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**\*Admitted in DC**

Illinois Pollution Control Board  
100 West Randolph Street  
Suite 11-500  
Chicago, Illinois 60601

August 25, 2006

Re: Comments on Proposed Mercury Emission Controls for Electric  
Generating Units in Illinois – R06-25

Honorable members:

These comments are submitted on behalf of Unions for Jobs and the Environment (UJAE), a §501(c)(4) organization of eleven national and international labor unions.<sup>1</sup>

UJAE's member unions represent a spectrum of more than 3.2 million workers in electric power, transportation, coal mining, construction and other industries. UJAE members' jobs and economic wellbeing will be directly impacted by the Pollution Control Board's decisions on Illinois EPA's ("IEPA") proposed standards for mercury emissions from power plants.

Representatives of UJAE member unions participated actively in the preliminary development of these proposed regulations, including meetings with Director Doug Scott and with representatives of Governor

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<sup>1</sup> Member unions of UJAE are: Brotherhood of Locomotive Engineers; International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers; International Brotherhood of Electrical Workers; International Brotherhood of Teamsters; Marine Engineers Beneficial Association; Sheet Metal Workers International Association; United Association of Journeymen and Apprentices in the Plumbing and Pipefitting Industry; United Food and Commercial Workers International Union; United Mine Workers of America; United Transportation Union; and Utility Workers of America. For further information about UJAE, *see*, [www.ujae.org](http://www.ujae.org).

Blagojevich's Administration. We expressed serious concerns about the effects of a state-specific mercury rule on workers at generating plants unable to meet stringent emission limits within unrealistic deadlines; the chilling effect that the proposed rule would have on the future development of Illinois coal; and the absence of measurable environmental benefits compared to implementation of U.S. EPA's Clean Air Mercury Rule (CAMR).

The interests of UJAE member unions in the mercury control issue are straightforward. If IEPA's proposed rule leads to the closure of many of the state's relatively old and small generating plants - as we expect it will - electrical workers, coal miners and workers in energy-related industries will lose their jobs. UJAE members view EPA's Clean Air Mercury Rule, and its national emission trading program, as the best means to "level the playing field" for these smaller and older powerplants, and to help revive markets for Illinois coal.

CAMR is the companion to EPA's Clean Air Interstate Rule (CAIR) for reducing emissions of sulfur dioxide and nitrogen oxides through a market-based emissions trading program. CAMR is designed to work in tandem with CAIR, by achieving mercury reductions at little or no cost as "co-benefits" of emission control technologies for the reduction of SO<sub>2</sub> and NO<sub>x</sub> emissions. Imposing a state-specific, command-and-control mercury rule with no opportunities for emissions trading or banking would increase the risks of plant closures and job losses, raise electric costs for consumers and industries, and reduce the potential for revitalization of the Illinois coal industry.

### **Background**

The United States is the only country in the world with a comprehensive regulatory program for reducing mercury emissions from industrial sources. Most major sources of mercury emissions, such as municipal and hospital waste incinerators, already are subject to EPA mercury emission limitations. Mercury deposition in the U.S. from foreign sources, such as China, is expected to increase.<sup>2</sup>

Mercury is a pollutant that circulates throughout the global atmospheric environment. Emissions by U.S. electric utilities represent approximately one percent of global mercury emissions from natural and

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<sup>2</sup> *Id.*, at 391.

manmade sources. U.S. EPA estimates that domestic electric utilities contribute 11 tons of the 144 tons of mercury deposited annually in the continental United States. When EPA's Clean Air Mercury Rule is fully implemented, U.S. EPA projects that domestic utility deposition will decline to 3 tons annually.<sup>3</sup>

Mercury is a public health issue because it can be consumed by women of childbearing age who eat contaminated fish. Adverse health effects, in the form of developmental disorders, can occur among children of women exposed to high levels of mercury as a consequence of fish consumption.

