Lethal Legacy

A Comprehensive Look at America's Dirtiest Power Plants

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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 Great Smokey Mountains and Shenandoah National Park, by as much as 90 percent.

• The U.S., which emits the most carbon dioxide in the world, will continue to delay meaningful action to reduce its emissions of this global warming gas.

As detailed below, enforcement of the Clean Air Act could dramatically cut emissions from the nation's dirtiest power plants, thereby protecting the environment and public health. Similarly, weakening the Clean Air Act—as the Bush administration has done—could erode progress made to improve the nation's air quality over the last three decades.

Key Findings

This report documents the 2002 emissions of smog-forming nitrogen oxides (NOx), soot-forming sulfur dioxide (SO2), and carbon dioxide (CO2) from the 548 dirtiest power plants in the nation and quantifies the emissions that will continue unabated as a result of the Bush administration's policies. Each of the plants examined in this report emitted at least 20 tons of "excess" NOx or SO2—emissions that could be eliminated if the plant was to install modern pollution control equipment.

Sulfur Dioxide (SO2)

Nationwide, the 548 dirtiest plants emitted 10.1 million tons of SO2 in 2002. This is about 64 percent of total SO2 emissions (about 15.8 million tons) from all sources in the U.S. in 2001.[3] Of this pollution, 70 percent (7.1 million tons) was "excess," or could be eliminated if the plants met modern emissions standards.[4] Enforcing—rather than weakening—the New Source Review rules would reduce SO2

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 "excess," or could be eliminated if the plants met modern NOx emission standards.[7] Enforcing—rather than weakening—the New Source Review rules would reduce NOx emissions by at least this amount.[8] NOx forms "smog" or ground-level ozone, which in turn exacerbates or even causes respiratory illness and asthma. Smog pollution also creates acid rain and clouds scenic vistas.

Carbon dioxide (CO2)

Nationwide, these 548 plants emitted 2.2 billion tons of CO2 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.[9] CO2 is the leading cause of global warming.

Power Plants with Most Emissions in 2002

The ten power plants emitting the most sulfur dioxide, nitrogen oxides, and carbon dioxide in 2002 are as follows:

Rank	Plant Name and State		
	SO2	**NOx**	**CO2**
1	Bowen, GA	Cumberland, TN	Bowen, GA
2	Hatfields Ferry, PA	Paradise, KY	Scherer, GA
3	Keystone, PA	JM Stuart, OH	WA Parish, TX
4	WH Sammis, OH	Belews Creek, NC	Navajo, AZ
5	Conesville, OH	Gen. JM Gavin, OH	James H Miller, AL
6	EC Gaston, AL	John E Amos, WV	Gibson, IN
7	Gibson, IN	Monroe, MI	Cumberland, TN
8	JM Stuart, OH	Four Corners, NM	Jeffrey, KS
9	Muskingum River, OH	Mount Storm, WV	Sherburne Co, MN
10	Montour, PA	WH Sammis, OH	Martin Lake, TX

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 plants met modern emissions standards. Installing scrubbers on these 11 plants alone could cut sulfur emissions by more 1.2 million tons per year.

Rank	Plant/State	SO2 Emissions (tons)	Excess SO2 Emissions/% excess
1	Hatfields Ferry, PA	158,713	144,029 (91%)
2	Keystone, PA	150,619	133,774 (89%)
3	Bowen, GA	160,673	128,493 (80%)
4	WH Sammis, OH	145,114	121,934 (84%)
5	Conesville, OH	135,526	120,593 (89%)
6	EC Gaston, AL	127,732	108,349 (85%)
7	Muskingum River, OH	115,526	103,591 (90%)
8	Gibson, IN	127,357	99,217 (78%)
9	Montour, PA	111,445	98,534 (88%)
10	JM Stuart, OH	117,549	94,778 (81%)
11	Johnsonville, TN	108,793	94,660 (87%)

Similarly, 10 plants emitted more than 30,000 tons of "excess" NOx in 2002, which could be eliminated if the plants met modern emissions standards.

Rank	Plant/State	NOx Emissions (tons)	Excess NOx Emissions/% excess
1	Cumberland, TN	49,943	36,021 (72%)
2	JM Stuart, OH	46,769	35,383 (76%)
3	Paradise, KY	47,027	35,075 (75%)
4	Belews Creek, NC	44,882	33,405 (74%)
5	Gen Gavin, OH	43,839	32,616 (74%)
6	New Madrid, MO	37,465	31,556 (84%)
7	John Amos, WV	43,501	30,761 (71%)
8	Four Corners, NM	41,577	30,655 (74%)
9	Mt. Storm, WV	39,876	30,506 (77%)
10	LaCygne, KS	38,419	30,125 (78%)

States with the Most Power Plant Pollution
The states with highest levels of power plant emissions in 2002 were:

Rank	State		
	SO2	**NOx**	**CO2**
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	Alabama	Tennessee	Georgia

Regional Comparisons
The bulk of power plant emissions originate from plants in the Midwest and the South. In fact, these two regions are home to the plants that released 74 percent of the SO2, 72 percent of the NOx and 68 percent of the CO2 emitted by all 548 dirty power plants in 2002. The Mid-Atlantic and Southwest regions follow, while New England and the West emitted the smallest amount of power plant pollution in 2002.

	CO2 (tons)	SO2 (tons)	NOx (tons)	Excess SO2 (tons)	Excess NOx (tons)
South	763,376,948	3,866,154	1,592,340	2,794,762	1,012,774
Midwest	737,458,483	3,607,774	1,575,412	2,534,379	1,042,694
Southwest	306,222,778	789,758	467,798	420,563	228,634
Mid Atlantic	191,408,042	1,455,026	366,078	1,185,900	220,176
West	183,139,801	300,520	335,081	109,187	198,765
New England	27,645,809	146,867	38,929	103,414	17,051
	2,209,251,861	**10,166,099**	**4,375,637**	**7,148,204**	**2,720,095**

Recommendations

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 and enforcing the rules that were in place when the Bush administration took office;

- Enforcing the ambient air quality standards to ensure that all Americans will breathe air that meets federal health standards by the end of this decade as required by the Clean Air Act;

• 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 NOx, 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 NOx, SO2 and mercury.

Background: Health and Environmental Impacts of Power Plant Pollution

Fine Particle "Soot"

Power plants emit sulfur dioxide (SO2) and nitrogen oxides (NOx), which are converted in the atmosphere into fine particle aerosols. When inhaled, these aerosols are extremely hazardous to our health. In the last decade, extensive research has linked these particles to dozens of health problems, including asthma attacks, heart attacks, hospitalization for respiratory and cardiovascular disease, chronic bronchitis, and premature mortality.

Fine particles are especially harmful to children, the elderly, and people with preexisting lung or heart problems:

• One study found that babies in cities with high levels of particulate pollution had a 26 percent increased risk for Sudden Infant Death Syndrome (SIDS).[10]

• Particles can trigger heart attacks in people with heart disease by causing changes in heart rhythms.[11]

• Studies by the Harvard School of Public Health, the Health Effects Institute and others have confirmed that tens of thousands of people each year die prematurely due to fine particle pollution.[12]

• A 2000 study estimated that 30,000 people die prematurely each year due to particles from power plants. Of these deaths, an estimated 18,000 could be prevented if power plants were required to install modern pollution controls.[13]

Ozone "Smog"

More than 141 million Americans live in areas where ground-level ozone or "smog" levels are high enough to cause serious health damage.[14] Like fine-particle soot, smog damages our respiratory systems and can trigger asthma attacks, sending hundreds of thousands of people to the emergency room each year.

Smog is formed when nitrogen oxides (NOx) from power plants and cars mix with other chemicals in the air in the presence of sunlight. Power plants are the largest industrial source of NOx in the nation.

Ozone reduces lung function for anyone chronically exposed, including healthy adults who exercise outdoors in the summertime. For vulnerable populations, including children, the elderly, and people with asthma or other respiratory disease, smoggy days often mean staying indoors, missing work, or missing school, and in the worst cases, hospitalization. Smog triggers an estimated six million asthma attacks each year and sends 150,000 Americans to hospital emergency rooms just in the eastern half of the nation.[15]

Mercury Poisoning

Mercury is a toxic heavy metal, which, when ingested, can cause serious neurological damage, particularly to developing fetuses, infants, and children. People are exposed to mercury when they eat fish that have been contaminated by methylmercury, the organic and most dangerous form of mercury. The neurotoxic effects of low-level mercury exposure are similar to the effects of lead toxicity in children and include delayed development and cognitive deficits, language difficulties, and problems with motor function, attention and memory.

Most at risk are fetuses exposed to mercury in the womb as well as children and infants whose nervous systems are still developing. The risks extend to an alarming segment of our population. In January 2003, Centers for Disease Control and Prevention reported that 1 in 12 American women of childbearing age has mercury levels above EPA's safe health threshold.[16] This translates into 322,000 newborns at risk per year.[17]

Health agencies in 44 states and territories have issued fish consumption advisories for at least one species of fish because of mercury pollution

in local waterways. Because mercury is bioaccumulative, moving up the food chain as fish are consumed, large predator fish such as largemouth bass, walleye, shark, tuna and swordfish have higher levels of mercury than species lower in the food chain.[18]

National estimates for 1994-95 concluded that coal and oil burning power plants were the largest stationary sources of mercury, responsible for 32.8 percent of total mercury emissions.[19] EPA has yet to set any standards for mercury emissions, so power plant operators can emit mercury without limits, unlike other sources of mercury in the U.S.

Global Warming

Perhaps the most serious environmental challenge we face in the coming decade and century is global warming. The world's most respected climate scientists have concluded that our planet is warming as a result of manmade pollution. They also conclude that unless we act quickly to reverse this trend, we will face catastrophic changes in weather systems and our climate across the globe.

The most authoritative source of scientific information has been the United Nations' International Panel on Climate Change (IPCC), which came out with a three-part series of reports last year concluding that:[20]

• The Earth warmed more in the 20th century than in any century in the past 1,000 years;

• The Earth could warm by another 2.5-10.4 degrees Fahrenheit over the course of this century, a warming rate not seen in the last 10,000 years;

• The most likely cause of the warming is the emission of greenhouse gases from the burning of fossil fuels; and

• The consequences of global warming could include sea level rise; unprecedented heat waves; drought; increasingly intense tropical storms; floods; soil erosion; decreased crop yields; water shortages; and spread of infectious diseases.

Power plants in the U.S. are responsible for upwards of 40 percent of all emissions of carbon dioxide (CO2), the leading cause of global warming. Burning coal results in more CO2 emissions than any other method of generating electricity, yet we continue to rely on coal for more than half of our electricity generation.

Acid Rain

The sulfur and nitrogen emissions that form soot and smog also cause acid rain. These pollutants combine with water to form acids called sulfates and nitrates. These acids fall to earth in rain, snow and fog, destroying sensitive ecosystems. In many eastern states, the rain is often as acidic as orange juice.[21]

Aquatic life is extremely vulnerable to the effects of acid rain. Twenty-five percent of lakes in the Adirondack region of New York cannot support any fish at all due to acidity.[22] Similarly, 30 percent of trout streams in Virginia are either marginal or unsuitable for brook trout.[23] Acid rain has compromised water bodies as far south as Georgia and as far west as Indiana.

