

Lethal Legacy

A Comprehensive Look at America's Dirtiest Power Plants

Brandon Wu

**U.S. Public Interest Research Group Education Fund
October 2003**

TABLE OF CONTENTS

EXECUTIVE SUMMARY	3
BACKGROUND: HEALTH AND ENVIRONMENTAL IMPACTS OF POWER PLANT POLLUTION	8
Fine Particle “Soot”	8
Ozone “Smog”	8
Mercury Poisoning.....	8
Global Warming.....	9
Acid Rain.....	9

PROMISES

EXECUTIVE SUMMARY

Since taking office in 2001, President Bush and his administration have broken two important promises to the American public concerning pollution emitted by the nation's oldest and dirtiest power plants.

Just 60 days after taking office, under intense pressure from electric utilities and the coal industry, the Bush administration retracted its campaign promise to support a mandatory cap on power plant emissions of carbon dioxide, the leading cause of global warming.

Then, in August 2003, the Bush administration issued final rule changes to the Clean Air Act's New Source Review program, breaking a decades-old promise codified in the Clean Air Act itself—that old power plants, when making other life-prolonging modifications, would be required to install modern pollution controls. This policy change marks a full retreat from the previous administration's effort to enforce this law.

Each of these broken promises carries with it serious consequences for public health and the environment.

- Millions of tons of soot- and smog-forming emissions each year will go unchecked as a result of the administration's changes to the New Source Review program. This pollution will

cause as many as 400,000 asthma attacks and 20,000 premature deaths each year.¹

- This same pollution will continue to cause acid rain and acid fog, which at current levels has rendered 25 percent of Adirondack lakes incapable of supporting life and has caused the decline of forest ecosystems throughout the Eastern U.S. and Canada.²

- Our national parks and wilderness areas will continue to be shrouded in a pollution-induced haze, which already diminishes summertime visibility of treasured vistas, such as those in the

emissions by at least this amount.⁵ Sulfur dioxide pollution forms fine-particle “soot,” which causes health and environmental problems such as premature death from heart and respiratory problems, acid rain, and haze in our national parks.

Nitrogen Oxides

Nationwide, these 548 plants emitted 4.4 million tons of NOx in 2002. This is nearly 20 percent of total NOx emissions (about 22 million tons) from all sources in the U.S. in 2001.⁶ Of this pollution, 62% (2.7 million tons) was “2 7.4(millio 2040492m l.1d2hgr el.3(200-3.8ar))-5.4(tons) from all s)-M

Excess Sulfur Dioxide and Nitrogen Oxide Emissions

Eleven plants emitted more than 90,000 tons of “excess” SO₂ in 2002, which could be eliminated if the

States with the Most Power Plant Pollution

The states with highest levels of power plant emissions in 2002 were:

Rank	State		
	SO ₂	NO _x	CO ₂
1	Ohio	Ohio	Texas
2	Pennsylvania	Indiana	Ohio
3	Indiana	Florida	Indiana
4	Texas	West Virginia	Pennsylvania
5	Georgia	Texas	Florida
6	West Virginia	Pennsylvania	Kentucky
7	Kentucky	Kentucky	Illinois
8	North Carolina	Illinois	West Virginia
9	Florida	Alabama	Alabama
10			

- Setting strong sulfur and nitrogen standards for power plants; and
- Setting mercury emission standards by December 2004 that will require application of the maximum achievable control technology to reduce power plant mercury emissions by 90 percent by 2008.

Overall, a sound policy to clean up air pollution from the nation's dirtiest power plants would:

- Include mandatory carbon dioxide limits requiring real reductions of carbon dioxide from the electric power sector;
- Eliminate “grandfathering” and ensure that every plant reduces NO_x, SO₂ and mercury emissions to levels reflecting application of state-of-the-art pollution controls;
- Maintain current Clean Air Act requirements and deadlines for meeting air quality goals; and
- Set aggressive national emission caps for power plant NO_x, SO₂ and mercury.

