,616	2	1,705	4%	5%	290	5.45	1,580

Pacific Contiguous	344,886	10,904	0	0	0%	0%	0		0
California	193,585	1,846	0	0	0%	0%	0	NA	0
Oregon	52,049	2,431	0	0	0%	0%	0	NA	0
Washington	99,254	6,625	0	0	0%	0%	0	NA	0
Pacific Noncontiguous	15,886	1,928	0	0	0%	0%	0		0
Alaska	6,083	536	0	0	0%	0%	0	NA	0
Hawaii	9,804	1,391	0	0	0%	0%	0	NA	0
							0	NA	0
U.S. Total	3,738,765	1,652,926	433	318,538	9%	19%	54,151		251,291

*ANNUALIZED 2009 BASED ON SEP 2009 YTD FROM DOE/EIA ELECTRIC POWER MONTHLY (DEC 2009).
** PRELIMINARY SORT OF UNITS AT RISK BASED ON DOE/NETL 2007 COAL POWERPLANT DATABASE (2009), COVERING UNITS 25-400 MW AND >40 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 EGUs 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 FGD

F_767_Plant D EIA-2005	F_767_Plant J EIA-2005	F_767_Plant L EIA-2005	F_767_Boiler D EIA-2005	F_767_Boiler AH EIA-2005	This Sheet Formula	F_767_Generator E EIA-2005	F_767_Generator T EIA-2005	F_767_Boiler_Fuel R EIA-2005	F_423_Coal_State Several EIA-2005
Utility Name	**Plant Name**	**Plant Location State**	**Boiler ID**	**Boiler In Service Date**	**Boiler Age as of 2/11/2011 (years)**	**Generator Nameplate Rating (MW)**	**Net Annual Electrical Generation (MW-h)**	**Primary Fuel Consumed (1000 tons)**	**Coal Origin State (Largest Source in 2005)**
Alabama Power Co	Barry	AL	1	2/1/1954	57.0	153	935,406	413	Imported
Alabama Power Co	Barry	AL	2	7/1/1954	56.6	153	1,039,559	463	Imported
Alabama Power Co	Barry	AL	3	7/1/1959	51.6	272	1,888,773	821	Imported
Alabama Power Co	Gadsden	AL	1	4/1/1949	61.9	69	218,587	118	Alabama
Alabama Power Co	Gadsden	AL	2	7/1/1949	61.6	69	211,241	111	Alabama
Alabama Power Co	Gorgas	AL	6	4/1/1951	59.9	125	611,469	312	Alabama
Alabama Power Co	Gorgas	AL	7	7/1/1952	58.6	125	661,966	325	Alabama
Alabama Power Co	Greene Coun	AL	1	6/1/1965	45.7	299	1,932,777	139	Illinois
Alabama Power Co	Greene Coun	AL	2	7/1/1966	44.6	269	1,852,732	114	Illinois
Alabama Power Co	E C Gaston	AL	1	5/1/1960	50.8	272	1,488,861	600	Alabama
Alabama Power Co	E C Gaston	AL	2	7/1/1960	50.6	272	1,496,973	612	Alabama
Alabama Power Co	E C Gaston	AL	3	6/1/1961	49.7	272	1,616,927	674	Alabama
Alabama Power Co	E C Gaston	AL	4	6/1/1962	48.7	245	1,868,088	747	Alabama
Tennessee Valley Authority	Widows Cree	AL	1	7/1/1952	58.6	141	719,503	354	Kentucky
Tennessee Valley Authority	Widows Cree	AL	2	10/1/1952	58.4	141	699,166	345	Kentucky
Tennessee Valley Authority	Widows Cree	AL	3	11/1/1952	58.3	141	667,433	323	Kentucky
Tennessee Valley Authority	Widows Cree	AL	4	1/1/1953	58.1	141	764,030	364	Kentucky
Tennessee Valley Authority	Widows Cree	AL	5	6/1/1954	56.7	141	702,224	322	Kentucky
Tennessee Valley Authority	Widows Cree	AL	6	7/1/1954	56.6	141	729,701	331	Kentucky
UNS Electric Inc	H Wilson Sun	AZ	4	5/1/1967	43.8	173	783,197	369	Colorado
Aquila Inc	W N Clark	CO	59	NL	NL	25	172,856	100	NL
Public Service Co of Colorado	Arapahoe	CO	3	6/1/1951	59.7	46	257,863	166	Wyoming
Public Service Co of Colorado	Arapahoe	CO	4	6/1/1955	55.7	112	635,999	377	Wyoming