Forests also are severely affected by acid deposition. In the Adirondacks, more than half of the red spruce trees have died since the 1960s; the red spruce in the Southern Appalachians are showing signs of damage as well.[24] New England's famous sugar maples are in decline due to the loss of nutrients in the soil caused by acid rain.

Recent studies show that power plants will need to reduce sulfur and nitrogen emissions by up to 80 percent to allow these lakes and forests to recover.[25]

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 than 10 million tons per year to just under two million tons per year. Similarly, NOx emissions would fall from more than 4.5 million tons per year to just 1.6 million tons per year.[30]

In 1999, after a three-year investigation of compliance with the NSR program, the Clinton administration's EPA concluded that violations of the NSR rules were common, finding that plant owners were making enormous modifications without applying for or obtaining NSR permits. As a result, the administration initiated enforcement actions against eight utilities for NSR violations at more than 50 power plants that had resulted in hundreds of millions of tons of illegal pollution. By early 2000, utilities were beginning to settle the enforcement actions, agreeing to install emissions control equipment and make other environmental improvements.[31]

However, the Bush administration's changes to the NSR program have stymied additional enforcement actions.

Promises Broken

Throughout the 2000 Presidential campaign, then-candidate George W. Bush campaigned as being tough on power plant emissions in Texas. Over the course of the year, he made several statements about how he would address power

plant pollution as president. Two things are clear from reading these statements. First, the President was pledging to eliminate grandfathering. Second, he supported limiting all four of the major pollutants from power plants, which he enumerated as sulfur dioxide, nitrogen oxides, mercury and carbon dioxide.

• February 2000 interview with Tim Russert of NBC News, when asked about his environmental critics in Texas: "I'm the first person to say, 'We're going to stop this grandfathering business. We're going to bring plants into compliance.'"[32]

• September 20, 2000, on CNN: "I know we can do a good job with uh, working with the coal industry to make sure that the coal burning plants, that the proper technology to keep our air clean, that's a long term solution, that's a longer term solution."

• September 29, 2000, Saginaw, Michigan: "With the help of Congress, environmental groups and industry, we will require all power plants to meet clean air standards in order to reduce emissions of sulfur dioxide, nitrogen oxide, mercury and carbon dioxide within a reasonable period of time, and we will provide market-based incentives such as emissions trading to help industry achieve the required reductions."[33]

• October 11, 2000, Presidential debate hosted by Jim Lehrer, Wait Chapel, Wake Forest University, Winston-Salem, North Carolina: "...[w]e need to make sure that if we decontrol our plants that there's mandatory -- that the plants must conform to clean air standards, the grandfathered plants. That's what we did in Texas. No excuses. I mean, you must conform….The electric decontrol bill that I fought for and signed in Texas has mandatory emissions standards, Mr. Vice President. That's what we ought to do at the federal level when it comes to grandfather plants for utilities."[34]

Backtracking on Pledge to Curb Global Warming Emissions

On Tuesday, March 13, 2001, just 60 days after taking office, President Bush wrote a letter wrote a letter to Senator Chuck Hagel (R-NE) stating that he would not support mandatory controls on carbon dioxide emissions from power plants.

The letter contradicted statements made by the new EPA Administrator, former New Jersey Governor Christine Todd Whitman, who had just reasserted the campaign pledge in a series of public appearances. In a February 26, 2001 CNN interview, Administrator Whitman said, "George Bush was very clear during the course of the campaign that he believed in a multi-pollutant strategy, and that includes CO2, and I have spoken to that . . . He has also been very clear that the science is good on global warming. It does exist."[35] Just three days before President Bush's letter to Senator Hagel, the *New York Times* reported on the front page that the Bush administration would live up to its carbon commitment, based on statements made by Administrator Whitman at an international gathering of the Group of 8, the leading economic powers of the world. In that article, Myron Ebell of the Competitive Enterprise Institute attacked the administration, stating: 'This is a colossal mistake . . . If they persist, there will be war."[36]

About a year later, the administration revealed its proposal to address power plant pollution, known as the Clear Skies Initiative. That proposal fulfills neither the promise to cap carbon emissions nor the promise to end grandfathering of dirty power plants. Rather, it sets pollution caps for NOx, SO2 and mercury at levels that would allow more pollution than faithful enforcement of the current Clean Air Act. Further, the proposal exempts power plants from the very provisions of the Clean Air Act that would actually eliminate grandfathering if enforced.[37]

Backtracking on the Clean Air Act's Promise to Clean Up Power Plants

Over just two years, the Bush administration's EPA has issued two final rules that eliminate the teeth of New Source Review program and the primary means to cut pollution from the nation's dirtiest power plants. The decision about whether these rules are inconsistent with the language of the Clean Air Act now rests with the courts.

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 to the New Source Review program creating new exemptions to allow plants to refurbish without installing modern pollution controls. Former EPA Administrator Carole Browner joined hundreds of doctors and hundreds of thousands of Americans in denouncing this move, stating:

"The Bush Administration's announcement retreats from the promise of the Clean Air Act – fresh and healthy air for all Americans. The rollback in the law will permit thousands of the oldest, dirtiest smokestacks to continue spewing out pollution rather than installing state of the art pollution controls. It is nothing but a special deal for the special interests. It comes at the expense of all who breathe and most particularly our children."[38]

On Labor Day of 2003, the Bush administration's EPA issued a second rule change expanding the definition of "equipment replacement" for the purposes of exempting even more modifications from New Source Review's cleanup requirements. The *New York Times* called this second rollback a "reckless and insupportable decision to eviscerate a central provision of the Clean Air Act and allow power plants, refineries and other industrial sites to spew millions of tons of unhealthy pollutants into the air."[39]

Other opinion-leaders had similar reactions.

• The State and Territorial Air Pollution Program Administrators: "This rule eviscerates the NSR program and represents a huge step backward in our efforts to achieve and sustain clean air."[40]

• *Philadelphia Inquirer*, August 29, 2003: "The next time President Bush goes for a brisk run, he should try doing it while breathing through a straw. Before he finishes the first block, he'd have an idea of what thousands of asthmatics go through, thanks to the air pollution streaming from the stacks of aging factories and power plants. Once he caught his breath, the President might think twice about his plan to eviscerate the Clean Air Act."[41]

• *Chicago Tribune*, August 29, 2003: "The EPA announced new rules Wednesday that effectively extend the lives of some of the dirtiest coal-fired power plants, refineries, and factories in the nation. The long-sought rule changes are a clear victory for industry, not for cleaner air." [42]

• *Akron Beacon-Journal*, August 29, 2003: "The Bush change promises…greater levels of air pollution than intended. The proposal runs counter to the Clean Air Act in a more fundamental way. The first purpose of the law is to protect public health. The record is plain that pollution from these plants adds to premature deaths and respiratory illness." [43]

• *Houston Chronicle*, August 29, 2003: "While the president pretended to champion environmental protection…his administration decided to adopt a policy that undermines the Clean Air Act…. Just as true patriotism means more than waving a flag, environmental protection requires more than posing against the scenic beauty threatened by the Bush administration's policies." [44]

• *Nashville Tennessean*, September 2, 2003: "…T]he Environmental Protection Agency announcement promises murkier skies and poorer health." [45]

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	SO2 (tons)	Excess SO2 (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
TN	Johnsonville	108,793	94,660	87

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	2.31	94,660	87
12	WV	John E Amos	3935	107,619	1.27	82,139	76
13	PA	Homer City	3122	105,784	1.85	88,672	84
14	NC	Belews Creek	8042	103,085	1.35	80,130	78
15	IN	Warrick	6705	98,777	3.20	89,527	91
16	FL	Crystal River	628	97,709	1.32	75,494	77
17	NC	Roxboro	2712	95,610	1.31	73,771	77
18	MI	Monroe	1733	91,904	1.16	68,152	74
19	WV	Fort Martin	3943	91,119	2.48	80,079	88
20	GA	Scherer	6257	86,350	0.81	54,210	63
21	TX	Monticello	6147	86,319	1.16	63,980	74
22	OH	Miami Fort	2832	85,699	2.22	74,130	87
23	KY	Paradise	1378	84,072	1.06	60,168	72
24	NC	Marshall	2727	82,260	1.32	63,543	77
25	TX	Big Brown	3497	77,860	1.72	64,257	83
26	TN	Kingston	3407	77,571	1.45	61,562	79
27	OH	Cardinal	2828	74,751	1.82	62,455	84
28	OH	Kyger Creek	2876	74,452	2.31	64,766	87
29	GA	Harllee Branch	709	73,944	1.69	60,800	82
30	VA	Chesterfield	3797	73,841	1.67	60,584	82
31	GA	Wansley (6052)	6052	73,600	1.17	54,651	74
32	MD	Morgantown	1573	70,344	1.94	59,469	85
33	OH	Walter C Beckjord	2830	69,931	1.93	59,084	84
34	PA	Brunner Island	3140	68,932	1.61	56,105	81
35	OH	Eastlake	2837	67,456	2.05	57,562	85
36	KS	Jeffrey Energy Center	6068	67,380	0.74	40,007	59
37	TX	Martin Lake	6146	66,400	0.79	41,029	62
38	IN	Tanners Creek	988	62,532	2.16	53,858	86
39	IN	Wabash River	1010	61,899	2.23	53,572	87
40	TX	W A Parish	3470	61,827	0.59	30,461	49
41	AL	Barry	3	59,525	0.73	35,202	59
42	AL	Gorgas	8	56,024	1.39	43,922	78
43	WV	Mitchell	3948	56,009	1.33	43,376	77
44	IN	Cayuga	1001	55,617	1.99	47,241	85
45	IN	Rockport	6166	53,196	0.65	28,580	54
46	FL	F J Gannon	646	52,919	1.82	44,185	83
47	MD	Chalk Point	1571	52,526	1.50	41,990	80
48	LA	Big Cajun 2	6055	52,004	0.77	31,694	61
49	NY	Dunkirk	2554	51,907	2.90	46,534	90
50	AL	Colbert	47	49,960	1.42	39,374	79

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 the total national emission of NOx from the 548 dirty power plants.