More than 80% of dietary mercury consumption in the U.S. comes from saltwater fish such as tuna, cod, and swordfish. Canned tuna alone accounts for 30% of U.S. mercury consumption.<sup>4</sup> Controls on domestic electric utility emissions will have little or no impact on marine sources of mercury exposure. The mercury levels of ocean fish have not changed in hundreds of years, despite major increases in manmade mercury emissions.<sup>5</sup> Any reduction of U.S. utility mercury emissions will not impact the mercury content of saltwater fish consumed in this country.

The two major epidemiological studies examining the neurological effects of mercury consumption – conducted in the Seychelles and Faroe Islands – reached contradictory findings among populations largely dependent upon the consumption of saltwater fish containing high levels of mercury.<sup>6</sup> In the Faroe Islands, adverse developmental effects were observed among children of women who regularly consumed whale meat contaminated with both PCBs and mercury. In the Seychelles research, no adverse developmental effects were noted among the children of women who consumed large quantities of contaminated fish. The latest followup research to the Seychelles study confirms the absence of adverse neurological effects to these children.

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<sup>3</sup> U.S. EPA, Regulatory Impact Analysis of the Final Clean Air Mercury Rule (March 2005).

<sup>4</sup> See, F. Lipfert, S. Morris, *et al.*, "Methylmercury, Fish Consumption and the Precautionary Principle," 55 J. Air & Waste Mgmt. Assn. 388 (April 2005).

<sup>5</sup> A. Krapiel, *et al.*, "Sources and Variations of Mercury in Tuna," 37 Environ. Sci. Technology 5551 (2003); G. Miller, *et al.*, 175 Science 1121 (1972).

<sup>6</sup> See, National Research Council, Toxicological Effects of Methylmercury (National Academy Press, 2000).

Reducing U.S. power plant mercury emissions by 70%-90% is estimated to reduce the deposition of mercury by 5%-10% in the lower-48 states, and to reduce the average mercury content of domestic freshwater fish by 1%-2%.<sup>7</sup> Reducing the average content of mercury in canned tuna by eliminating the highest 10% to 20% of mercury-contaminated fish could reduce U.S. mercury consumption by 6% to 11%.<sup>8</sup>

There is no evidence that controls on Illinois power plants would reduce the number or prevalence of mercury-related “fish advisories” in Illinois or other states. Elemental mercury is the dominant species of mercury emitted by Illinois power plants burning western subbituminous coals. Unlike particulate and ionic mercury, elemental mercury is deposited hundreds to thousands of miles downwind of emitting sources.<sup>9</sup>

### **EPA’ Clean Air Mercury Rule**

In March 2005, EPA promulgated the Clean Air Mercury Rule (CAMR), a program to reduce national emissions of mercury from electric generators by 70% in two phases commencing in 2010. Like the federal acid rain program, CAMR provides the opportunity for emissions trading, to reduce the cost of the program by concentrating reductions at sources with the most cost-effective control options.

CAMR is designed to work in tandem with EPA’s companion Clean Air Interstate Rule (CAIR), requiring a 70% reduction of sulfur and nitrogen oxide emissions from electric generators in a 28-state eastern region. Most of the mercury reductions resulting from the first phase of CAMR will be achieved as a “co-benefit” of the installation of scrubbers and other pollution controls needed to meet CAIR’s emission caps. EPA projects that more than 60 Gigawatts of electric generating capacity in the eastern U.S. will be retrofitted with scrubbers by 2010 as a result of compliance with the CAIR rule.

Figure 1 illustrates the extent of pollution control retrofits that EPA projects in response to the CAIR and CAMR rules by 2010. Most of the capacity to be controlled is located east of the Mississippi River, principally in the Midwest and along the Ohio River Valley. As shown by later exhibits,

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<sup>7</sup> Lipfert, *et al.*, n. 4 *supra*, at 391.