B

PROMISES MADE TO AMERICANS, PROMISES BROKEN BY THE BUSH ADMINISTRATION

Background: “Grandfathering” of Old, Dirty Power Plants

In 1977, while amending the original 1970 Clean Air Act, Congress adopted the “New Source Review” (NSR) program to ensure that major sources of pollution, both new and existing, would use modern pollution control technologies.²⁶ At that time, Congress required major new sources to use the “best available control technologies” if they were located in areas with clean air and even more aggressive controls, termed “lowest achievable emission rates,” if located in an area not meeting national health standards.

For the existing plants—the old, dirty power plants—Congress decided to require that new pollution controls be installed when the facility made a modification, defined as “any physical change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted.”²⁷ The reason was logical: it would be less costly to install pollution controls when a plant was already undergoing construction.²⁸

The National Academy of Public Administrators (NAPA), an independent, nonpartisan organization chartered by Congress, concluded in its April 2003 analysis of the NSR program that given the “breadth of the statutory language as it applies to existing sources and the legislative history of NSR, the Panel believes that Congress clearly did not intend for grandfathering of existing sources to continue indefinitely. Rather, Congress envisioned that sources already planned or existing by 1977 would either be upgraded or replaced over time and that, whenever changes were made later, existing facilities would install cleaner technologies to minimize air pollution.”²⁹ Notwithstanding, many power plants have avoided the New Source Review program’s requirements. In some instances, plant owners have claimed that their modifications are simply “routine

maintenance,” which EPA, not Congress, exempted from triggering New Source Review.

As a result, today two distinct types of power plants are operating – older dirty plants and newer clean plants. Twenty-six years after enactment of the NSR program, the vast majority of pre-1977 facilities have ancient or no pollution controls at all. These plants account for most of the emissions in the U.S.

The NSR program, if enforced, could dramatically improve air quality. According to the Department of Energy’s Energy Information Administration, full implementation of the NSR program to existing power plants would lower SO₂ emissions from these plants from more

2

plant pollution as president. Two things are clear from reading these statements. First, the President was pledging to eliminate

In 2001, Vice President Cheney's industry-led National Energy Policy Development Group issued a paper instructing EPA to conduct an analysis of the NSR program's impact on energy supplies. In response, EPA reversed its previous position and stated that NSR needed to be reformed to ensure reliable electricity and oil refining capacity.

In the last weeks of 2002, EPA finalized changes

REPORT FINDINGS: THE COUNTRY'S DIRTIEST POWER PLANTS

More than 1,100 power plants report emissions to EPA, which compiles the information in its acid rain database. Almost half of the plants (548) emitted 20 tons or more “excess” sulfur dioxide or nitrogen oxide pollution—pollution that could be eliminated with modern pollution control technology. These plants represent most of the generating capacity in the electric sector and emit most of the industry’s pollution. Specifically, these 548 plants accounted for 98 percent of the nitrogen oxides emitted by power plants in 2002; more than 99 percent of power plant sulfur dioxide emissions; and 91 percent of power plant carbon dioxide emissions. (It should be noted that power plants are also the largest source of toxic mercury emissions into the air. Mercury is not included in this report because EPA does not collect mercury emissions data as part of its acid rain database.)

The following report findings focus on these 548 power plants.

Sulfur Dioxide Emissions

These 548 dirty power plants emitted a combined total of 10,166,099 tons of sulfur dioxide (SO₂) in 2002. Of this, 70 percent (7,148,203 tons) could be eliminated by requiring these plants to meet modern emissions standards and install the best pollution control technology.