Table 4: Plants with Greatest Excess NOx Emissions

State	Plant Name	NOx (tons)	Excess NOx (tons)	% Excess
TN	Cumberland	49,943	36,012	72
OH	JM Stuart	46,769	35,383	76
KY	Paradise	47,027	35,075	75
NC	Belews Creek	44,882	33,405	74
OH	Gen JM Gavin	43,839	32,616	74
MO	New Madrid	37,465	31,556	84
WV	John Amos	43,501	30,761	71
NM	Four Corners	41,577	30,655	74
WV	Mt. Storm	39,876	30,506	77
KS	LaCygne	38,419	30,125	78

Table 5: 50 Power Plants with Most NOx Emissions, 2002							
Rank	State	Plant Name	ORISPL	NOx (tons)	NOx Rate (lbs/mmBTU)	Excess NOx (tons)	% Excess
1	TN	Cumberland	3399	49,943	0.54	36,012	72
2	KY	Paradise	1378	47,027	0.59	35,075	75
3	OH	J M Stuart	2850	46,769	0.62	35,383	76
4	NC	Belews Creek	8042	44,882	0.59	33,405	74
5	OH	Gen J M Gavin	8102	43,839	0.59	32,616	74
6	WV	John E Amos	3935	43,501	0.51	30,761	71
7	MI	Monroe	1733	41,624	0.53	29,748	71
8	NM	Four Corners	2442	41,577	0.57	30,655	74
9	WV	Mt Storm	3954	39,876	0.64	30,506	77
10	OH	W H Sammis	2866	38,624	0.50	27,034	70
11	KS	La Cygne	1241	38,419	0.69	30,125	78
12	IN	Gibson	6113	38,241	0.41	24,171	63
13	MO	New Madrid	2167	37,465	0.95	31,556	84
14	GA	Bowen	703	37,300	0.35	21,210	57
15	AZ	Navajo	4941	35,569	0.36	20,614	58
16	FL	Crystal River	628	35,059	0.47	23,952	68
17	IN	Rockport	6166	34,243	0.42	21,935	64
18	MT	Colstrip	6076	32,631	0.41	20,742	64
19	KS	Jeffrey Energy Center	6068	31,301	0.34	17,614	56
20	WY	Jim Bridger	8066	30,842	0.38	18,692	61
21	NM	San Juan	2451	30,353	0.43	19,753	65
22	UT	Intermountain	6481	30,256	0.41	19,303	64
23	PA	Bruce Mansfield	6094	29,869	0.40	18,603	62
24	FL	Big Bend	645	29,644	0.59	22,167	75
25	WV	Mitchell	3948	29,598	0.70	23,281	79
26	IN	Clifty Creek	983	29,231	0.73	23,204	79
27	AL	E C Gaston	26	29,171	0.45	19,479	67
28	WV	Harrison	3944	29,090	0.43	18,857	65
29	AL	James H Miller Jr	6002	28,036	0.29	13,694	49
30	GA	Harllee Branch	709	27,808	0.63	21,236	76
31	GA	Scherer	6257	27,626	0.26	11,556	42
32	OH	Muskingum River	2872	27,339	0.69	21,371	78
33	IL	Powerton	879	27,219	0.69	21,335	78
34	OH	Conesville	2840	26,659	0.54	19,192	72
35	MN	Sherburne County	6090	26,288	0.30	12,969	49
36	TN	Kingston	3407	26,085	0.49	18,080	69
37	OH	Kyger Creek	2876	25,318	0.78	20,475	81
38	PA	Homer City	3122	25,169	0.44	16,613	66
39	AL	Widows Creek	50	25,161	0.48	17,217	68
40	FL	St Johns River Power	207	24,653	0.48	17,001	69
41	FL	F J Gannon	646	24,434	0.84	20,067	82
42	AL	Barry	3	24,401	0.30	12,239	50
43	TN	Johnsonville	3406	23,914	0.51	16,847	70
44	NC	Roxboro	2712	23,656	0.32	12,737	54
45	OH	Cardinal	2828	23,379	0.57	17,231	74
46	PA	Hatfields Ferry	3179	23,065	0.47	15,723	68
47	ND	Milton R Young	2823	22,845	0.81	18,597	81
48	FL	Seminole	136	22,627	0.46	15,272	67
49	IL	Baldwin	889	22,375	0.35	12,818	57
50	NE	Gerald Gentleman Station	6077	22,084	0.40	13,740	62

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	74,893	39,361	53
27	Colorado	22	13	71,565	41,446	58
28	Utah	9	6	71,545	44,381	62
29	Maryland	13	10	71,354	47,658	67
30	New York	60	19	59,780	28,278	47
31	Nebraska	13	9	47,008	29,838	63
32	Nevada	10	7	44,674	27,216	61
33	Mississippi	23	9	43,637	24,125	55
34	Arkansas	15	9	41,634	20,753	50
35	Montana	4	3	35,130	21,945	62
36	Massachusetts	19	7	27,354	13,304	49
37	New Jersey	19	5	25,820	19,193	74
38	Washington	6	1	15,470	7,767	50
39	South Dakota	5	1	14,954	12,272	82
40	Delaware	8	4	8,577	4,381	51
41	Oregon	6	1	8,401	5,384	64
42	New Hampshire	4	3	6,624	2,735	41
43	California	63	4	5,047	2,695	53
44	Connecticut	13	5	4,388	792	18
45	Maine	8	1	564	219	39
46	District of Columbia	1	1	410	151	37

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 NOx.

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 NOx 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
16	MI	Monroe	1733	16,244,583	205.18
17	OH	W H Sammis	2866	15,854,576	205.19
18	NC	Belews Creek	8042	15,700,908	205.20
19	TX	Monticello	6147	15,619,270	209.75
20	OH	J M Stuart	2850	15,575,642	205.20
21	PA	Bruce Mansfield	6094	15,411,599	205.20
22	OH	Gen J M Gavin	8102	15,353,814	205.20
23	FL	Crystal River	628	15,194,400	205.20
24	UT	Intermountain	6481	14,983,662	205.20
25	NC	Roxboro	2712	14,935,713	205.17
26	NM	Four Corners	2442	14,930,145	205.05
27	AL	Barry	3	14,700,456	181.31
28	MO	Labadie	2103	14,626,118	205.20
29	NM	San Juan	2451	14,489,489	205.04
30	WY	Laramie River	6204	14,070,159	205.20
31	WV	Harrison	3944	13,997,732	205.20
32	LA	Big Cajun 2	6055	13,892,121	205.20
33	IN	Petersburg	994	13,484,833	205.20
34	AL	E C Gaston	26	13,258,499	205.20
35	TX	Welsh	6139	13,245,291	205.39
36	IL	Baldwin	889	13,073,405	205.20
37	TX	Limestone	298	13,002,297	217.74
38	WV	Mt Storm	3954	12,818,015	205.20
39	NC	Marshall	2727	12,802,735	205.20
40	TX	Sam Seymour	6179	12,475,799	205.04
41	AR	Independence	6641	12,237,935	205.14
42	KY	Ghent	1356	12,221,232	205.20
43	GA	Wansley (6052)	6052	12,056,295	190.87
44	PA	Homer City	3122	11,709,767	205.29
45	PA	Conemaugh	3118	11,603,128	205.13
46	PA	Keystone	3136	11,522,016	205.20
47	OK	Muskogee	2952	11,499,995	202.45
48	NE	Gerald Gentleman Station	6077	11,414,410	205.20
49	KS	La Cygne	1241	11,346,364	205.20
50	KY	Shawnee	1379	10,968,115	205.20

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
42	Oregon	6	1	4,126,996
43	South Dakota	5	1	3,668,330
44	California	63	4	1,863,440
45	Maine	8	1	397,061
46	District of Columbia	1	1	279,433

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 and enforcing the rules that were in place when the Bush administration took office;
- Enforcing the ambient air quality standards to ensure that all Americans will breathe air that meets federal health standards by the end of this decade as required by the Clean Air Act;
- 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 NOx, 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 NOx, SO2 and mercury.

METHODOLOGY

Data source: Data came from the U.S. EPA acid rain database, final Continuous Emissions Monitoring (CEM) data for 2002, which is available at http://www.epa.gov/airmarkets/2002emissionsdetail.xls.

Emissions rates: To calculate the emissions rate for each pollutant at each plant, we divided the quantity of pollution (in tons) by the heat input (in million BTUs) and multiplied the result by 2000 to obtain pounds of pollution emitted per million BTU.

Excess emissions: For nitrogen oxide emissions, we assumed that .15 pounds/mmBTU is the best emissions rate achievable using selective catalytic reduction to reduce NOx emissions from conventional coal plants. Similarly, for sulfur dioxide emissions, we assumed that 0.30 pounds/mmBTU is the best emissions rate achievable using sulfur scrubbers. To calculate "excess" emissions for each pollutant for each plant, we multiplied the optimal emissions rate by the heat input and subtracted the product from the actual emissions in 2002.

Definition of "Dirty" 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. This report focuses on these 548 plants as the dirtiest power plants.

Regional data: To generate regional comparisons, we categorized the states as follows.

- Midwest: IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD and WI.
- South: AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA and WV.
- New England: CT, ME, MA, NH, RI and VT.
- Mid Atlantic: PA, NY, NJ, DE, DC, MD.
- Southwest: AZ, NM, OK, TX.
- West: CA, CO, ID, MT, NV, OR, UT, WA, WY.