Public Service Co of Colorado	Cameo	CO	2	NL	NL	44	336,526	202	Colorado
Public Service Co of Colorado	Cherokee	CO	1	6/1/1957	53.7	125	743,189	355	Colorado
Public Service Co of Colorado	Cherokee	CO	2	6/1/1959	51.7	125	807,480	374	Colorado

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	8/1/1968	42.5	400	2,735,970	1,496	Idaho
Conectiv Energy Supply Inc	Edge Moor	DE	3	12/1/1957	53.2	75	449,193	182	West Virginia
Indian River Operations Inc	Indian River (	DE	1	6/1/1957	53.7	82	382,160	165	West Virginia
Indian River Operations Inc	Indian River (	DE	2	6/1/1959	51.7	82	367,476	165	West Virginia
Indian River Operations Inc	Indian River (	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 Smitl	FL	1	6/1/1965	45.7	150	1,209,964	534	Imported
Gulf Power Co	Lansing Smitl	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	Hutsonville	IL	05	2/1/1953	58.0	75	383,621	162	Indiana
Ameren Energy Generating Co	Hutsonville	IL	06	7/1/1954	56.6	75	371,882	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 LL(	Crawford	IL	7	5/1/1958	52.8	239	1,190,315	717	Wyoming
Midwest Generations EME LL(	Crawford	IL	8	4/1/1961	49.9	358	1,775,558	1,055	Wyoming
Midwest Generations EME LL(	Joliet 9	IL	5	7/1/1959	51.6	360	1,673,848	1,055	Wyoming
Midwest Generations EME LL(	Waukegan	IL	17	4/1/1952	58.9	121	405,718	272	Wyoming
Midwest Generations EME LL(	Waukegan	IL	7	6/1/1958	52.7	326	2,001,661	1,189	Wyoming
Midwest Generations EME LL(	Waukegan	IL	8	6/1/1962	48.7	355	2,153,125	1,316	Wyoming
Midwest Generations EME LL(	Will County	IL	1	5/1/1955	55.8	188	726,859	459	Wyoming
Midwest Generations EME LL(	Will County	IL	2	3/1/1955	56.0	184	725,094	456	Wyoming
Midwest Generations EME LL(	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	Joppa Steam	IL	1	8/1/1953	57.5	183	1,334,446	830	Wyoming
Electric Energy Inc	Joppa Steam	IL	2	9/1/1953	57.4	183	1,345,537	839	Wyoming
Electric Energy Inc	Joppa Steam	IL	3	5/1/1954	56.8	183	1,286,422	802	Wyoming
Electric Energy Inc	Joppa Steam	IL	4	8/1/1954	56.5	183	1,395,791	867	Wyoming
Electric Energy Inc	Joppa Steam	IL	5	6/1/1955	55.7	183	1,313,742	823	Wyoming
Electric Energy Inc	Joppa Steam	IL	6	8/1/1955	55.5	183	1,202,957	766	Wyoming
Dynegy Midwest Generation In	Hennepin Pow	IL	1	6/1/1953	57.7	75	426,690	281	Wyoming
Dynegy Midwest Generation In	Hennepin Pow	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	Lakeside	IL	7	4/1/1961	49.9	38	77,529	48	Illinois
Springfield City of	Lakeside	IL	8	12/1/1965	45.2	38	130,922	82	Illinois
State Line Energy LLC	State Line En	IN	3	12/1/1955	55.2	125	566,157	639	Montana
State Line Energy LLC	State Line En	IN	4	5/1/1962	48.8	209	798,387	766	Montana
Indiana Michigan Power Co	Tanners Cree	IN	U1	3/1/1951	60.0	153	845,728	384	West Virginia
Indiana Michigan Power Co	Tanners Cree	IN	U2	11/1/1952	58.3	153	873,420	390	West Virginia
Indiana Michigan Power Co	Tanners Cree	IN	U3	12/1/1954	56.2	215	1,048,578	457	West Virginia
Indianapolis Power & Light Co	Harding Stree	IN	50	5/1/1958	52.8	114	573,130	289	Indiana