Overall, SO₂ emissions from *all* power plants reporting to EPA’s acid rain database fell by

nine percent between 2000 and 2002; however, the 2002 emissions (10.2 million tons) remain 1.3 million tons above the level mandated by the 1990 acid rain amendments to the Clean Air Act, due to the use of banked emission credits.⁴⁶

In 2002, the Bowen plant in Georgia emitted more SO₂ than any other plant in the nation (Table 2). This single plant emitted more SO₂ pollution than all of the plants in Delaware, Utah, Montana, Washington, Oregon, South Dakota, Connecticut, Maine, DC, and California combined. The same could be said of the Hatfields Ferry and Keystone plants in Pennsylvania and the Sammis plant in Ohio.

Requiring these plants to meet modern emissions standards would dramatically cut SO₂ emissions at many of these plants. For example, as shown in Table 1, 11 plants emitted at least 90,000 tons of “excess” SO₂ emissions in 2002—pollution that could be eliminated with modern pollution control technology. Installing scrubbers on just these 11 plants would reduce SO₂ emissions by 1.2 million tons per year.

Residents of the Midwest, Mid-Atlantic and Southeast would benefit most from pollution reduction at these plants. Enforcing the NSR program and installing modern pollution controls would eliminate almost 937,000 tons of emissions from Ohio alone; more than 742,000 tons of emissions from Pennsylvania; and 392,000 tons from Georgia (Table 3).

Table 1: Plants with Greatest Excess SO₂ Emissions

State	Plant Name	SO ₂ (tons)	Excess SO ₂ (tons)	% Excess
PA	Hatfields Ferry	158,713	144,029	91
PA	Keystone	150,619	133,774	89
GA	Bowen	160,673	128,493	80
OH	WH Sammis	145,114	121,934	84
OH	Conesville	135,526	120,593	89
AL	EC Gaston	127,732	108,349	85
OH	Muskingum River	115,526	103,591	90
IN	Gibson	127,732	99,217	78
PA	Montour	111,445	98,354	88
OH	JM Stuart	117,549	94,778	81

Table 2: 50 Power Plants with Most SO2 Emissions, 2002

Rank	State	Plant Name	ORISPL	SO2 (tons)	SO2 Rate (lbs/mmBTU)	Excess SO2 (tons)	% Excess
1	GA	Bowen	703	160,673	1.50	128,493	80
2	PA	Hatfields Ferry	3179	158,713	3.24	144,029	91
3	PA	Keystone	3136	150,619	2.68	133,774	89
4	OH	W H Sammis	2866	145,114	1.88	121,934	84
5	OH	Conesville	2840	135,526	2.72	120,593	89
6	AL	E C Gaston	26	127,732	1.98	108,349	85
7	IN	Gibson	6113	127,357	1.36	99,217	78
8	OH	J M Stuart	2850	117,549	1.55	94,778	81
9	OH	Muskingum River	2872	115,526	2.90	103,591	90
10	PA	Montour	3149	111,445	2.55	98,354	88
11	TN	Johnsonville	3406	108,793	2.		