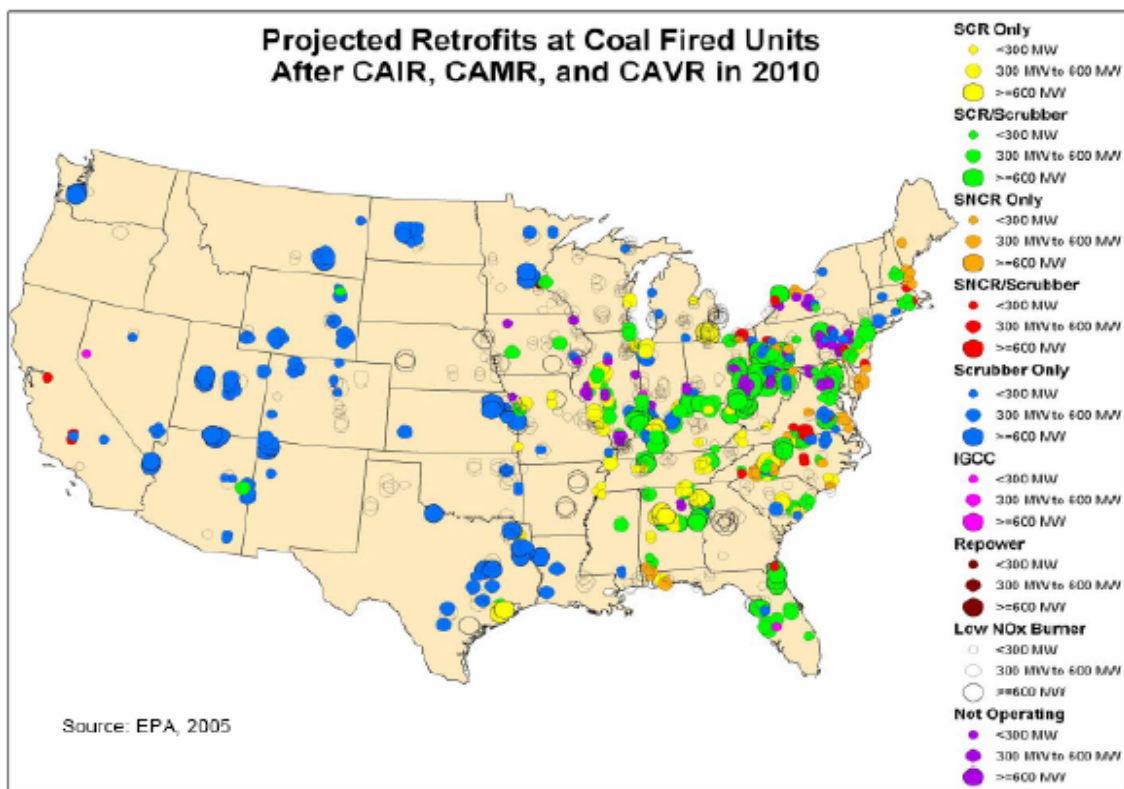
<sup>8</sup> *Id.*, at 396.

<sup>9</sup> Leonard Levin, Ph.D., Electric Power Research Institute (Presentation at 2006 Electric Utilities Environment Conference, Tucson, Arizona, January 16, 2006.)

Illinois will be a major beneficiary of the mercury deposition reductions resulting from these rules, even after the effects of interstate emission allowance trading are considered.

Illinois electric generating units are projected to emit 5,609 pounds of mercury in 2009. The pollution controls to be added in response to EPA's CAIR and CAMR rules are expected to reduce Illinois mercury emissions by 66%, to 1,926 pounds by 2018. The mercury emissions difference in Illinois between CAIR/CAMR and the IEPA rule in 2018 is only 1,127 pounds, or 2 percent of projected national EGU mercury emissions of 57,914 pounds.<sup>10</sup> As discussed below, this negligible additional reduction in emissions is not likely to generate measurable public health or environmental benefits.

**Figure 1**



<sup>10</sup>Emissions data are from ICF Resources, Analysis of the Proposed Illinois Mercury Rule (March 10, 2006), Table 1-1.

### **Mercury Control Benefits**

A fundamental issue facing Illinois policymakers is whether adopting utility mercury emissions controls more stringent than U.S. EPA's Clean Air Mercury Rule would bring about meaningful health benefits to the people of Illinois. EPA's analyses supporting the federal mercury regulations are instructive.