Indianapolis Power & Light Co	Harding Stree	IN	60	4/1/1961	49.9	114	635,929	315	Indiana
Indianapolis Power & Light Co	Eagle Valley	IN	3	11/1/1951	59.3	50	244,956	146	Indiana
Indianapolis Power & Light Co	Eagle Valley	IN	4	1/1/1953	58.1	69	314,669	178	Indiana
Indianapolis Power & Light Co	Eagle Valley	IN	5	12/1/1953	57.2	69	341,177	182	Indiana
Indianapolis Power & Light Co	Eagle Valley	IN	6	10/1/1956	54.4	114	576,371	283	Indiana
PSI Energy Inc	Edwardsport	IN	7-1	1/1/1949	62.1	40	91,309	50	Indiana
PSI Energy Inc	Edwardsport	IN	7-2	1/1/1949	62.1	69	87,308	60	Indiana
PSI Energy Inc	Edwardsport	IN	8-1	12/1/1951	59.2	*	*	68	Indiana
PSI Energy Inc	R Gallagher	IN	1	7/1/1959	51.6	150	717,609	327	Indiana
PSI Energy Inc	R Gallagher	IN	2	12/1/1958	52.2	150	738,073	339	Indiana
PSI Energy Inc	R Gallagher	IN	3	4/1/1960	50.9	150	644,914	296	Indiana
PSI Energy Inc	R Gallagher	IN	4	3/1/1961	49.9	150	776,308	358	Indiana
PSI Energy Inc	Wabash Rive	IN	4	1/1/1955	56.1	113	602,049	298	Indiana
PSI Energy Inc	Wabash Rive	IN	6	8/1/1968	42.5	387	2,149,048	1,028	Indiana
Logansport City Of	Logansport	IN	6	NL	NL	25	101,968	NL	NL
Richmond City of	Whitewater V	IN	1	NL	NL	33	195,648	NL	NL
Hoosier Energy R E C Inc	Frank E Ratts	IN	1SG1	5/1/1970	40.8	117	686,229	308	Indiana
Hoosier Energy R E C Inc	Frank E Ratts	IN	2SG1	5/1/1970	40.8	117	497,108	229	Indiana

Interstate Power & Light Co	Dubuque	IA	1	NL	NL	38	164,192	NL	NL
Interstate Power & Light Co	Dubuque	IA	5	NL	NL	29	50,058	NL	NL
Interstate Power & Light Co	Milton L Kapp	IA	2	5/1/1967	43.8	218	1,225,857	NL	Wyoming
Interstate Power & Light Co	Prairie Creek	IA	3	6/1/1958	52.7	50	98,904	32	Wyoming
Interstate Power & Light Co	Prairie Creek	IA	4	6/1/1967	43.7	149	706,549	538	Wyoming
Interstate Power & Light Co	Sutherland	IA	1	6/1/1955	55.7	38	210,202	137	Wyoming
Interstate Power & Light Co	Sutherland	IA	2	6/1/1955	55.7	38	210,202	144	Wyoming
Interstate Power & Light Co	Sutherland	IA	3	6/1/1961	49.7	82	453,592	283	Wyoming
MidAmerican Energy Co	Riverside	IA	9	6/1/1961	49.7	136	640,217	379	Wyoming
MidAmerican Energy Co	Council Bluffs	IA	1	2/1/1954	57.0	49	297,837	220	Wyoming
MidAmerican Energy Co	Council Bluffs	IA	2	2/1/1958	53.0	82	635,618	399	Wyoming
MidAmerican Energy Co	George Neal	IA	1	5/1/1964	46.8	147	953,847	578	Wyoming
Interstate Power & Light Co	Burlington	IA	1	6/1/1968	42.7	212	1,143,174	741	Wyoming
Ames City of	Ames Electric	IA	7	NL	NL	33	156,380	NL	NL
Ames City of	Ames Electric	IA	8	NL	NL	65	351,759	NL	NL
Cedar Falls City of	Streeter Stati	IA	7	NL	NL	35	109,692	NL	NL
Muscatine City of	Muscatine Pl	IA	7	6/1/1958	52.7	25	98,538	82	Wyoming
Muscatine City of	Muscatine Pl	IA	8	6/1/1969	41.7	75	148,807	363	Wyoming
Pella City of	Pella	IA	7	NL	NL	26	106,922	NL	NL
Pella City of	Pella	IA	8	NL	NL	*	*	NL	NL
Corn Belt Power Coop	Earl F Wisdor	IA	1	NL	NL	33	138,410	NL	NL
Central Iowa Power Coop	Fair Station	IA	1	NL	NL	25	127,013	NL	NL
Central Iowa Power Coop	Fair Station	IA	2	NL	NL	38	238,377	NL	NL