Table 3: SO2 Emissions by State, 2002

Rank	State	# Plants	# Dirty	SO2 (tons)	Excess SO2 (tons)	% Excess
1	Ohio	45	23	1,132,060	936,843	83
2	Pennsylvania	48	26	889,386	742,533	83
3	Indiana	35	24	778,864	592,146	76
4	Texas	128	48	561,974	333,253	59
5	Georgia	32	12	512,621	391,727	76
6	West Virginia	17	14	507,095	384,180	76
7	Kentucky	27	21	482,647	342,240	71
8	North Carolina	20	17	462,964	357,691	77
9	Florida	62	26	449,617	293,110	65
10	Alabama	19	9	448,221	323,865	72
11	Illinois	54	24	353,157	213,405	60
12	Michigan	34	19	342,751	234,016	68
13	Tennessee	12	7	333,570	251,217	75
14	Maryland	13	10	255,345	208,034	81
15	Missouri	29	17	231,771	129,821	56
16	Virginia	20	11	230,816	181,109	78
17	New York	60	19	229,191	176,234	77
18	South Carolina	18	12	199,105	143,875	72
19	Wisconsin	30	17	191,012	121,825	64
20	North Dakota	7	7	140,534	89,642	64
21	Kansas	23	15	129,763	65,912	51
22	Iowa	23	19	127,826	68,863	54
23	Oklahoma	23	14	106,308	46,589	44
24	Louisiana	33	14	101,730	57,036	56
25	Minnesota	20	14	100,939	42,225	42
26	Massachusetts	19	7	90,479	62,675	69
27	Colorado	22	13	87,694	39,196	45
28	Wyoming	7	6	79,506	23,377	29
29	Arkansas	15	9	70,724	31,501	45
30	Arizona	19	7	70,662	29,718	42
31	Nebraska	13	9	67,342	33,289	49
32	Mississippi	23	9	67,045	37,211	56
33	New Mexico	13	7	50,815	11,003	22
34	Nevada	10	7	49,233	25,774	52
35	New Jersey	19	5	47,798	34,703	73
36	New Hampshire	4	3	43,935	36,157	82
37	Delaware	8	4	32,219	23,827	74
38	Utah	9	6	32,130	9,660	30
39	Montana	4	3	20,650	1,323	6
40	Washington	6	1	19,032	3,627	19
41	Oregon	6	1	12,262	6,229	51
42	South Dakota	5	1	11,756	6,393	54
43	Connecticut	13	5	10,471	3,287	31
44	Maine	8	1	1,982	1,294	65
45	District of Columbia	1	1	1,087	569	52
46	California	63	4	12	0	0

Nitrogen Oxide Emissions

The 548 dirty plants detailed in this report emitted a combined total of 4,375,637 tons of nitrogen oxides (NOx) in 2002. Of this, 62 percent (2,720,095 tons) could be eliminated by requiring these plants to meet modern emissions standards.

Overall, NOx emissions from *all* power plants reporting to EPA's acid rain database fell by 12 percent between 2000 and 2002.⁴⁷

The Cumberland plant in Tennessee was the largest single emitter of NOx in the nation in 2002 (Table 5). Cumberland's NOx emission of 49,943 tons was greater than the emission of all the dirty plants in South Dakota, Delaware, Oregon, New Hampshire, California, Connecticut, Maine, and DC combined and more than 40,000 tons greater than the average NOx emission of 7,985 tons per dirty plant.

Table 4 shows that 10 plants emitted at least 30,000 tons of "excess" NOx in 2002, or NOx that could be eliminated by installing modern pollution controls or enforcing the NSR program. Installing such controls on these ten plants alone would eliminate some 326,000 tons of NOx.

The states that would benefit most from NOx pollution controls are, just as with sulfur dioxide, those in the Midwest, Mid-Atlantic and Southeast (Table 6). All but one of the top ten NOx-emitting states are in one of those three regions (the one exception being Texas), with Ohio being far and away the largest emitter nationwide. Ohio's 368,254 tons of NOx emitted in 2002 was 8.4 percent of

Table 6: NOx Emissions by State, 2002

Rank	State	# Plants	# Dirty	NOx (tons)	Excess NOx (tons)	% Excess
1	Ohio	45	23	368,254	270,553	73
2	Indiana	35	24	280,837	187,416	67
3	Florida	62	26	241,843	157,688	65
4	West Virginia	17	14	225,791	158,384	70
5	Texas	128	48	221,286	79,856	36
6	Pennsylvania	48	26	200,137	120,515	60
7	Kentucky	27	21	198,089	126,630	64
8	Illinois	54	24	171,185	103,550	60
9	Alabama	19	9	160,761	98,582	61
10	Tennessee	12	7	154,347	107,570	70
11	Georgia	32	12	145,605	85,158	58
12	North Carolina	20	17	145,175	92,465	64
13	Missouri	29	17	137,066	90,360	66
14	Michigan	34	19	131,460	77,080	59
15	Kansas	23	15	94,954	61,284	65
16	Wisconsin	30	17	88,517	53,644	61
17	Minnesota	20	14	86,289	56,684	66
18	Oklahoma	23	14	85,416	46,533	54
19	Wyoming	7	6	83,250	47,931	58
20	Arizona	19	7	82,871	48,918	59
21	South Carolina	18	12	82,428	53,182	65
22	Iowa	23	19	78,941	49,512	63
23	New Mexico	13	7	78,225	53,327	68
24	Virginia	20	11	78,137	48,877	63
25	North Dakota	7	7	75,947	50,501	66
26	Louisiana	33	14	734,985	331,706.8	45.1