Any proposal to reduce mercury emissions below the levels required by current federal law should be premised upon a demonstration that such controls are needed to protect public health. The mercury deposition analyses conducted by EPA in connection with the CAIR and CAMR rules indicate that:

- 1) Illinois stands to be a major beneficiary of mercury deposition reductions as a result of the CAIR rule; and
- 2) The deposition reductions in Illinois due to the "co-benefits" of CAIR are approximately equal to those resulting from a hypothetical "zero-out" of all mercury emissions from electric generating units throughout the United States.

### **EPA's Mercury Deposition Analyses**

U.S. EPA analyzed the mercury reductions resulting from implementation of the Clean Air Interstate Rule and the Clean Air Mercury Rule.<sup>11</sup> EPA's March 2005 Final Regulatory Impact Analysis of the CAMR compares these mercury reduction benefits with those from a hypothetical "zero-out" strategy eliminating 100% of mercury emissions from U.S. electric utilities. While there are no practical means of eliminating all mercury emissions from electric utilities, EPA's "zero out" analysis provides a useful benchmark for comparing the impacts of alternative mercury reduction proposals.

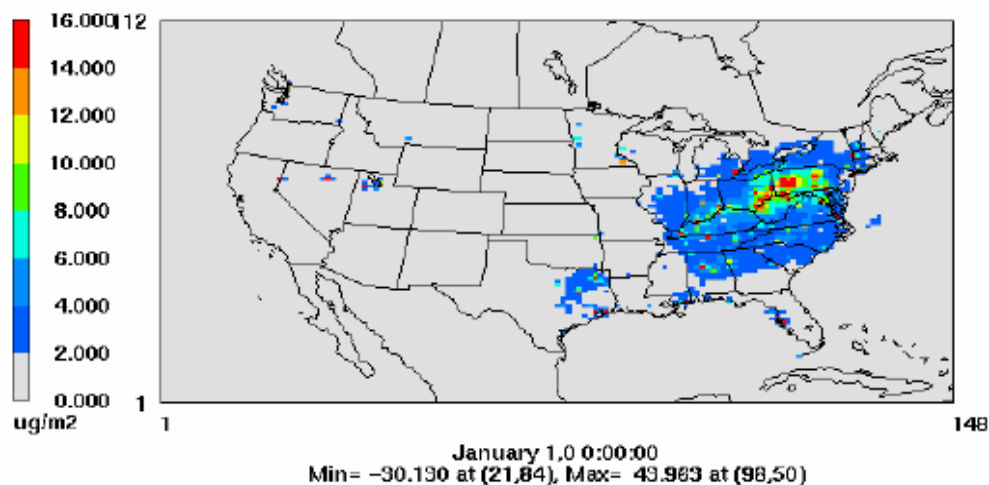
EPA's modeling demonstrates that CAIR and other minor non-utility mercury emissions controls in 2020 will result in a similar reduction in total mercury deposition (Figure 2) as completely eliminating U.S. power plant mercury emissions (Figure 3). The principal reason for these results is that CAIR will bring about a large decrease in mercury emissions from power

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<sup>11</sup> Figures 2-3 are from U.S. EPA, Final Regulatory Impact Analysis of the Clean Air Mercury Rule (March 2005).

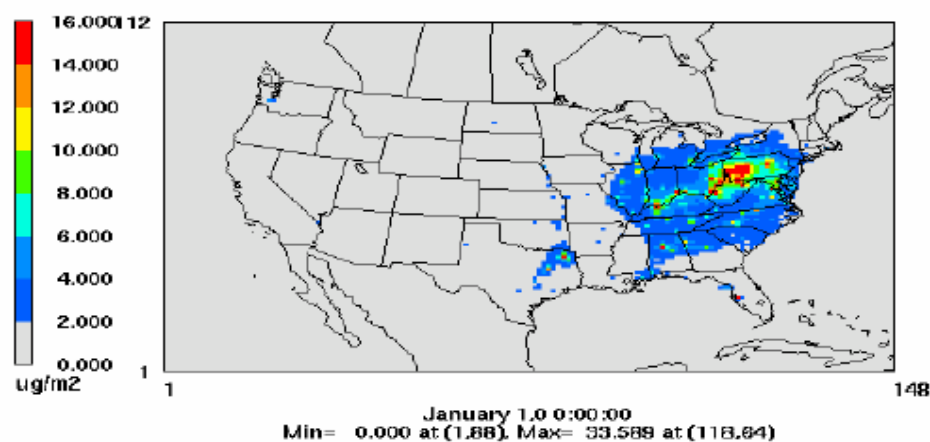
plants as utilities employ greater use of scrubber control technology to reduce SO<sub>2</sub>. These scrubbers effectively capture mercury as well as SO<sub>2</sub>.