Empire District Electric Co	Riverton	KS	39	NL	NL	38	174,627	NL	NL
Empire District Electric Co	Riverton	KS	40	NL	NL	50	313,874	NL	NL
Westar Energy	Lawrence En	KS	3	1/1/1955	56.1	49	331,036	228	Wyoming
Westar Energy	Tecumseh Er	KS	10	4/1/1962	48.9	150	896,209	578	Wyoming
Westar Energy	Tecumseh Er	KS	9	8/1/1957	53.5	82	508,011	301	Wyoming
Kansas City City of	Quindaro	KS	1	5/1/1965	45.8	82	409,574	260	Wyoming
Kentucky Power Co	Big Sandy	KY	BSU1	1/1/1963	48.1	281	1,542,054	653	Kentucky
Kentucky Utilities Co	Green River	KY	4	4/1/1954	56.9	75	336,573	177	Kentucky
Kentucky Utilities Co	Green River	KY	5	7/1/1959	51.6	114	338,730	160	Kentucky
Kentucky Utilities Co	Tyrone	KY	5	7/1/1953	57.6	75	355,762	184	Kentucky
Tennessee Valley Authority	Shawnee	KY	1	4/1/1953	57.9	175	914,556	414	Colorado
Tennessee Valley Authority	Shawnee	KY	2	6/1/1953	57.7	175	917,047	417	Colorado
Tennessee Valley Authority	Shawnee	KY	3	10/1/1953	57.4	175	894,467	403	Colorado
Tennessee Valley Authority	Shawnee	KY	4	1/1/1954	57.1	175	1,016,621	459	Colorado
Tennessee Valley Authority	Shawnee	KY	5	10/1/1954	56.4	175	1,038,069	467	Colorado
Tennessee Valley Authority	Shawnee	KY	6	11/1/1954	56.3	175	1,006,847	455	Colorado

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 Reic	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	12/1/1954	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 Ge	C P Crane	MD	1	7/1/1961	49.6	190	975,724	389	Pennsylvania
Constellation Power Source Ge	C P Crane	MD	2	2/1/1963	48.0	209	1,152,590	464	Pennsylvania
Constellation Power Source Ge	Herbert A Wa	MD	2	1/1/1959	52.1	136	718,492	330	West Virginia
Constellation Power Source Ge	Herbert A Wa	MD	3	8/1/1966	44.5	359	2,253,747	891	West Virginia
Allegheny Energy Supply Co LI	R Paul Smith	MD	11	11/1/1958	52.3	75	327,598	158	Pennsylvania
Allegheny Energy Supply Co LI	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 Englanc	Brayton Point	MA	1	4/1/1963	47.9	241	1,867,848	782	Colorado
Dominion Energy New Englanc	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	58.8	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 Statior	MI	1	6/1/1954	56.7	44	216,731	135	Wyoming
Lansing City of	Eckert Statior	MI	2	6/1/1958	52.7	44	190,396	131	Wyoming
Lansing City of	Eckert Statior	MI	3	6/1/1961	49.7	47	209,882	136	Wyoming
Lansing City of	Eckert Statior	MI	4	6/1/1964	46.7	80	274,638	162	Wyoming
Lansing City of	Eckert Statior	MI	5	6/1/1968	42.7	80	351,617	202	Wyoming
Lansing City of	Eckert Statior	MI	6	6/1/1970	40.7	80	451,259	285	Wyoming
Lansing City of	Erickson Stati	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	Meramec	MO	4	7/1/1961	49.6	359	1,889,095	1,171	Wyoming
Independence City of	Blue Valley	MO	1	4/1/1958	52.9	25	80,926	58	Missouri
Independence City of	Blue Valley	MO	2	5/1/1958	52.8	25	75,196	50	Missouri
Independence City of	Blue Valley	MO	3	6/1/1965	45.7	65	173,196	108	Missouri
Springfield City of	James River I	MO	3	2/1/1960	51.0	44	272,769	188	Wyoming