Carbon Dioxide Emissions

The 548 dirty plants detailed in this report released 2,209,251,861 tons of carbon dioxide in 2002. This is almost 35 percent of total CO₂ emissions (about 6.4 billion tons) from all sources in the U.S. in 2001.⁴⁸ Because there are no codified emissions standards for CO₂, we cannot calculate “excess” CO₂ emissions as we did for SO₂ and NO_x.

Overall, CO₂ emissions from *all* power plants reporting to EPA’s acid rain database fell by one percent between 2000 and 2002.⁴⁹

Power plants in Texas emitted more CO₂ than in any other state in 2002. Its 180,914,682 tons

of CO₂ emissions comprise more than 8 percent of total emissions from the 548 dirty power plants in this study. With regards to individual plant emissions, two plants from Georgia – Bowen and Scherer – led the nation in 2002, with each of these plants releasing approximately 22 million tons of CO₂ that year (Table 7).

Once more, aside from Texas, the top ten list of states with the highest CO₂ emissions is comprised of Midwestern, Mid-Atlantic and Southeastern states. Ohio, Indiana, and Pennsylvania are among the top polluters with regards to CO₂, just as they are for NO_x and SO₂ (Table 8).

Table 7: 50 Power Plants with Most CO2 Emissions, 2002

Rank	State	Plant Name	ORISPL	CO2 (tons)	CO2 Emissions Rate (lbs/mmBTU)
1	GA	Bowen	703	22,011,155	205.20
2	GA	Scherer	6257	21,983,231	205.20
3	TX	W A Parish	3470	20,707,557	198.06
4	AZ	Navajo	4941	20,458,265	205.20
5	AL	James H Miller Jr	6002	19,619,478	205.20
6	IN	Gibson	6113	19,247,465	205.20
7	TN	Cumberland	3399	19,058,149	205.20
8	KS	Jeffrey Energy Center	6068	18,723,049	205.20
9	MN	Sherburne County	6090	18,220,647	205.20
10	TX	Martin Lake	6146	17,719,307	209.53
11	WV	John E Amos	3935	17,429,396	205.21
12	IN	Rockport	6166	16,837,252	205.20
13	WY	Jim Bridger	8066	16,620,442	205.20
14	KY	Paradise	1378	16,350,089	205.20
15	MT	Colstrip	6076	16,262,887	205.18