APPENDIX A. 2002 EMISSIONS BY POWER PLANT

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)
AL	Barry	3	59,525	14,700,456	24,401	162,155,771	0.30	0.73	181.31	35,202	12,239
AL	Charles R Lowman	56	17,139	4,105,956	9,663	40,019,858	0.48	0.86	205.20	11,136	6,662
AL	Colbert	47	49,960	7,240,749	15,290	70,572,655	0.43	1.42	205.20	39,374	9,997
AL	E C Gaston	26	127,732	13,258,499	29,171	129,222,289	0.45	1.98	205.20	108,349	19,479
AL	Gadsden	7	8,740	742,982	1,918	7,240,752	0.53	2.41	205.22	7,654	1,375
AL	Gorgas	8	56,024	8,277,878	16,808	80,677,435	0.42	1.39	205.21	43,922	10,757
AL	Greene County	10	40,969	4,124,220	10,314	42,011,540	0.49	1.95	196.34	34,667	7,163
AL	James H Miller Jr	6002	44,149	19,619,478	28,036	191,220,804	0.29	0.46	205.20	15,466	13,694
AL	Widows Creek	50	43,983	10,866,389	25,161	105,922,492	0.48	0.83	205.18	28,095	17,217
AR	Carl Bailey	202	380	83,035	148	1,206,488	0.25	0.63	137.65	199	57
AR	Cecil Lynch	167	0	26,548	54	446,676	0.24	0.00	118.87	0	21
AR	Flint Creek	6138	10,961	3,890,115	5,096	37,915,335	0.27	0.58	205.20	5,274	2,252
AR	Independence	6641	24,614	12,237,935	16,315	119,314,326	0.27	0.41	205.14	6,717	7,366
AR	Lake Catherine	170	4	805,571	1,570	13,555,134	0.23	0.00	118.86	0	553
AR	Mcclellan	203	441	125,839	278	1,951,265	0.29	0.45	128.98	148	132
AR	Robert E Ritchie	173	1	175,941	394	2,960,521	0.27	0.00	118.86	0	172
AR	Thomas Fitzhugh	201	171	22,921	74	288,618	0.51	1.19	158.83	128	53
AR	White Bluff	6009	34,151	10,335,627	17,705	100,773,663	0.35	0.68	205.13	19,035	10,147
AZ	Agua Fria	141	9	422,794	849	7,122,769	0.24	0.00	118.72	0	314
AZ	Apache Station	160	5,167	3,068,831	6,528	31,278,625	0.42	0.33	196.23	475	4,183
AZ	Cholla	113	20,770	8,350,689	12,881	81,439,136	0.32	0.51	205.08	8,554	6,773
AZ	Coronado	6177	17,727	5,704,593	11,933	55,600,345	0.43	0.64	205.20	9,387	7,763
AZ	Irvington	126	3,119	1,227,078	2,540	14,987,367	0.34	0.42	163.75	870	1,416
AZ	Navajo	4941	4,007	20,458,265	35,569	199,398,686	0.36	0.04	205.20	0	20,614
AZ	Springerville	8223	19,862	6,451,073	12,572	62,875,991	0.40	0.63	205.20	10,431	7,856
CA	Hanford Energy Park Peaker	55698	0	34,172	385	574,384	1.34	0.00	118.99	0	342
CA	Henrietta Peaker Plant	55807	0	21,402	204	359,809	1.14	0.00	118.97	0	177
CA	Humboldt Bay	246	4	292,735	871	4,923,881	0.35	0.00	118.90	0	502
CA	Los Medanos Energy Center	55217	8	1,515,131	3,586	25,494,977	0.28	0.00	118.86	0	1,674
CO	Arapahoe	465	5,107	2,186,585	5,343	21,320,716	0.50	0.48	205.11	1,909	3,744
CO	Cameo	468	2,095	434,629	819	4,239,544	0.39	0.99	205.04	1,459	501
CO	Cherokee	469	15,957	4,760,723	9,476	46,704,244	0.41	0.68	203.87	8,952	5,973
CO	Comanche	470	16,773	5,693,376	8,810	55,542,284	0.32	0.60	205.01	8,442	4,644
CO	Craig	6021	10,391	10,665,230	19,381	103,949,552	0.37	0.20	205.20	0	11,585
CO	Hayden	525	2,868	4,433,177	8,603	43,214,614	0.40	0.13	205.17	0	5,362
CO	Martin Drake	492	8,530	2,193,004	4,205	21,534,007	0.39	0.79	203.68	5,299	2,590
CO	Nucla	527	1,487	922,997	1,333	9,001,127	0.30	0.33	205.08	137	658
CO	Pawnee	6248	14,833	3,968,366	4,592	38,786,012	0.24	0.76	204.63	9,015	1,683
CO	Rawhide Energy Station	6761	898	2,511,670	4,014	24,622,206	0.33	0.07	204.02	0	2,168
CO	Ray D Nixon	8219	4,968	1,891,496	2,834	18,513,968	0.31	0.54	204.33	2,191	1,445
CO	Valmont	477	3,786	1,362,314	2,057	13,293,779	0.31	0.57	204.96	1,792	1,060
CO	Zuni	478	0	51,087	98	859,668	0.23	0.00	118.85	0	34
CT	Bridgeport Harbor	568	4,090	1,884,300	1,736	18,428,740	0.19	0.44	204.50	1,326	353
CT	Middletown	562	722	469,445	760	6,584,269	0.23	0.22	142.60	0	266
CT	Montville	546	910	338,400	417	4,310,729	0.19	0.42	157.00	264	93
CT	New Haven Harbor	6156	4,010	1,372,521	1,143	16,957,263	0.13	0.47	161.88	1,466	0
CT	Norwalk Harbor	548	739	273,488	332	3,378,863	0.20	0.44	161.88	232	79

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)
DC	Benning	603	1,087	279,433	410	3,453,608	0.24	0.63	161.82	569	151
DE	Delaware City Refinery	52193	1,036	327,715	435	4,329,871	0.20	0.48	151.37	386	110
DE	Edge Moor	593	10,527	2,218,387	3,306	23,417,334	0.28	0.90	189.47	7,014	1,550
DE	Indian River	594	19,956	2,696,376	4,491	26,280,548	0.34	1.52	205.20	16,014	2,520
DE	McKee Run	599	700	152,796	345	1,919,684	0.36	0.73	159.19	412	201
FL	Anclote	8048	30,790	4,027,324	8,424	49,756,876	0.34	1.24	161.88	23,326	4,693
FL	Arvah B Hopkins	688	231	503,893	805	8,270,598	0.19	0.06	121.85	0	185
FL	Big Bend	645	11,601	10,229,251	29,644	99,700,375	0.59	0.23	205.20	0	22,167
FL	C D Mcintosh Jr	676	8,828	3,680,655	7,145	42,221,165	0.34	0.42	174.35	2,495	3,979
FL	Cape Canaveral	609	10,334	2,590,619	9,896	32,678,312	0.61	0.63	158.55	5,432	7,445
FL	Crist Electric Gen. Plant	641	42,899	5,527,317	13,636	54,057,539	0.50	1.59	204.50	34,790	9,582
FL	Crystal River	628	97,709	15,194,400	35,059	148,093,610	0.47	1.32	205.20	75,494	23,952
FL	Deerhaven	663	7,494	1,684,325	3,614	17,891,021	0.40	0.84	188.29	4,810	2,272
FL	F J Gannon	646	52,919	5,973,682	24,434	58,222,986	0.84	1.82	205.20	44,185	20,067
FL	Henry D King	658	0	35,281	76	593,030	0.26	0.00	118.99	0	32
FL	Indian River	33464	5,155	1,010,872	1,844	13,703,362	0.27	0.75	147.54	3,100	817
FL	Lansing Smith	643	11,765	3,005,839	4,721	35,683,404	0.26	0.66	168.47	6,413	2,044
FL	Manatee	6042	32,701	5,579,381	8,251	62,658,365	0.26	1.04	178.09	23,303	3,552
FL	Northside	667	12,943	3,339,118	4,147	39,651,175	0.21	0.65	168.42	6,996	1,173
FL	P L Bartow	634	24,400	2,066,827	4,234	25,535,327	0.33	1.91	161.88	20,569	2,318
FL	Port Everglades	617	18,837	3,834,267	9,399	45,408,930	0.41	0.83	168.88	12,026	5,993
FL	Putnam	6246	12	1,250,222	3,908	21,012,709	0.37	0.00	119.00	0	2,332
FL	Riviera	619	9,082	2,021,433	4,421	24,537,618	0.36	0.74	164.76	5,401	2,580
FL	Sanford	620	3,374	2,677,937	3,611	41,564,631	0.17	0.16	128.86	0	493
FL	Scholz Electric Gen. Plant	642	2,778	443,190	1,245	4,319,898	0.58	1.29	205.19	2,130	921
FL	Seminole	136	24,083	10,061,013	22,627	98,060,612	0.46	0.49	205.20	9,374	15,272
FL	St Johns River Power	207	20,907	10,470,810	24,653	102,036,847	0.48	0.41	205.24	5,602	17,001
FL	Stanton Energy	564	7,679	6,098,474	8,843	59,439,374	0.30	0.26	205.20	0	4,385
FL	Suwannee River	638	3,958	506,018	855	5,804,214	0.29	1.36	174.36	3,088	419
FL	Tom G Smith	673	3	46,086	89	775,940	0.23	0.01	118.79	0	31
FL	Turkey Point	621	9,135	2,403,137	6,263	30,395,712	0.41	0.60	158.12	4,575	3,984
GA	Arkwright	699	1,576	155,457	652	1,515,189	0.86	2.08	205.20	1,349	538
GA	Bowen	703	160,673	22,011,155	37,300	214,533,697	0.35	1.50	205.20	128,493	21,210
GA	Hammond	708	27,594	4,272,064	8,410	41,638,096	0.40	1.33	205.20	21,348	5,287
GA	Harllee Branch	709	73,944	8,990,195	27,808	87,623,824	0.63	1.69	205.20	60,800	21,236
GA	Jack Mcdonough	710	27,993	3,305,578	4,883	32,608,001	0.30	1.72	202.75	23,102	2,438
GA	Kraft	733	7,189	1,367,645	3,342	13,329,914	0.50	1.08	205.20	5,190	2,342
GA	McIntosh	6124	7,043	1,202,281	4,182	12,413,400	0.67	1.13	193.71	5,181	3,251
GA	Mcmanus	715	576	37,852	56	418,664	0.27	2.75	180.82	513	25
GA	Mitchell	727	4,567	632,130	1,887	6,161,189	0.61	1.48	205.20	3,643	1,425
GA	Scherer	6257	86,350	21,983,231	27,626	214,261,603	0.26	0.81	205.20	54,210	11,556
GA	Wansley (6052)	6052	73,600	12,056,295	20,333	126,327,066	0.32	1.17	190.87	54,651	10,858
GA	Yates	728	41,518	5,656,474	9,126	55,131,501	0.33	1.51	205.20	33,248	4,991
IA	Ames	1122	944	534,929	1,083	5,213,819	0.42	0.36	205.20	162	692
IA	Burlington (IA)	1104	5,262	1,479,153	1,257	14,425,647	0.17	0.73	205.07	3,098	175
IA	Council Bluffs	1082	20,257	6,419,113	13,456	62,566,538	0.43	0.65	205.19	10,872	8,763
IA	Dubuque	1046	1,923	460,501	1,874	4,540,699	0.83	0.85	202.83	1,241	1,533
IA	Earl F Wisdom	1217	350	34,195	110	338,126	0.65	2.07	202.26	299	85
IA	Fair Station	1218	5,611	231,133	486	2,252,793	0.43	4.98	205.20	5,273	317
IA	George Neal North	1091	21,127	6,129,542	16,391	59,800,660	0.55	0.71	205.00	12,157	11,906
IA	George Neal South	7343	15,617	4,737,683	8,257	46,184,489	0.36	0.68	205.16	8,689	4,793
IA	Lansing	1047	4,388	1,565,084	3,325	15,254,205	0.44	0.58	205.20	2,100	2,181
IA	Louisa	6664	15,901	5,635,315	8,669	54,925,058	0.32	0.58	205.20	7,662	4,550