Springfield City of	James River I	MO	4	5/1/1964	46.8	60	421,827	268	Wyoming
Springfield City of	James River I	MO	5	5/1/1970	40.8	105	674,595	420	Wyoming
Associated Electric Coop Inc	Thomas Hill	MO	MB1	12/1/1966	44.2	180	1,248,024	749	Wyoming
Associated Electric Coop Inc	Thomas Hill	MO	MB2	3/1/1969	41.9	285	1,969,327	1,173	Wyoming
Central Electric Power Coop	Chamois	MO	2	NL	NL	44	292,833	NL	NL
PPL Montana LLC	J E Corette P	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	Sheldon	NE	2	7/1/1961	49.6	120	807,432	518	Wyoming
Omaha Public Power District	North Omaha	NE	1	6/1/1954	56.7	74	361,170	236	Wyoming
Omaha Public Power District	North Omaha	NE	2	6/1/1957	53.7	109	600,520	398	Wyoming
Omaha Public Power District	North Omaha	NE	3	6/1/1959	51.7	109	597,538	394	Wyoming
Omaha Public Power District	North Omaha	NE	4	6/1/1963	47.7	136	785,291	480	Wyoming
Omaha Public Power District	North Omaha	NE	5	6/1/1968	42.7	218	1,072,896	657	Wyoming
Hastings City of	Whelan Ener(	NE	1	NL	NL	76	549,295	365	Wyoming
Public Service Co of NH	Schiller	NH	4	10/1/1952	58.4	50	322,425	163	Imported
Public Service Co of NH	Schiller	NH	5	5/1/1955	55.8	50	313,777	162	Imported
Public Service Co of NH	Schiller	NH	6	7/1/1957	53.6	50	343,650	169	Imported
Atlantic City Electric Co	Deepwater	NJ	1	12/1/1958	52.2	82	48,849	NL	N/A
Atlantic City Electric Co	Deepwater	NJ	8	12/1/1954	56.2	74	430,108	175	West Virginia
Vineland City of	Howard Dowr	NJ	10	NL	NL	25	81,820	NL	NL
AES Westover LLC	AES Westove	NY	11	10/1/1943	67.4	44	186,370	48	Pennsylvania
AES Westover LLC	AES Westove	NY	12	10/1/1943	67.4	*	*	48	Pennsylvania
AES Westover LLC	AES Westove	NY	13	12/1/1951	59.2	75	613,413	247	Pennsylvania
AES Greenidge LLC	AES Greenid(	NY	4	4/1/1950	60.9	50	223,897	57	Pennsylvania
AES Greenidge LLC	AES Greenid(	NY	5	4/1/1950	60.9	*	*	56	Pennsylvania
AES Greenidge LLC	AES Greenid(	NY	6	12/1/1953	57.2	113	665,481	278	Pennsylvania
Rochester Gas & Electric Corp	Rochester 7	NY	1	11/1/1948	62.3	46	87,091	41	West Virginia
Rochester Gas & Electric Corp	Rochester 7	NY	2	12/1/1950	60.2	63	232,833	102	West Virginia
Rochester Gas & Electric Corp	Rochester 7	NY	3	9/1/1953	57.4	63	212,109	102	West Virginia
Rochester Gas & Electric Corp	Rochester 7	NY	4	3/1/1957	53.9	82	449,419	182	West Virginia
Jamestown City of	S A Carlson	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	8/1/1952	58.5	74	422,875	194	Kentucky
Duke Energy Corp	Buck	NC	5	7/1/1941	69.6	80	187,154	112	West Virginia
Duke Energy Corp	Buck	NC	6	6/1/1941	69.7	*	*	112	West Virginia
Duke Energy Corp	Buck	NC	7	9/1/1942	68.4	40	81,227	50	West Virginia
Duke Energy Corp	Buck	NC	8	9/1/1953	57.4	125	691,815	312	West Virginia
Duke Energy Corp	Buck	NC	9	12/1/1953	57.2	125	686,814	310	West Virginia
Duke Energy Corp	Dan River	NC	1	12/1/1949	61.2	70	206,770	99	West Virginia
Duke Energy Corp	Dan River	NC	2	3/1/1950	61.0	70	170,831	80	West Virginia
Duke Energy Corp	Dan River	NC	3	8/1/1955	55.5	150	271,712	115	West Virginia
Duke Energy Corp	Riverbend	NC	10	11/1/1954	56.3	133	545,397	230	NL