Table 8: CO2 Emissions by State, 2002

Rank	State	# Plants	# Dirty	CO2 (tons)
1	Texas	128	48	180,914,682
2	Ohio	45	23	133,632,891
3	Indiana	35	24	127,814,259
4	Pennsylvania	48	26	108,295,123
5	Florida	62	26	104,261,375
6	Kentucky	27	21	97,480,110
7	Illinois	54	24	95,603,635
8	West Virginia	17	14	92,217,101
9	Alabama	19	9	82,936,608
10	Georgia	32	12	81,670,356
11	Michigan	34	19	73,385,533
12	North Carolina	20	17	71,904,826
13	Missouri	29	17	69,800,734
14	Tennessee	12	7	63,831,223
15	Wyoming	7	6	48,176,101
16	Wisconsin	30	17	47,569,472
17	Oklahoma	23	14	46,792,731
18	Arizona	19	7	45,683,322
19	Kansas	23	15	44,988,352
20	Colorado	22	13	41,074,652
21	Minnesota	20	14	40,404,999
22	Iowa	23	19	40,278,652
23	South Carolina	18	12	39,676,024
24	Louisiana	33	14	39,528,438
25	Virginia	20	11	39,015,186
26	New York	60	19	37,511,586
27	Utah	9	6	37,101,272
28	North Dakota	7	7	36,937,498
29	New Mexico	13	7	32,832,042
30	Maryland	13	10	31,276,143
31	Arkansas	15	9	27,703,530
32	Nebraska	13	9	23,374,128
33	Mississippi	23	9	23,152,173
34	Nevada	10	7	22,250,574
35	Montana	4	3	18,062,625
36	Massachusetts	19	7	17,837,375
37	Washington	6	1	10,484,141
38	New Jersey	19	5	8,650,484
39	Delaware	8	4	5,395,274
40	New Hampshire	4	3	5,073,218
41	Connecticut	13	5	4,338,154

RECOMMENDATIONS

It is time for the Bush administration to make good on promises to clean up the electric power industry. The Bush administration should fulfill the promise of the Clean Air Act to clean up the dirtiest power plants as well as deliver on the President's campaign pledge to cut U.S. emissions of carbon dioxide.

In order to ensure all Americans have healthy air to breathe, the Bush administration's Environmental Protection Agency (EPA) should faithfully implement the congressionally-mandated Clean Air Act programs applicable to power plants, including:

- Rescinding recently adopted regulatory changes to the New Source Review program



State	Plant Name	ORISPL	SO2 (tons)	CO2 (tons)	NOx (tons)	Heat Input (mmBTU)	NOx Rate	SO2 Rate	
-------	------------	--------	------------	------------	------------	--------------------	----------	----------	--

State	Plant Name	ORISPL	SO2 (tons)	CO2 (tons)	NOx (tons)	Heat Input (mmBTU)	NOx Rate	SO2 Rate	
-------	------------	--------	------------	------------	------------	--------------------	----------	----------	--



State	Plant Name	ORISPL	SO2 (tons)	CO2 (tons)	NOx (tons)	Heat Input (mmBTU)	NOx Rate	SO2 Rate	CO2 Rate	Excess SO2 (tons)	Excess NOx (tons)
OH	Ashtabula	2835	8,458	1,643,444	2,945	16,070,045	0.37	1.05	204.54	6,047	1,740
OH	Avon Lake	2836	45,989	4,646,516	18,078	45,266,495	0.80	2.03	205.30	39,199	14,683
OH	Bay Shore	2878	13,581	4,072,748	8,417	39,288,403	0.43	0.69	207.33	7,687	5,470

State	Plant Name	ORISPL	SO2 (tons)	CO2 (tons)	NOx (tons)	Heat Input (mmBTU)	NOx Rate	SO2 Rate	CO2 Rate	Excess SO2 (tons)	Excess NOx (tons)
PA	Mitchell	3181	1,164	1,288,267	2,275	12,598,037	0.36	0.18	204.52	0	1,330
PA	Montour	3149	111,445	8,954,560	12,331	87,276,467	0.28	2.55	205.20	98,354	5,785
PA	New Castle	3138	25,551	1,949,030	3,504	18,996,021	0.37	2.69	205.20	22,702	2,079
PA	Portland	3113	24,320	2,011,568	3,015	19,743,819	0.31	2.46	203.77	21,358	1,534