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)
IA	Milton L Kapp	1048	4,101	1,347,425	933	13,132,824	0.14	0.62	205.20	2,131	0
IA	Muscatine	1167	3,111	1,813,660	4,431	17,676,979	0.50	0.35	205.20	460	3,106
IA	Ottumwa	6254	15,980	5,551,749	8,328	54,110,578	0.31	0.59	205.20	7,863	4,270
IA	Pella	1175	414	152,110	282	1,483,771	0.38	0.56	205.03	191	171
IA	Prairie Creek	1073	4,304	1,357,837	2,580	13,263,699	0.39	0.65	204.74	2,314	1,585
IA	Riverside	1081	2,280	775,567	1,468	7,564,889	0.39	0.60	205.04	1,145	900
IA	Sixth Street	1058	1,954	694,118	2,007	7,073,643	0.57	0.55	196.25	893	1,477
IA	Streeter Station	1131	579	61,531	255	617,637	0.82	1.88	199.25	487	208
IA	Sutherland	1077	3,726	1,298,008	3,750	12,657,797	0.59	0.59	205.09	1,827	2,801
IL	Baldwin	889	26,267	13,073,405	22,375	127,421,111	0.35	0.41	205.20	7,154	12,818
IL	Coffeen	861	42,331	5,757,373	14,339	56,114,767	0.51	1.51	205.20	33,914	10,131
IL	Crawford	867	7,596	2,972,814	2,850	28,974,764	0.20	0.52	205.20	3,249	676
IL	Dallman	963	3,419	2,317,210	8,030	22,589,549	0.71	0.30	205.16	30	6,336
IL	Duck Creek	6016	11,026	2,322,122	5,328	22,635,088	0.47	0.97	205.18	7,630	3,630
IL	E D Edwards	856	35,748	4,026,880	8,846	39,610,929	0.45	1.80	203.32	29,807	5,875
IL	Fisk	886	3,843	1,503,046	2,462	14,649,555	0.34	0.52	205.20	1,645	1,364
IL	Havana	891	12,882	2,934,129	3,971	28,694,600	0.28	0.90	204.51	8,578	1,819
IL	Hennepin	892	4,792	2,283,865	3,621	22,259,882	0.33	0.43	205.20	1,453	1,952
IL	Hutsonville	863	14,955	677,543	1,799	6,603,736	0.54	4.53	205.20	13,964	1,303
IL	Joliet 29	384	20,664	6,140,288	3,810	59,846,886	0.13	0.69	205.20	11,687	0
IL	Joliet 9	874	4,560	1,474,252	2,562	14,368,937	0.36	0.63	205.20	2,404	1,484
IL	Joppa Steam	887	23,129	9,207,652	5,796	89,759,591	0.13	0.52	205.16	9,665	0
IL	Kincaid	876	17,665	6,618,001	20,905	64,502,942	0.65	0.55	205.20	7,990	16,067
IL	Lakeside	964	7,211	266,161	1,215	2,594,385	0.94	5.56	205.18	6,821	1,020
IL	Marion	976	8,995	1,629,093	6,703	15,606,888	0.86	1.15	208.77	6,654	5,532
IL	Meredosia	864	25,149	1,651,468	3,816	16,187,016	0.47	3.11	204.05	22,720	2,602
IL	Newton	6017	17,870	8,122,255	5,252	79,164,281	0.13	0.45	205.20	5,995	0
IL	Powerton	879	16,814	8,049,414	27,219	78,454,312	0.69	0.43	205.20	5,046	21,335
IL	Venice	913	0	46,109	80	771,958	0.21	0.00	119.46	0	22
IL	Vermilion	897	16,517	1,235,060	2,217	12,052,082	0.37	2.74	204.95	14,709	1,313
IL	Waukegan	883	10,782	4,675,356	4,945	45,568,762	0.22	0.47	205.20	3,947	1,527
IL	Will County	884	13,684	6,241,680	10,619	60,835,192	0.35	0.45	205.20	4,559	6,056
IL	Wood River	898	7,262	2,378,460	2,426	23,188,684	0.21	0.63	205.14	3,784	687
IN	A B Brown	6137	8,639	3,508,264	7,400	34,561,580	0.43	0.50	203.02	3,454	4,807
IN	Bailly	995	5,218	3,352,674	16,380	32,676,395	1.00	0.32	205.20	316	13,929
IN	Cayuga	1001	55,617	5,719,157	7,772	55,836,784	0.28	1.99	204.85	47,241	3,584
IN	Clifty Creek	983	38,198	8,245,112	29,231	80,361,719	0.73	0.95	205.20	26,143	23,204
IN	Dean M Mitchell	996	127	39,301	50	383,057	0.26	0.66	205.20	70	22
IN	Eagle Valley (H T Pritchard)	991	17,216	1,672,172	4,494	16,301,207	0.55	2.11	205.16	14,771	3,272
IN	Edwardsport	1004	8,178	591,423	1,925	5,766,145	0.67	2.84	205.14	7,313	1,492
IN	F B Culley	1012	7,119	2,703,215	6,318	26,349,123	0.48	0.54	205.18	3,166	4,342
IN	Frank E Ratts	1043	18,055	1,689,339	4,012	16,465,343	0.49	2.19	205.20	15,585	2,777
IN	Gibson	6113	127,357	19,247,465	38,241	187,597,107	0.41	1.36	205.20	99,217	24,171
IN	Harding Street Stn (EW Stout)	990	47,268	4,030,027	6,634	39,444,384	0.34	2.40	204.34	41,351	3,676
IN	Merom	6213	12,846	7,850,292	14,333	76,513,544	0.37	0.34	205.20	1,369	8,594
IN	Michigan City	997	9,178	2,961,664	9,897	28,878,830	0.69	0.64	205.11	4,846	7,731
IN	Mirant State Line Energy	981	8,443	3,271,892	7,141	31,889,859	0.45	0.53	205.20	3,660	4,749
IN	Noblesville	1007	3,611	247,625	1,153	2,413,499	0.96	2.99	205.20	3,249	972
IN	Perry K Steam Plant	992	106	80,620	136	1,524,957	0.18	0.14	105.73	0	21
IN	Petersburg	994	47,152	13,484,833	20,249	131,431,165	0.31	0.72	205.20	27,437	10,391
IN	R Gallagher Station	1008	47,767	3,112,213	6,133	30,333,466	0.40	3.15	205.20	43,217	3,858
IN	R M Schahfer	6085	27,494	10,285,655	17,371	100,250,052	0.35	0.55	205.20	12,457	9,852

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)
IN	Rockport	6166	53,196	16,837,252	34,243	164,105,757	0.42	0.65	205.20	28,580	21,935
IN	Tanners Creek	988	62,532	5,933,099	17,534	57,827,669	0.61	2.16	205.20	53,858	13,197
IN	Wabash River	1010	61,899	5,933,625	11,061	55,514,382	0.40	2.23	213.77	53,572	6,897
IN	Warrick	6705	98,777	6,246,969	17,550	61,671,988	0.57	3.20	202.59	89,527	12,925
IN	Whitewater Valley	1040	12,873	770,372	1,581	7,508,502	0.42	3.43	205.20	11,746	1,018
KS	Arthur Mullergren	1235	0	67,408	129	1,133,718	0.23	0.00	118.92	0	44
KS	Cimarron River	1230	0	85,124	159	1,432,397	0.22	0.00	118.86	0	52
KS	Garden City	1336	1	93,536	210	1,573,896	0.27	0.00	118.86	0	92
KS	Gordon Evans Energy Center	1240	3,829	454,602	2,309	10,003,680	0.46	0.77	90.89	2,328	1,559
KS	Holcomb	108	1,669	2,728,827	3,849	26,626,279	0.29	0.13	204.97	0	1,852
KS	Hutchinson Energy Center	1248	734	135,981	267	1,902,245	0.28	0.77	142.97	449	124
KS	Jeffrey Energy Center	6068	67,380	18,723,049	31,301	182,485,941	0.34	0.74	205.20	40,007	17,614
KS	Judson Large	1233	1	216,254	408	3,638,849	0.22	0.00	118.86	0	135
KS	La Cygne	1241	26,003	11,346,364	38,419	110,588,434	0.69	0.47	205.20	9,415	30,125
KS	Lawrence Energy Center	1250	7,749	5,211,977	6,200	50,801,985	0.24	0.31	205.19	129	2,390
KS	Murray Gill Energy Center	1242	785	101,822	290	1,732,368	0.33	0.91	117.55	525	160
KS	Nearman Creek	6064	7,625	1,923,067	3,860	18,782,214	0.41	0.81	204.78	4,808	2,452
KS	Quindaro	1295	3,345	1,179,838	2,686	11,676,933	0.46	0.57	202.08	1,594	1,810
KS	Riverton	1239	3,432	674,557	1,459	6,614,288	0.44	1.04	203.97	2,440	963
KS	Tecumseh Energy Center	1252	7,208	2,045,947	3,407	19,940,942	0.34	0.72	205.20	4,217	1,912
KY	Big Sandy	1353	41,899	5,393,370	15,149	52,566,916	0.58	1.59	205.20	34,014	11,206
KY	Cane Run	1363	14,977	3,228,116	6,276	31,463,093	0.40	0.95	205.20	10,257	3,916
KY	Coleman	1381	49,028	3,325,571	6,849	32,412,964	0.42	3.03	205.20	44,166	4,418
KY	Cooper	1384	22,713	2,173,944	4,771	21,188,528	0.45	2.14	205.20	19,535	3,182
KY	D B Wilson	6823	8,893	3,755,010	8,516	36,598,532	0.47	0.49	205.20	3,403	5,771
KY	Dale	1385	7,404	1,103,578	1,977	10,756,121	0.37	1.38	205.20	5,790	1,170
KY	E W Brown	1355	46,605	4,294,107	7,925	43,729,341	0.36	2.13	196.39	40,046	4,645
KY	East Bend	6018	12,918	3,576,629	5,455	34,859,949	0.31	0.74	205.20	7,689	2,841
KY	Elmer Smith	1374	7,113	2,765,016	9,561	26,947,659	0.71	0.53	205.21	3,071	7,540
KY	Ghent	1356	46,553	12,221,232	19,179	119,114,877	0.32	0.78	205.20	28,686	10,246
KY	Green River	1357	13,028	933,519	2,198	9,098,589	0.48	2.86	205.20	11,663	1,516
KY	H L Spurlock	6041	40,510	6,329,899	8,234	61,694,940	0.27	1.31	205.20	31,256	3,607
KY	Henderson I	1372	382	15,257	40	148,706	0.54	5.14	205.19	360	29
KY	HMP&L Station 2	1382	3,484	2,480,595	5,685	24,177,258	0.47	0.29	205.20	0	3,872
KY	Mill Creek	1364	22,549	9,562,108	14,599	93,197,955	0.31	0.48	205.20	8,570	7,609
KY	Paradise	1378	84,072	16,350,089	47,027	159,357,633	0.59	1.06	205.20	60,168	35,075
KY	R D Green	6639	3,424	3,960,962	7,401	38,605,921	0.38	0.18	205.20	0	4,505
KY	Robert Reid	1383	10,582	519,541	1,296	5,064,137	0.51	4.18	205.18	9,822	916
KY	Shawnee	1379	35,577	10,968,115	20,061	106,901,688	0.38	0.67	205.20	19,542	12,044
KY	Trimble County	6071	8,372	4,150,356	5,214	41,257,930	0.25	0.41	201.19	2,183	2,120
KY	Tyrone	1361	2,564	373,098	678	3,636,486	0.37	1.41	205.20	2,018	405
LA	A B Paterson	1407	0	70,413	121	1,184,914	0.20	0.00	118.85	0	32
LA	Big Cajun 1	1464	0	136,871	235	2,303,265	0.20	0.00	118.85	0	62
LA	Big Cajun 2	6055	52,004	13,892,121	19,909	135,401,723	0.29	0.77	205.20	31,694	9,754
LA	Doc Bonin	1443	1	286,379	658	4,818,812	0.27	0.00	118.86	0	297
LA	Dolet Hills	51	16,970	5,157,220	10,370	47,370,461	0.44	0.72	217.74	9,864	6,817
LA	Houma	1439	0	71,823	177	1,208,668	0.29	0.00	118.85	0	86
LA	Little Gypsy	1402	9	1,671,698	3,981	28,129,061	0.28	0.00	118.86	0	1,872
LA	Michoud	1409	43	1,716,677	5,566	28,868,715	0.39	0.00	118.93	0	3,401
LA	Ninemile Point	1403	54	4,098,006	13,093	68,847,463	0.38	0.00	119.05	0	7,929
LA	R S Nelson	1393	18,859	5,620,390	7,893	65,437,722	0.24	0.58	171.78	9,043	2,986
LA	Rodemacher	6190	13,733	4,336,230	8,099	48,657,960	0.33	0.56	178.23	6,434	4,449
LA	Sterlington	1404	4	651,647	2,012	10,953,764	0.37	0.00	118.98	0	1,191