**Figure 2: Mercury deposition reductions resulting from CAIR, 2020**



**Figure 8-4. Change in Total Mercury Deposition for All Sources: 2020 (with CAIR) Relative to 2001**

**Figure 3: Mercury deposition reductions resulting from elimination of U.S. utility mercury emissions, 2001**



**Figure 8-3. Decrease in Total Mercury Deposition with Power Plant Zero-Out Simulation: 2001**

## **Mercury Control Technologies**

Achieving high levels of mercury emission control will require major investments in mercury control technologies, in addition to the investments in scrubbers and selective catalytic reduction (SCR) technologies needed to comply with CAIR.

The combination of wet scrubbers and SCR at units burning Illinois bituminous coal can achieve “co-benefit” mercury reductions of 85% or more. However, many older and smaller units do not represent cost-effective candidates for the retrofit of these controls. These units likely would comply with EPA’s mercury rule by a combination of allowance purchases or transfers (e.g., from other units in the same utility system) or by retrofitting mercury-specific emission control technologies such as activated carbon injection (ACI).

### **Risks for Smaller Plants**

Illinois has 22 coal generating units smaller than 250 MW and more than 35 years of age, representing almost 3,200 MW of generating capacity (Attachment 1). These units are the most “at risk” of premature retirement if confronted with inflexible, plant-by-plant mercury control mandates.

Most Illinois units are operated under an economic dispatch system by the PJM RTO, stretching from Illinois to New Jersey. Raising production costs at Illinois units by regulatory requirements not applicable in nearby states, such as Kentucky, Indiana, and Ohio, will reduce the competitiveness of Illinois generation and risk the loss of jobs. IEPA’s analysis of the proposed rule confirms that the rule could cause Illinois to lose as much as 15% of its coal-based generation.<sup>12</sup>

The IEPA rule would impose a 75% minimum plant-level mercury reduction by 2009, with a 90% mercury removal requirement at the system level. By 2013, the 90% reduction requirement would apply to each plant. Because mercury-specific control technologies have not been commercially demonstrated at levels exceeding 90%, it is unlikely that many plants could qualify for the 75% limit in 2009. UJAE therefore is concerned that many smaller units may simply be shut down rather than comply with the IEPA rule.

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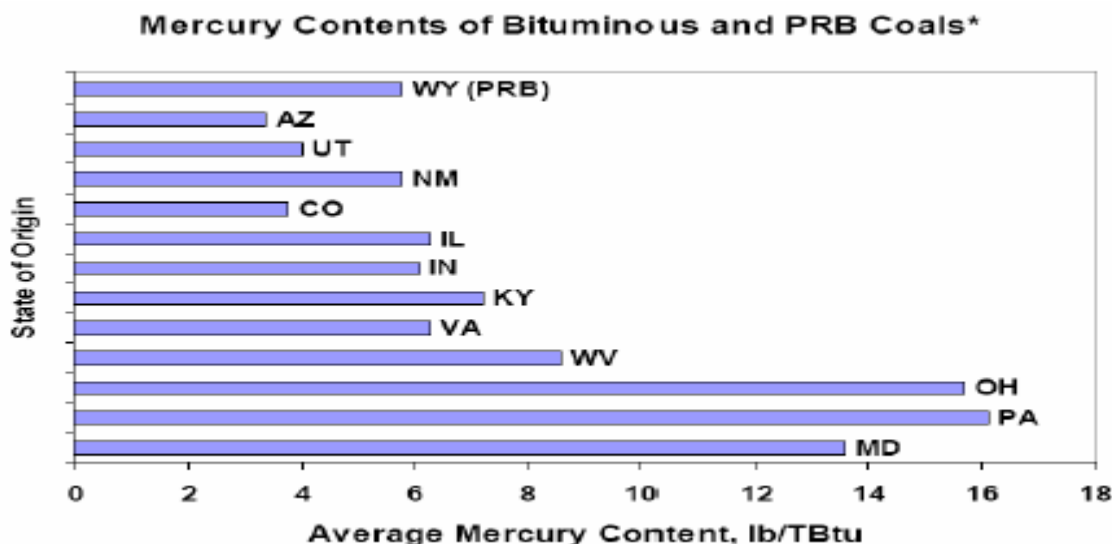
<sup>12</sup> ICF Resources, Analysis of the Proposed Illinois Mercury Rule (March 10, 2006).