State	Plant Name	ORISPL	SO2 (tons)	CO2 (tons)	NOx (tons)	Heat Input (mmBTU)	NOx Rate	SO2 Rate	CO2 Rate	Excess SO2 (tons)	Excess NOx (tons)
WI	Pleasant Prairie	6170	33,446	9,387,218	21,487	91,493,368	0.47	0.73	205.20	19,722	14,625
WI	Port Washington	4040	9,804	1,057,002	1,729	10,302,121	0.34	1.90	205.20	8,258	956
WI	Pulliam	4072	6,901	3,182,265	8,226	31,016,381	0.53	0.45	205.20	2,249	5,900
WI	Rock River	4057	9	184,148	452	3,102,154	0.29	0.01	118.72	0	219
WI	South Oak Creek	4041	12,869	6,588,934	6,535	64,219,629	0.20	0.40	205.20	3,236	1,719
WI	Stoneman	4146	241	20,371	37	198,555	0.37	2.42	205.19	211	22
WI	Valley (WEPCO)	4042	14,686	1,777,957	3,281	17,329,069	0.38	1.69	205.20	12,086	1,981
WI	Weston	4078	11,792	4,022,815	6,257	39,208,727	0.32	0.60	205.20	5,911	3,317
WV	Albright	3942	20,560	1,702,181	4,672	16,590,381	0.56	2.48	205.20	18,072	3,428
WV	Fort Martin	3943	91,119	7,551,652	11,236	73,602,855	0.31	2.48	205.20	80,079	5,715
WV	Harrison	3944	8,691	13,997,732	29,090	136,430,137	0.43	0.13	205.20	0	18,857
WV	John E Amos	3935	107,619	17,429,396	43,501	169,867,887	0.51	1.27	205.21	82,139	30,761

APPENDIX B. EMISSIONS FROM DIRTY POWER PLANTS: BY STATE

State	# Plants	# Dirty	SO ₂ (tons)	CO ₂ (tons)	NO _x (tons)	Excess SO ₂ (tons)	Excess NO _x (tons)
Alabama	19	9	448,221	82,936,608	160,761	323,865	98,582
Arizona	19	7	70,662	45,683,322	82,871	29,718	48,918
Arkansas	15	9	70,724	27,703,530	41,634	31,501	20,753
California	63	4	12	1,863,440	5,047	0	2,695
Colorado	22	13	87,694	41,074,652	71,565	39,196	41,446
Connecticut	13	5	10,471	4,338,154	4,388	3,287	792
Delaware	8	4	32,219	5,395,274	8,577	23,827	4,381
District of Columbia	1	1	1,087	279,433	410	569	151
Florida	62	26	449,617	104,261,375	241,843	293,110	157,688
Georgia	32	12	512,621	81,670,356	145,605	391,727	85,158
Idaho	3	0	0	0	0	0	0
Illinois	54	24	353,157	95,603,635	171,185	213,405	103,550
Indiana	35	24	778,864	127,814,259	280,837	592,146	187,416
Iowa	23	19	127,826	40,278,652	78,941	68,863	49,512
Kansas							

State	# Plants	# Dirty	SO2 (tons)	CO2 (tons)	NOx (tons)	Excess SO2 (tons)	Excess NOx (tons)
Texas	128	48	561,974	180,914,682	221,286	333,253	79,856
Utah	9	6	32,130	37,101,272	71,545	9,660	44,381
Vermont	1	0	0	0	0	0	0
Virginia	20	11	230,816	39,015,186	78,137	181,109	48,877
Washington	6	1	19,032	10,484,141	15,470	3,627	7,767
West Virginia	17	14	507,095	92,217,101	225,791	384,180	158,384
Wisconsin	30	17	191,012	47,569,472	88,517	121,825	53,644
Wyoming	7	6	79,506	48,176,101	83,250	23,377	47,931
TOTAL			10,166,099	2,209,251,861	4,375,637	7,148,204	2,720,095