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)
LA	Teche	1400	3	510,502	906	8,590,074	0.21	0.00	118.86	0	262
LA	Waterford 1 & 2	8056	49	1,308,460	1,872	21,989,675	0.17	0.00	119.01	0	223
MA	Brayton Point	1619	39,593	7,435,155	12,670	74,025,160	0.34	1.07	200.88	28,490	7,118
MA	Canal	1599	22,014	4,069,016	5,599	46,736,568	0.24	0.94	174.13	15,003	2,093
MA	Kendall Square	1595	57	332,363	714	5,494,964	0.26	0.02	120.97	0	301
MA	Mount Tom	1606	5,282	1,059,680	1,991	10,328,261	0.39	1.02	205.20	3,732	1,216
MA	Mystic	1588	5,003	1,435,490	1,142	18,381,275	0.12	0.54	156.19	2,246	0
MA	Salem Harbor	1626	14,132	2,596,730	3,794	26,605,027	0.29	1.06	195.21	10,141	1,798
MA	Somerset	1613	4,399	908,942	1,445	8,910,086	0.32	0.99	204.03	3,062	777
MD	Brandon Shores	602	39,974	7,573,937	11,669	73,820,086	0.32	1.08	205.20	28,901	6,133
MD	C P Crane	1552	32,386	2,446,256	10,742	23,715,374	0.91	2.73	206.30	28,829	8,963
MD	Chalk Point	1571	52,526	6,387,632	15,227	70,242,145	0.43	1.50	181.87	41,990	9,959
MD	Dickerson	1572	33,911	3,182,191	7,380	32,046,130	0.46	2.12	198.60	29,104	4,977
MD	Gould Street	1553	1,352	209,193	364	2,444,814	0.30	1.11	171.13	985	180
MD	Herbert A Wagner	1554	18,794	3,220,518	5,707	32,521,810	0.35	1.16	198.05	13,915	3,268
MD	Morgantown	1573	70,344	7,435,745	18,619	72,494,145	0.51	1.94	205.14	59,469	13,182
MD	R P Smith	1570	4,588	618,455	1,257	6,027,713	0.42	1.52	205.20	3,684	805
MD	Riverside	1559	0	32,412	78	545,379	0.29	0.00	118.86	0	37
MD	Vienna	1564	1,471	169,805	310	2,097,893	0.30	1.40	161.88	1,156	153
ME	William F Wyman	1507	1,982	397,061	564	4,586,995	0.25	0.86	173.12	1,294	219
MI	B C Cobb	1695	12,546	2,489,108	3,258	24,489,708	0.27	1.02	203.28	8,873	1,421
MI	Belle River	6034	24,359	9,136,652	9,834	89,945,184	0.22	0.54	203.16	10,867	3,088
MI	Dan E Karn	1702	21,416	4,774,828	8,575	50,252,848	0.34	0.85	190.03	13,878	4,806
MI	Eckert Station	1831	6,562	2,254,090	3,507	21,969,795	0.32	0.60	205.20	3,267	1,859
MI	Endicott Gen.	4259	1,112	503,534	604	4,907,733	0.25	0.45	205.20	376	236
MI	Erickson	1832	3,867	895,322	1,875	8,726,322	0.43	0.89	205.20	2,558	1,221
MI	Greenwood	6035	2,815	883,750	1,043	13,353,352	0.16	0.42	132.36	812	41
MI	Harbor Beach	1731	1,867	280,819	1,288	2,737,110	0.94	1.36	205.19	1,456	1,083
MI	J B Sims	1825	414	300,276	548	2,926,603	0.37	0.28	205.20	0	329
MI	J C Weadock	1720	10,135	2,448,270	3,791	23,862,296	0.32	0.85	205.20	6,556	2,001
MI	J H Campbell	1710	40,330	10,174,503	15,432	99,166,722	0.31	0.81	205.20	25,455	7,995
MI	J R Whiting	1723	13,036	2,776,931	3,728	27,065,601	0.28	0.96	205.20	8,976	1,698
MI	James De Young	1830	1,273	195,473	419	1,905,186	0.44	1.34	205.20	987	276
MI	Monroe	1733	91,904	16,244,583	41,624	158,346,674	0.53	1.16	205.18	68,152	29,748
MI	Presque Isle	1769	16,882	3,809,444	10,474	37,128,978	0.56	0.91	205.20	11,313	7,690
MI	River Rouge	1740	16,194	3,585,457	5,521	35,022,719	0.32	0.92	204.75	10,941	2,894
MI	St Clair	1743	46,523	7,536,790	13,558	73,461,239	0.37	1.27	205.19	35,504	8,048
MI	Trenton Channel	1745	30,171	4,729,991	5,847	46,103,437	0.25	1.31	205.19	23,255	2,389
MI	Wyandotte	1866	1,345	365,713	533	3,697,852	0.29	0.73	197.80	790	256
MN	Allen S King	1915	23,271	3,579,175	11,934	34,884,747	0.68	1.33	205.20	18,038	9,317
MN	Black Dog	1904	3,071	1,885,004	6,507	18,571,218	0.70	0.33	203.00	286	5,115
MN	Clay Boswell	1893	21,166	8,303,021	14,783	80,999,931	0.37	0.52	205.01	9,016	8,708
MN	Fox Lake	1888	22	64,394	112	1,071,577	0.21	0.04	120.19	0	32
MN	High Bridge	1912	3,821	2,003,290	5,790	19,524,359	0.59	0.39	205.21	892	4,326
MN	Hoot Lake	1943	2,828	1,044,048	1,836	10,175,928	0.36	0.56	205.20	1,302	1,073
MN	Hutchinson Utils Comm (Plt 2)	6358	0	30,756	167	528,008	0.63	0.00	116.50	0	128
MN	M L Hibbard	1897	132	284,573	406	2,745,537	0.30	0.10	207.30	0	200
MN	Northeast Station	1961	2,001	186,060	407	1,813,439	0.45	2.21	205.20	1,729	271
MN	Riverside	1927	12,903	2,923,689	13,643	28,498,577	0.96	0.91	205.18	8,629	11,505
MN	Sherburne County	6090	26,742	18,220,647	26,288	177,589,149	0.30	0.30	205.20	103	12,969
MN	Silver Lake	2008	882	111,668	224	1,099,132	0.41	1.61	203.19	718	142
MN	Syl Laskin	1891	1,608	936,817	2,210	9,133,582	0.48	0.35	205.14	238	1,525
MN	Taconite Harbor Energy	10075	2,490	831,857	1,981	8,105,749	0.49	0.61	205.25	1,274	1,373

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)
MO	Asbury	2076	4,349	1,521,284	6,169	14,787,227	0.83	0.59	205.76	2,131	5,060
MO	Blue Valley	2132	1,360	57,929	96	571,075	0.34	4.76	202.88	1,274	53
MO	Chamois	2169	1,226	458,927	1,956	4,472,980	0.87	0.55	205.20	555	1,621
MO	Columbia	2123	885	111,638	279	1,088,111	0.51	1.63	205.20	721	197
MO	Iatan	6065	14,856	4,961,637	7,596	48,359,038	0.31	0.61	205.20	7,602	3,969
MO	James River	2161	4,714	1,694,580	4,584	16,580,971	0.55	0.57	204.40	2,226	3,341
MO	Labadie	2103	47,610	14,626,118	7,820	142,554,725	0.11	0.67	205.20	26,227	0
MO	Lake Road	2098	2,838	776,956	3,370	7,576,047	0.89	0.75	205.11	1,702	2,801
MO	Meramec	2104	16,447	5,471,872	9,419	53,332,145	0.35	0.62	205.20	8,447	5,419
MO	Montrose	2080	15,826	3,415,421	5,587	33,288,577	0.34	0.95	205.20	10,833	3,090
MO	New Madrid	2167	15,798	8,082,519	37,465	78,777,612	0.95	0.40	205.20	3,981	31,556
MO	Rush Island	6155	23,256	7,372,345	3,992	71,855,267	0.11	0.65	205.20	12,477	0
MO	Sibley	2094	11,804	3,613,323	11,491	35,217,599	0.65	0.67	205.20	6,522	8,850
MO	Sikeston	6768	6,236	2,170,990	2,205	20,466,151	0.22	0.61	212.15	3,166	670
MO	Sioux	2107	45,957	6,278,142	14,090	61,190,481	0.46	1.50	205.20	36,779	9,501
MO	Southwest	6195	3,390	1,712,776	2,672	16,693,721	0.32	0.41	205.20	886	1,419
MO	Thomas Hill	2168	15,221	7,474,277	18,276	72,857,640	0.50	0.42	205.17	4,292	12,811
MS	Baxter Wilson	2050	8	1,667,699	6,375	27,707,974	0.46	0.00	120.38	0	4,297
MS	Daniel Electric Gen. Plant	6073	27,207	8,457,422	10,371	97,326,501	0.21	0.56	173.79	12,608	3,071
MS	Delta	2051	27	107,265	199	1,804,148	0.22	0.03	118.91	0	63
MS	Gerald Andrus	8054	8	1,699,748	4,809	28,135,482	0.34	0.00	120.83	0	2,699
MS	Moselle	2070	2	349,476	790	5,880,134	0.27	0.00	118.87	0	349
MS	R D Morrow	6061	9,982	2,761,350	6,285	26,913,751	0.47	0.74	205.20	5,945	4,266
MS	Red Hills Generation Facility	55076	4,745	2,732,369	1,177	25,335,498	0.09	0.37	215.69	945	0
MS	Rex Brown	2053	2	457,417	988	7,695,009	0.26	0.00	118.89	0	411
MS	Watson Electric Gen. Plant	2049	25,064	4,919,427	12,643	48,998,101	0.52	1.02	200.80	17,714	8,968
MT	Colstrip	6076	16,735	16,262,887	32,631	158,520,689	0.41	0.21	205.18	0	20,742
MT	J E Corette	2187	3,135	1,331,694	1,703	12,979,500	0.26	0.48	205.20	1,188	729
MT	Lewis & Clark	6089	781	468,045	796	4,303,778	0.37	0.36	217.50	135	473
NC	Asheville	2706	16,711	2,754,515	5,188	27,673,489	0.37	1.21	199.07	12,560	3,113
NC	Belews Creek	8042	103,085	15,700,908	44,882	153,030,325	0.59	1.35	205.20	80,130	33,405
NC	Buck	2720	7,427	1,389,551	2,110	13,543,392	0.31	1.10	205.20	5,396	1,094
NC	Cape Fear	2708	11,755	1,715,339	2,645	16,722,458	0.32	1.41	205.15	9,247	1,391
NC	Cliffside	2721	22,096	2,841,734	3,633	27,697,257	0.26	1.60	205.20	17,942	1,556
NC	Dan River	2723	2,949	634,967	1,375	6,188,794	0.44	0.95	205.20	2,020	911
NC	Elizabethtown Power	10380	1,346	177,721	935	1,732,893	1.08	1.55	205.11	1,086	805
NC	G G Allen	2718	31,132	4,917,885	9,018	47,932,588	0.38	1.30	205.20	23,942	5,423
NC	L V Sutton	2713	20,865	2,963,327	9,007	28,919,584	0.62	1.44	204.94	16,527	6,838
NC	Lee	2709	15,535	2,498,883	5,515	25,038,852	0.44	1.24	199.60	11,779	3,637
NC	Lumberton Power, LLC	10382	1,944	260,884	1,117	2,543,462	0.88	1.53	205.14	1,563	926
NC	Marshall	2727	82,260	12,802,735	19,170	124,783,021	0.31	1.32	205.20	63,543	9,812
NC	Mayo	6250	27,410	5,404,044	9,710	52,674,734	0.37	1.04	205.19	19,509	5,759
NC	Riverbend	2732	14,959	1,887,624	3,793	18,397,855	0.41	1.63	205.20	12,200	2,414
NC	Rowan County Plant	7826	1	60,616	162	995,928	0.33	0.00	121.73	0	87
NC	Roxboro	2712	95,610	14,935,713	23,656	145,590,652	0.32	1.31	205.17	73,771	12,737
NC	W H Weatherspoon	2716	7,879	958,382	3,258	9,342,414	0.70	1.69	205.17	6,478	2,558
ND	Antelope Valley	6469	13,863	7,931,145	11,793	72,849,658	0.32	0.38	217.74	2,936	6,329
ND	Coal Creek	6030	24,428	10,587,048	10,354	97,244,878	0.21	0.50	217.74	9,841	3,061
ND	Coyote	8222	14,069	3,948,732	13,173	36,270,124	0.73	0.78	217.74	8,628	10,453
ND	Leland Olds	2817	47,399	5,969,285	13,765	54,829,441	0.50	1.73	217.74	39,174	9,653
ND	Milton R Young	2823	28,565	6,165,648	22,845	56,633,293	0.81	1.01	217.74	20,070	18,597
ND	R M Heskett	2790	2,189	657,287	918	6,037,325	0.30	0.73	217.74	1,283	465