## The Rule Will Harm Illinois Coal

Activated carbon injection technologies offer great promise for the cost-effective reduction of mercury emissions, particularly for low-rank western coals.<sup>13</sup> The mercury content of Illinois' coals is comparable with subbituminous coals produced in the Powder River Basin (see Figure 4), widely used in Illinois.

Figure 4



Source: CONSOL, Inc., derived from U.S. EPA ICR mercury database.

To date, most activated carbon injection research has focused on removing mercury from units fueled by lignite and subbituminous coals. Only four of the 19 full-scale ACI tests to date have been conducted with high-sulfur bituminous coals, like those produced in Illinois. Mercury removal performance has been poorer for these coals than for low-sulfur western subbituminous coals.

A recent summary of mercury removal performance by ACI methods suggests that units burning western subbituminous coals may be able to achieve 90% mercury reduction, while units burning eastern bituminous coals may be limited to reductions of 50% to 70% (see Attachment 2).

<sup>13</sup> For EPA's review of the performance and costs of alternative mercury control technologies, see, [http://www.epa.gov/ttn/atw/utility/ord\\_whtpaper\\_hgcontroltech\\_oar-2002-0056-6141.pdf](http://www.epa.gov/ttn/atw/utility/ord_whtpaper_hgcontroltech_oar-2002-0056-6141.pdf)

In sum, it now appears that activated carbon injection - the lowest-cost technology for reducing mercury emissions – is more effective with western subbituminous coals than with Illinois bituminous coals. This means that achieving 90% mercury control at plants burning bituminous coals would require the installation of expensive FGD and SCR systems. This will limit the potential revitalization of the Illinois coalfields, and may lock Illinois generating units into Powder River Basin coal supplies for the indefinite future.

### **Need for a Workable Illinois Mercury Rule**

All UJAE member unions support U.S. EPA's CAMR and its emission trading program as the best approach for reducing mercury emissions in Illinois. IEPA's proposed mercury rule would eliminate trading and banking of emission allowances both in-state and out-of-state. The rule's inflexible plant-by-plant controls will raise electric generation costs by hundreds of millions of dollars annually compared to EPA's CAMR, reduce Illinois' coal-based generation, and threaten job losses at more than 20 small generating units.

Incorporating CAMR's cap-and-trade principles within the Illinois rule would improve its cost-effectiveness, without any demonstrable harm to public health, while increasing the prospects for revitalization of Illinois coal markets by adding flexibility to source compliance options. The most direct means to achieve these goals is to adopt the EPA CAMR rule with its trading program.

Illinois is one of several states that have challenged the legality of EPA's mercury trading rule, on the grounds that the Clean Air Act requires mercury to be controlled by Maximum Achievable Control Technology ("MACT") standards. UJAE suggests that the IEPA rule be modified to ensure that its emission performance standards would not continue to apply in the event that U.S. EPA is required by judicial action to promulgate national MACT standards under section 112 of the Clean Air Act. In this event, the Illinois mercury rule should provide that Illinois generators are subject to the same national MACT standards as other states.

We also suggest that the PCB modify the IEPA rule to conform its deadlines to those required by CAIR or CAMR. Because the largest construction investments will be required to meet CAIR's 2010 and 2015 deadlines, conforming Illinois' deadlines to would help ensure adequate

labor for the coordinated construction and installation of mercury and other pollution controls.