END NOTES

- ¹ These numbers were calculated by the Clean Air Task Force, using data from the U.S. Energy Information Administration on likely emissions decreases resulting from full application of the NSR program, in its December 2000 study entitled *Analysis of Strategies for Reducing Multiple Emissions from Power Plants: Sulfur Dioxide, Nitrogen Oxides and Carbon Dioxide*.
- ² Baker, J.P., J. Van Sickle, C.J. Gagen, D.R. DeWalle, W.E. Sharpe, R.F. Carline, B.P. Baldigo, P.S. Murdoch, D.W. Bath, W.A. Kretser, H.A. Simonin, and P.J. Wigington, 1996. Episodic acidification of small streams in the Northeastern United States: Effects of fish populations. *Ecological Applications* 6(2): 422-437.
- ³ U.S. EPA, National Air Quality and Emissions Trends Report, www.epa.gov/ttn/chieftrends/trends01/trends2001_aug2003.zip.
- ⁴ Note in methodology section that for the purposes of this report we use 0.30 pounds of sulfur dioxide per million BTUs of fuel input as the modern emission standard for sulfur. That this standard is being met routinely can be verified in EPA's RACT/BACT/LAER clearinghouse, <http://cfpub1.epa.gov/rblc/htm/bl02.cfm>.
- ⁵ The U.S. Energy Information Administration report cited in Note 1 estimates that full application of the New Source Review program would cut SO₂ emissions to just 1.9 million tons, eliminating 8.2 million tons. EIA's numbers reflect an assumption that some sources would repower or retire rather than install new pollution controls.
- ⁶ U.S. EPA, National Air Quality and Emission Trends Report, www.epa.gov/ttn/chieftrends/trends01/trends2001_aug2003.zip.
- ⁷ Note in methodology section that for the purposes of this report we use 0.15 pounds of sulfur dioxide per million BTUs of fuel input as the modern emission standard for sulfur. That this standard is being met routinely can be verified in EPA's RACT/BACT/LAER clearinghouse, <http://cfpub1.epa.gov/rblc/htm/bl02.cfm>.
- ⁸ The EIA study cited in Note 1 also projected that enforcement of NSR would reduce power plant NO_x emissions to just 1.6 million tons, a cut of about 2.8 million tons. Again, this reflects the assumption that some sources would retire rather than install pollution controls if forced to comply with NSR.
- ⁹ Energy Information Administration, *Emissions of Greenhouse Gases in the United States 2001*. Report #: DOE/EIA-0573. Available at <http://www.eia.doe.gov/oiaf/1605/ggrpt/carbon.html>.
- ¹⁰ Woodruff, T.J., Grillo, J. and Schoendorf, K.C. "The Relationship Between Selected Causes of Post-neonatal Infant Mortality and Particulate Air Pollution in the United States." *Environmental Health Perspectives*, 105(6), June 1997.
- ¹¹ See, e.g., Gold, D. et al., "Ambient Pollution and Heart Rate Variability," *Circulation*, v. 101, 1267-1273, American Heart Association (March 21, 2000).
- ¹² See summary of studies, Wilson and Spengler, *Particles in Our Air: Concentrations and Health Effects* (1999), at 212.
- ¹³ Abt Associates, *The Particulate-Related Health Benefits of Reducing Power Plant Emissions* (October 2000).
- ¹⁴ The American Lung Association, *State of the Air: 2001*, available at www.lungusa.org.
- ¹⁵ *Out of Breath, Health Effects from Ozone in the Eastern United States*, Prepared by Abt Associates for Clear the Air, October 1999.
- ¹⁶ Centers for Disease Control, January 2003. Second National Report on Human Exposure to Environmental Chemicals.
- ¹⁷ Clean Air Task Force from 2000 Census data and fertility data from the National Center for Health Statistics.
- ¹⁸ U.S. EPA "Mercury Study Report to Congress," 1997.
- ¹⁹ Id.
- ²⁰ International Panel on Climate Change, Reports of Working Groups I, II and III, Available on the web at www.ipcc.ch, March 11, 2001.
- ²¹ National Atmospheric Deposition Program, 2001.
- ²² Baker, J.P., J. Van Sickle, C.J. Gagen, D.R. DeWalle, W.E. Sharpe NatioStudy . NaonsB0006 .48 0 0 6J7sAbdic,