Duke Energy Corp	Riverbend	NC	7	10/1/1952	58.4	100	386,624	171	NL
Duke Energy Corp	Riverbend	NC	8	11/1/1952	58.3	100	419,207	191	NL
Duke Energy Corp	Riverbend	NC	9	8/1/1954	56.5	133	484,561	208	NL
MDU Resources Group Inc	R M Heskett	ND	B1	11/1/1954	56.3	40	109,952	119	NL
MDU Resources Group Inc	R M Heskett	ND	B2	11/1/1963	47.3	75	497,382	281	North Dakota
Minnkota Power Coop Inc	Milton R Your	ND	B1	11/1/1970	40.3	257	1,883,383	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	Walter C Bec	OH	1	6/1/1952	58.7	115	527,295	258	Kentucky
Cincinnati Gas & Electric Co	Walter C Becl	OH	2	10/1/1953	57.4	113	503,252	241	Kentucky
Cincinnati Gas & Electric Co	Walter C Becl	OH	3	11/1/1954	56.3	125	762,907	347	Kentucky
Cincinnati Gas & Electric Co	Walter C Becl	OH	4	7/1/1958	52.6	163	1,008,854	457	Kentucky
Cincinnati Gas & Electric Co	Walter C Becl	OH	5	12/1/1962	48.2	245	1,272,573	577	Kentucky
Cincinnati Gas & Electric Co	Miami Fort	OH	6	11/1/1960	50.3	163	1,138,334	485	West Virginia
Cleveland Electric Illum Co	Ashtabula	OH	7	12/1/1958	52.2	256	1,408,106	845	NL
Orion Power Midwest LP	Avon Lake	OH	10	12/1/1949	61.2	86	234,796	150	Pennsylvania
Cleveland Electric Illum Co	Eastlake	OH	1	9/1/1953	57.4	123	739,967	396	NL
Cleveland Electric Illum Co	Eastlake	OH	3	12/1/1953	57.2	123	657,096	344	NL
Cleveland Electric Illum Co	Eastlake	OH	4	8/1/1954	56.5	208	1,465,556	835	NL
Cleveland Electric Illum Co	Lake Shore	OH	18	6/1/1962	48.7	256	950,870	663	NL
Columbus Southern Power Co	Conesville	OH	1	2/1/1959	52.0	148	41,534	19	Ohio

Columbus Southern Power Co	Conesville	OH	2	2/1/1957	54.0	136	68,262	31	Ohio
Columbus Southern Power Co	Conesville	OH	3	10/1/1962	48.4	162	726,694	307	Ohio
Columbus Southern Power Co	Picway	OH	9	11/1/1955	55.3	106	241,192	127	Ohio
Dayton Power & Light Co	O H Hutching	OH	H-1	7/1/1948	62.6	69	66,750	39	West Virginia
Dayton Power & Light Co	O H Hutching	OH	H-2	3/1/1949	61.9	69	67,716	39	West Virginia
Dayton Power & Light Co	O H Hutching	OH	H-3	12/1/1950	60.2	69	142,165	63	West Virginia
Dayton Power & Light Co	O H Hutching	OH	H-4	2/1/1951	60.0	69	126,658	55	West Virginia
Dayton Power & Light Co	O H Hutching	OH	H-5	11/1/1952	58.3	69	149,967	73	West Virginia
Dayton Power & Light Co	O H Hutching	OH	H-6	9/1/1953	57.4	69	134,430	63	West Virginia
Ohio Edison Co	R E Burger	OH	5	3/1/1950	61.0	103	11,838	8	NL
Ohio Edison Co	R E Burger	OH	6	3/1/1950	61.0	*	*	8	NL
Ohio Edison Co	R E Burger	OH	7	3/1/1955	56.0	156	946,472	441	NL
Ohio Edison Co	R E Burger	OH	8	6/1/1955	55.7	156	1,036,329	463	NL
Ohio Power Co	Muskingum R	OH	1	12/1/1953	57.2	220	1,023,374	409	West Virginia
Ohio Power Co	Muskingum R	OH	2	6/1/1954	56.7	220	720,451	289	West Virginia
Ohio Power Co	Muskingum R	OH	3	12/1/1957	53.2	238	885,630	349	West Virginia
Ohio Power Co	Muskingum R	OH	4	10/1/1968	42.4	238	937,101	363	West Virginia
Toledo Edison Co	Bay Shore	OH	2	2/1/1959	52.0	141	853,560	481	NL
Toledo Edison Co	Bay Shore	OH	3	5/1/1963	47.8	141	808,672	470	NL