UJAE appreciates the opportunity to submit these comments on the proposed IEPA mercury rule, and hopes that its perspective will be useful to the PCB as it proceeds with the review of the IEPA proposal.

Sincerely

/s/

Eugene M. Trisko  
General Counsel  
Unions for Jobs and  
The Environment

Attachments

Cc: Honorable Esther Lopez  
Honorable Dan Reitz

Attachment 1

IL PLANTS <250 MW  
 AND >35 YEARS OF AGE  
 AS OF 2006

		Mw	Yr Coal
MIDWEST GEN	CRAWFORD 7	239	1958 SUB
SPRING-IL	DALLMAN 1	90	1968 BIT
AMEREN-CILCO	ED EDWARDS 1	136	1960 SUB
DYNEGY	HENNEPIN 1	75	1953 SUB
DYNEGY	HENNEPIN 2	231	1959 SUB
AMEREN ENERGY	HUTSONVILLE 3	75	1953 SUB
AMEREN ENERGY	HUTSONVILLE 4	75	1954 SUB
EEI	JOPPA 1	183	1953 SUB
EEI	JOPPA 2	183	1953 SUB
EEI	JOPPA 3	183	1954 SUB
EEI	JOPPA 4	183	1954 SUB
EEI	JOPPA 5	183	1955 SUB
EEI	JOPPA 6	183	1955 SUB
AMEREN ENERGY	MEREDOSIA 1	58	1948 BIT
AMEREN ENERGY	MEREDOSIA 2	58	1949 BIT
AMEREN ENERGY	MEREDOSIA 3	239	1960 SUB
DYNEGY	VERMILION 1	74	1955 SUB
DYNEGY	VERMILION 2	109	1956 SUB
MIDWEST GEN	WAUKEGAN 6	121	1952 SUB
MIDWEST GEN	WILL COUNTY 1	188	1955 SUB
MIDWEST GEN	WILL COUNTY 2	184	1955 SUB
DYNEGY	WOOD RIVER (IL) 4	113	1954 SUB
TOTAL		3,164	

Note: Lakeside 6 & 7, which fall into the above categories, will be retired between 2009 and 2010

Attachment 2

**2006 Electric Utility Environmental Conference**

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**“Mercury Sorbent Injection with  
Cold-Side ESPs”**



**Sorbent Technologies Corporation**

Sid Nelson Jr.; Ron Landreth, Ph.D.; Xin Liu, Ph.D.;  
Zhong Tang, Ph.D.; & Jon Miller

**Conclusion: B-PAC Appears Widely Applicable**

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<u>Coal</u>	<u>PM Unit</u>	<u>Hg Removal</u>	<u>lb/MMacf</u>	<u>Plant</u>	<u>Utility</u>	<u>Data</u>
Bitum. Low-S	CS ESP	85%	5.0	Allen	Duke	Apogee/ST
Bitum. High-S	CS-ESP	70%	4.0	Lausche	OhioU	SorbTech
Bitum. HighSO <sub>3</sub>	CS ESP	NA**	4.0	Merrimack	PSNH	SorbTech
Bitum. Low-S	HS ESP	80%*	6.4	Cliffside	Duke	SorbTech
Bitum. Low-S	HS ESP	50%	5.0	Buck	Duke	SorbTech
Subbitum.Blend	CS-ESP	90%	3.0	St. Clair	Detroit Ed.	SorbTech
Subbituminous	CS-ESP	90+%	3.0	St. Clair	Detroit Ed.	SorbTech
Subbituminous	CS-ESP	90%	3.2	Stanton 1	GRE	EERC/URS
Lignite	SD/FF	95%	1.5	Stanton 10	GRE	EERC/URS
Lignite	CSESP**	70%***	1.5	Stanton 10	GRE	EERC/URS

\* when under low-load conditions at this plant.  
 \*\* Public Service of New Hampshire has not yet publicly released this data.  
 \*\*\* actually the in-flight Hg removal across the spray dryer.