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)
ND	Stanton	2824	10,022	1,678,354	3,099	15,415,984	0.40	1.30	217.74	7,710	1,943
NE	C W Burdick	2241	0	38,786	76	652,672	0.23	0.00	118.85	0	27
NE	Canaday	2226	2	76,412	127	1,286,490	0.20	0.00	118.79	0	30
NE	Gerald Gentleman Station	6077	32,152	11,414,410	22,084	111,251,575	0.40	0.58	205.20	15,464	13,740
NE	Gerald Whelan Energy Center	60	2,007	618,100	831	6,024,409	0.28	0.67	205.20	1,103	379
NE	Lon Wright	2240	978	456,106	411	4,475,420	0.18	0.44	203.83	307	75
NE	Nebraska City	6096	12,820	4,196,583	8,214	40,902,362	0.40	0.63	205.20	6,684	5,146
NE	North Omaha	2291	11,509	3,904,854	6,108	38,335,921	0.32	0.60	203.72	5,759	3,233
NE	Platte	59	2,250	744,373	1,318	7,255,057	0.36	0.62	205.20	1,162	773
NE	Sheldon	2277	5,624	1,924,504	7,841	18,757,350	0.84	0.60	205.20	2,810	6,434
NH	Merrimack	2364	30,657	3,156,784	3,833	30,767,913	0.25	1.99	205.20	26,042	1,526
NH	Newington	8002	5,226	756,457	943	9,658,944	0.20	1.08	156.63	3,777	218
NH	Schiller	2367	8,053	1,159,977	1,848	11,425,396	0.32	1.41	203.05	6,339	991
NJ	B L England	2378	12,122	1,577,653	3,717	15,777,994	0.47	1.54	199.98	9,755	2,533
NJ	Deepwater	2384	2,460	530,877	979	5,159,986	0.38	0.95	205.77	1,686	592
NJ	Hudson Gen. Station	2403	18,954	3,531,791	8,994	37,344,823	0.48	1.02	189.14	13,353	6,193
NJ	Mercer	2408	14,262	2,947,225	11,971	29,012,016	0.83	0.98	203.17	9,910	9,795
NJ	Sayreville	2390	1	62,938	160	1,057,149	0.30	0.00	119.07	0	80
NM	Cunningham	2454	4	777,486	1,318	13,115,422	0.20	0.00	118.56	0	334
NM	Four Corners	2442	32,847	14,930,145	41,577	145,626,998	0.57	0.45	205.05	11,003	30,655
NM	Maddox	2446	1	278,825	422	4,703,558	0.18	0.00	118.56	0	70
NM	Prewitt Escalante Gen. Stn	87	1,192	1,759,793	3,470	17,152,014	0.40	0.14	205.20	0	2,183
NM	Reeves	2450	0	94,504	173	1,590,183	0.22	0.00	118.86	0	54
NM	Rio Grande	2444	2	501,799	912	8,443,688	0.22	0.00	118.86	0	279
NM	San Juan	2451	16,768	14,489,489	30,353	141,335,394	0.43	0.24	205.04	0	19,753
NV	Clark	2322	3	504,559	1,148	8,490,197	0.27	0.00	118.86	0	511
NV	Fort Churchill	2330	9	660,996	2,211	10,851,604	0.41	0.00	121.82	0	1,397
NV	Mohave	2341	40,347	10,153,106	20,267	99,030,892	0.41	0.81	205.05	25,492	12,839
NV	North Valmy	8224	6,874	4,508,896	7,871	43,946,407	0.36	0.31	205.20	282	4,575
NV	Reid Gardner	2324	1,977	5,351,897	10,735	52,290,147	0.41	0.08	204.70	0	6,813
NV	Sunrise	2326	1	206,665	851	3,477,583	0.49	0.00	118.86	0	590
NV	Tracy	2336	23	864,455	1,593	14,691,219	0.22	0.00	117.68	0	491
NY	74Th Street	2504	778	466,013	651	5,757,521	0.23	0.27	161.88	0	219
NY	AES Cayuga (Milliken)	2535	5,432	2,658,788	4,015	25,914,036	0.31	0.42	205.20	1,545	2,072
NY	AES Greenidge	2527	19,444	1,285,806	3,186	12,532,197	0.51	3.10	205.20	17,564	2,246
NY	AES Somerset (Kintigh)	6082	4,149	5,383,508	7,733	52,470,935	0.29	0.16	205.20	0	3,797
NY	AES Westover	2526	15,071	1,059,269	2,748	10,324,268	0.53	2.92	205.20	13,522	1,973
NY	Bowline Point	2625	1,360	1,453,553	2,029	21,459,594	0.19	0.13	135.47	0	420
NY	CH Resources - Niagara Falls	50202	471	195,227	180	1,885,899	0.19	0.50	207.04	189	39
NY	Charles Poletti	2491	1,009	1,620,808	1,952	24,919,028	0.16	0.08	130.09	0	83
NY	Dunkirk	2554	51,907	3,675,372	6,142	35,822,390	0.34	2.90	205.20	46,534	3,455
NY	Dynegy Danskammer	2480	12,120	2,564,063	4,885	25,705,219	0.38	0.94	199.50	8,264	2,957
NY	Dynegy Roseton, LLC	8006	6,821	1,297,333	1,652	16,490,831	0.20	0.83	157.34	4,347	415
NY	East River	2493	498	928,597	1,509	14,330,214	0.21	0.07	129.60	0	434
NY	Huntley Power	2549	38,998	3,502,854	7,158	34,140,897	0.42	2.28	205.20	33,877	4,597
NY	Lovett	2629	7,979	1,868,868	3,488	19,379,427	0.36	0.82	192.87	5,072	2,034
NY	Northport	2516	24,175	5,724,592	6,875	75,874,013	0.18	0.64	150.90	12,794	1,184
NY	Oswego	2594	2,470	439,602	545	5,463,095	0.20	0.90	160.94	1,650	135
NY	Port Jefferson	2517	6,453	1,362,193	1,323	17,524,214	0.15	0.74	155.46	3,824	9
NY	Rochester 7, Russell Station	2642	26,395	1,689,235	3,065	16,464,214	0.37	3.21	205.20	23,925	1,830
NY	S A Carlson	2682	3,662	335,906	646	3,569,724	0.36	2.05	188.20	3,127	379