Toledo Edison Co	Bay Shore	OH	4	6/1/1968	42.7	218	1,470,130	844	NL
Orrville City of	Orrville	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	1,386,782	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	New Castle P	PA	3	6/1/1952	58.7	98	379,812	176	Pennsylvania
Orion Power Midwest LP	New Castle P	PA	4	6/1/1958	52.7	114	387,596	178	Pennsylvania
Orion Power Midwest LP	New Castle P	PA	5	6/1/1964	46.7	136	547,499	253	Pennsylvania
Sunbury Generation LLC	WPS Energy	PA	1A	11/1/1949	61.3	75	433,438	165	Pennsylvania
Sunbury Generation LLC	WPS Energy	PA	1B	11/1/1949	61.3	90	460,553	177	Pennsylvania
Sunbury Generation LLC	WPS Energy	PA	2A	9/1/1949	61.4	104	373,753	176	Pennsylvania
Sunbury Generation LLC	WPS Energy	PA	2B	9/1/1949	61.4	*	*	183	Pennsylvania
Sunbury Generation LLC	WPS Energy	PA	3	4/1/1951	59.9	*	*	210	Pennsylvania
Sunbury Generation LLC	WPS Energy	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 Ll	Armstrong Pc	PA	1	4/1/1958	52.9	163	998,552	409	Pennsylvania
Allegheny Energy Supply Co Ll	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	Canadys Stea	SC	CAN1	4/1/1962	48.9	136	753,076	310	Kentucky
South Carolina Electric&Gas C	Canadys Stea	SC	CAN2	5/1/1964	46.8	136	702,852	287	Kentucky
South Carolina Electric&Gas C	Canadys Stea	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	Urquhart	SC	URQ3	10/1/1955	55.4	100	602,974	231	Tennessee
South Carolina Pub Serv Auth	Dolphus M Gı	SC	1	6/1/1966	44.7	82	547,407	231	Kentucky
South Carolina Pub Serv Auth	Dolphus M Gı	SC	2	6/1/1966	44.7	82	585,626	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	937,747	NL	Kentucky
Tennessee Valley Authority	Johnsonville	TN	9	6/1/1959	51.7	173	959,223	NL	Kentucky
PacifiCorp	Carbon	UT	1	11/1/1954	56.3	75	526,435	265	Utah
PacifiCorp	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	Glen Lyn	VA	51	6/1/1944	66.7	100	320,880	83	Virginia
Appalachian Power Co	Glen Lyn	VA	52	6/1/1944	66.7	*	*	83	Virginia
Appalachian Power Co	Glen Lyn	VA	6	5/1/1957	53.8	238	1,330,240	503	Virginia
Mirant Mid-Atlantic LLC	Potomac Rive	VA	1	10/1/1949	61.4	92	260,950	142	West Virginia
Mirant Mid-Atlantic LLC	Potomac Rive	VA	2	6/1/1950	60.7	92	206,828	107	West Virginia
Mirant Mid-Atlantic LLC	Potomac Rive	VA	3	7/1/1954	56.6	110	303,283	118	West Virginia
Mirant Mid-Atlantic LLC	Potomac Rive	VA	4	2/1/1956	55.0	110	263,041	108	West Virginia
Mirant Mid-Atlantic LLC	Potomac Rive	VA	5	5/1/1957	53.8	110	285,669	118	West Virginia
Virginia Electric & Power Co	Bremo Bluff	VA	3	6/1/1950	60.7	69	374,235	192	Kentucky
Virginia Electric & Power Co	Bremo Bluff	VA	4	8/1/1958	52.5	185	1,060,572	439	Kentucky
Virginia Electric & Power Co	Chesapeake	VA	1	6/1/1953	57.7	113	624,822	271	Virginia
Virginia Electric & Power Co	Chesapeake	VA	2	12/1/1954	56.2	113	662,801	281	Virginia
Virginia Electric & Power Co	Chesapeake	VA	3	6/1/1959	51.7	185	1,069,211	429	Virginia
Virginia Electric & Power Co	Chesapeake	VA	4	5/1/1962	48.8	239	1,424,392	577	Virginia
Virginia Electric & Power Co	Possum Poin	VA	3	6/1/1955	55.7	114	42,742	NL	Kentucky
Virginia Electric & Power Co	Possum Poin	VA	4	4/1/1962	48.9	239	84,982	NL	Kentucky
Virginia Electric & Power Co	Yorktown	VA	1	7/1/1957	53.6	188	1,003,384	405	Kentucky
Virginia Electric & Power Co	Yorktown	VA	2	1/1/1959	52.1	188	1,064,934	433	Kentucky
Appalachian Power Co	Kanawha Riv	WV	1	7/1/1953	57.6	220	1,092,162	456	West Virginia
Appalachian Power Co	Kanawha Riv	WV	2	12/1/1953	57.2	220	973,982	404	West Virginia
Central Operating Co	Philip Sporn	WV	11	1/1/1950	61.1	153	869,234	379	West Virginia
Central Operating Co	Philip Sporn	WV	21	7/1/1950	60.6	153	783,060	331	West Virginia
Central Operating Co	Philip Sporn	WV	31	8/1/1951	59.5	153	626,298	259	West Virginia
Central Operating Co	Philip Sporn	WV	41	2/1/1952	59.0	153	642,943	255	West Virginia
Monongahela Power Co	Albright	WV	1	11/1/1952	58.3	69	225,654	118	West Virginia
Monongahela Power Co	Albright	WV	2	9/1/1952	58.4	69	245,168	127	West Virginia
Monongahela Power Co	Albright	WV	3	10/1/1954	56.4	140	590,169	263	West Virginia
Monongahela Power Co	Rivesville	WV	7	1/1/1943	68.1	35	-3,278	1	Pennsylvania
Monongahela Power Co	Rivesville	WV	8	9/1/1951	59.4	75	178,789	94	Pennsylvania
Monongahela Power Co	Willow Island	WV	1	2/1/1949	62.0	50	115,600	69	Pennsylvania
Monongahela Power Co	Willow Island	WV	2	10/1/1960	50.4	163	518,814	256	Pennsylvania
Ohio Power Co	Kammer	WV	1	7/1/1958	52.6	238	1,287,029	493	Pennsylvania
Ohio Power Co	Kammer	WV	2	11/1/1958	52.3	238	1,359,885	529	Pennsylvania
Ohio Power Co	Kammer	WV	3	3/1/1958	53.0	238	1,355,825	525	Pennsylvania
Madison Gas & Electric Co	Blount Street	WI	7	12/1/1949	61.2	*	*	44	Indiana
Madison Gas & Electric Co	Blount Street	WI	8	6/1/1957	53.7	50	200,198	94	Indiana
Madison Gas & Electric Co	Blount Street	WI	9	7/1/1961	49.6	50	172,437	90	Indiana
Wisconsin Electric Power Co	Valley	WI	1	6/1/1968	42.7	136	772,465	222	Colorado
Wisconsin Electric Power Co	Valley	WI	2	6/1/1968	42.7	*	*	232	Colorado

Wisconsin Electric Power Co	Valley	WI	3	3/1/1969	41.9	136	690,367	209	Colorado
Wisconsin Electric Power Co	Valley	WI	4	3/1/1969	41.9	*	*	200	Colorado
Wisconsin Power & Light Co	Edgewater	WI	3	7/1/1951	59.6	60	395,951	261	Wyoming
Wisconsin Power & Light Co	Edgewater	WI	4	12/1/1969	41.2	330	1,799,567	1,078	Wyoming
Wisconsin Power & Light Co	Nelson Dewe	WI	1	12/1/1959	51.2	100	688,211	311	Montana
Wisconsin Power & Light Co	Nelson Dewe	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	46.2	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	Manitowoc	WI	6	6/1/1957	53.7	22	109,822	52	Pennsylvania
Manitowoc Public Utilities	Manitowoc	WI	7	6/1/1964	46.7	32	154,113	55	Pennsylvania
Dairyland Power Coop	Alma	WI	B4	9/1/1957	53.4	54	281,238	115	Wyoming
Dairyland Power Coop	Alma	WI	B5	3/1/1960	50.9	82	388,214	150	Wyoming
Dairyland Power Coop	Genoa	WI	1	7/1/1969	41.6	346	2,414,001	461	Illinois
PacifiCorp	Dave Johnstc	WY	BW41	2/1/1959	52.0	114	858,353	574	Wyoming
PacifiCorp	Dave Johnstc	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