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
OH	Cardinal	2828	74,751	8,409,740	23,379	81,967,529	0.57	1.82	205.20	62,455	17,231
OH	Conesville	2840	135,526	10,213,573	26,659	99,550,940	0.54	2.72	205.19	120,593	19,192
OH	Eastlake	2837	67,456	6,767,417	21,094	65,959,321	0.64	2.05	205.20	57,562	16,147
OH	Edgewater	2857	47	110,460	196	1,546,068	0.25	0.06	142.89	0	80
OH	Gen J M Gavin	8102	32,380	15,353,814	43,839	149,647,267	0.59	0.43	205.20	9,933	32,616
OH	Hamilton	2917	1,561	312,394	532	3,059,956	0.35	1.02	204.18	1,102	302
OH	J M Stuart	2850	117,549	15,575,642	46,769	151,809,366	0.62	1.55	205.20	94,778	35,383
OH	Killen Station	6031	19,664	3,741,385	7,935	36,476,849	0.44	1.08	205.14	14,193	5,199
OH	Kyger Creek	2876	74,452	6,625,110	25,318	64,572,197	0.78	2.31	205.20	64,766	20,475
OH	Lake Shore	2838	2,453	1,119,927	1,471	10,915,462	0.27	0.45	205.20	815	653
OH	Miami Fort	2832	85,699	7,913,436	16,159	77,128,952	0.42	2.22	205.20	74,130	10,375
OH	Muskingum River	2872	115,526	8,163,694	27,339	79,568,208	0.69	2.90	205.20	103,591	21,371
OH	Niles	2861	17,242	1,293,782	5,912	12,611,059	0.94	2.73	205.18	15,351	4,966
OH	O H Hutchings	2848	6,275	949,702	2,787	9,341,578	0.60	1.34	203.33	4,874	2,086
OH	Picway	2843	10,457	506,061	1,098	4,932,338	0.45	4.24	205.20	9,717	728
OH	R E Burger	2864	35,454	2,175,989	6,759	21,208,478	0.64	3.34	205.20	32,272	5,168
OH	Richard Gorsuch	7253	31,006	1,731,020	3,228	16,871,556	0.38	3.68	205.20	28,476	1,962
OH	W H Sammis	2866	145,114	15,854,576	38,624	154,533,808	0.50	1.88	205.19	121,934	27,034
OH	W H Zimmer	6019	21,492	9,033,570	20,966	88,046,486	0.48	0.49	205.20	8,285	14,362
OH	Walter C Beckjord	2830	69,931	7,418,892	18,753	72,308,846	0.52	1.93	205.20	59,084	13,330
OK	Comanche	8059	4	740,367	2,974	12,457,886	0.48	0.00	118.86	0	2,039
OK	Conoco	7185	10	368,999	505	6,209,244	0.16	0.00	118.85	0	40
OK	GRDA	165	17,226	7,915,705	15,387	77,376,523	0.40	0.45	204.60	5,619	9,584
OK	Horseshoe Lake	2951	53	887,541	1,607	14,924,661	0.22	0.01	118.94	0	487
OK	Hugo	6772	8,557	3,332,939	3,832	32,490,592	0.24	0.53	205.16	3,683	1,395
OK	Mooreland	3008	1	134,735	207	2,267,214	0.18	0.00	118.85	0	37
OK	Muskogee	2952	27,522	11,499,995	17,744	113,609,224	0.31	0.48	202.45	10,480	9,223
OK	Mustang	2953	3	650,766	2,428	10,950,382	0.44	0.00	118.86	0	1,607
OK	Northeastern	2963	34,512	9,467,675	18,086	101,959,271	0.35	0.68	185.71	19,218	10,439
OK	Riverside	4940	8	1,499,062	3,008	25,224,495	0.24	0.00	118.86	0	1,116
OK	Seminole	2956	17	2,146,233	4,001	36,113,229	0.22	0.00	118.86	0	1,293
OK	Sooner	6095	18,393	7,386,334	12,330	72,031,463	0.34	0.51	205.09	7,588	6,927
OK	Southwestern	2964	3	611,199	2,871	10,284,432	0.56	0.00	118.86	0	2,099
OK	Tulsa	2965	1	151,183	437	2,543,924	0.34	0.00	118.86	0	247
OR	Boardman	6106	12,262	4,126,996	8,401	40,224,136	0.42	0.61	205.20	6,229	5,384
PA	Armstrong	3178	32,500	2,198,944	4,128	21,432,174	0.39	3.03	205.20	29,285	2,520
PA	Bruce Mansfield	6094	30,313	15,411,599	29,869	150,210,584	0.40	0.40	205.20	7,781	18,603
PA	Brunner Island	3140	68,932	8,773,249	16,191	85,510,979	0.38	1.61	205.20	56,105	9,777
PA	Brunot Island Power Stn	3096	1	227,879	681	3,835,225	0.36	0.00	118.83	0	393
PA	Cheswick	8226	42,018	3,376,491	5,761	32,977,679	0.35	2.55	204.77	37,071	3,288
PA	Conemaugh	3118	5,936	11,603,128	19,461	113,132,106	0.34	0.10	205.13	0	10,976
PA	Cromby	3159	3,667	888,337	1,417	9,365,377	0.30	0.78	189.71	2,262	714
PA	Delaware	3160	403	157,029	288	1,795,317	0.32	0.45	174.93	134	153
PA	Eddystone	3161	6,718	3,534,537	4,900	35,756,761	0.27	0.38	197.70	1,355	2,218
PA	Elrama	3098	5,395	3,469,031	8,080	33,811,223	0.48	0.32	205.20	324	5,544
PA	Hatfields Ferry	3179	158,713	10,043,622	23,065	97,891,123	0.47	3.24	205.20	144,029	15,723
PA	Homer City	3122	105,784	11,709,767	25,169	114,082,530	0.44	1.85	205.29	88,672	16,613
PA	Hunlock Power Station	3176	3,369	395,220	464	3,771,083	0.25	1.79	209.61	2,804	181
PA	Keystone	3136	150,619	11,522,016	18,203	112,300,340	0.32	2.68	205.20	133,774	9,780
PA	Martins Creek	3148	22,051	2,528,755	5,127	28,188,725	0.36	1.56	179.42	17,823	3,012

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
PA	Schuylkill	3169	135	49,983	52	574,697	0.18	0.47	173.95	48	8
PA	Seward	3130	10,737	903,788	1,752	8,808,855	0.40	2.44	205.20	9,416	1,091
PA	Shawville	3131	38,226	3,051,848	6,534	29,745,503	0.44	2.57	205.20	33,764	4,303
PA	Sunbury	3152	25,216	2,505,104	5,398	23,347,084	0.46	2.16	214.60	21,714	3,647
PA	Titus	3115	13,841	1,239,473	1,791	12,080,730	0.30	2.29	205.20	12,028	885
PA	Warren	3132	1,947	148,245	419	1,444,853	0.58	2.70	205.20	1,731	311
PA	Westwood	50611	385	353,654	264	2,946,009	0.18	0.26	240.09	0	43
SC	Canadys Steam	3280	18,591	2,254,691	4,398	21,903,894	0.40	1.70	205.87	15,306	2,755
SC	Cope Station	7210	1,879	3,516,202	4,161	34,270,959	0.24	0.11	205.20	0	1,590
SC	Cross	130	14,096	8,506,559	15,775	82,909,917	0.38	0.34	205.20	1,660	9,557
SC	Dolphus M Grainger	3317	9,974	1,052,601	3,067	10,259,297	0.60	1.94	205.20	8,435	2,297
SC	H B Robinson	3251	8,435	1,031,209	3,480	10,051,148	0.69	1.68	205.19	6,927	2,727
SC	Jefferies	3319	23,821	2,228,863	4,873	21,805,162	0.45	2.18	204.43	20,550	3,238
SC	Mcmeekin	3287	9,820	1,316,498	2,553	12,831,788	0.40	1.53	205.19	7,895	1,590
SC	Urquhart	3295	5,510	1,129,699	1,189	14,233,814	0.17	0.77	158.73	3,375	121
SC	W S Lee	3264	7,435	1,051,189	1,658	10,245,448	0.32	1.45	205.20	5,898	889
SC	Wateree	3297	36,378	4,217,174	9,380	41,105,811	0.46	1.77	205.19	30,212	6,297
SC	Williams	3298	25,544	4,695,940	10,214	45,772,403	0.45	1.12	205.19	18,678	6,781
SC	Winyah	6249	37,622	8,675,399	21,681	84,555,538	0.51	0.89	205.20	24,939	15,339
SD	Big Stone	6098	11,756	3,668,330	14,954	35,753,697	0.84	0.66	205.20	6,393	12,272
TN	Allen	3393	18,711	5,366,473	14,470	52,305,146	0.55	0.72	205.20	10,865	10,548
TN	Bull Run	3396	42,188	6,013,355	17,912	58,609,690	0.61	1.44	205.20	33,396	13,517
TN	Cumberland	3399	16,661	19,058,149	49,943	185,752,021	0.54	0.18	205.20	0	36,012
TN	Gallatin	3403	34,159	7,674,385	11,812	75,471,852	0.31	0.91	203.37	22,838	6,152
TN	John Sevier	3405	35,487	5,192,854	10,211	50,612,597	0.40	1.40	205.20	27,896	6,415
TN	Johnsonville	3406	108,793	9,575,802	23,914	94,216,619	0.51	2.31	203.27	94,660	16,847
TN	Kingston	3407	77,571	10,950,205	26,085	106,727,180	0.49	1.45	205.20	61,562	18,080
TX	AES Deepwater, Inc.	10670	2,789	899,152	2,372	8,609,302	0.55	0.65	208.88	1,497	1,726
TX	Alex Ty Cooke Gen Sta	3602	0	77,917	122	1,311,138	0.19	0.00	118.85	0	24
TX	Barney M. Davis	4939	91	1,039,829	1,403	17,340,667	0.16	0.01	119.93	0	102
TX	Big Brown	3497	77,860	9,600,108	7,205	90,687,590	0.16	1.72	211.72	64,257	403
TX	Coleto Creek	6178	14,289	4,378,288	3,554	42,673,353	0.17	0.67	205.20	7,887	354
TX	Decordova	8063	11	1,788,280	5,631	30,079,342	0.37	0.00	118.90	0	3,375
TX	E S Joslin	3436	0	76,790	179	1,292,128	0.28	0.00	118.86	0	82
TX	Eagle Mountain	3489	7	654,338	935	11,012,352	0.17	0.00	118.84	0	109
TX	Fort Phantom	4938	3	561,474	760	9,447,810	0.16	0.00	118.86	0	51
TX	Gibbons Creek	6136	10,816	3,215,146	2,382	31,336,585	0.15	0.69	205.20	6,115	32
TX	Graham	3490	62	764,276	2,060	12,940,577	0.32	0.01	118.12	0	1,090
TX	Harrington Station	6193	26,967	9,687,453	13,139	94,419,565	0.28	0.57	205.20	12,804	6,058
TX	J K Spruce	7097	4,782	4,440,721	4,146	43,281,894	0.19	0.22	205.20	0	900
TX	J L Bates	3438	1	234,830	1,598	3,951,353	0.81	0.00	118.86	0	1,301
TX	J T Deely	6181	21,514	6,576,137	6,118	64,094,954	0.19	0.67	205.20	11,900	1,310
TX	Jones Station	3482	7	1,295,331	1,906	21,851,021	0.17	0.00	118.56	0	268
TX	La Palma	3442	2	289,770	628	4,875,850	0.26	0.00	118.86	0	263
TX	Lake Creek	3502	1	227,304	560	3,824,373	0.29	0.00	118.87	0	273
TX	Laredo	3439	2	346,926	479	5,835,027	0.16	0.00	118.91	0	41
TX	Lewis Creek	3457	7	1,455,838	2,209	24,497,192	0.18	0.00	118.86	0	372
TX	Limestone	298	30,839	13,002,297	13,757	119,429,603	0.23	0.52	217.74	12,925	4,800
TX	Lon C Hill	3440	1	141,047	199	2,373,391	0.17	0.00	118.86	0	21

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)
TX	Martin Lake	6146	66,400	17,719,307	18,464	169,136,966	0.22	0.79	209.53	41,029	5,779
TX	Monticello	6147	86,319	15,619,270	15,920	148,930,601	0.21	1.16	209.75	63,980	4,751
TX	Morgan Creek	3492	3	673,741	2,911	11,336,985	0.51	0.00	118.86	0	2,061
TX	Newman	3456	5	1,065,017	1,679	17,920,776	0.19	0.00	118.86	0	335
TX	Nichols Station	3484	3	526,562	909	8,882,614	0.20	0.00	118.56	0	243
TX	Nueces Bay	3441	3	614,877	973	10,346,367	0.19	0.00	118.86	0	197
TX	Oak Creek	3523	0	59,774	102	1,005,721	0.20	0.00	118.87	0	27
TX	Oklaunion	127	3,738	4,711,711	8,266	45,923,129	0.36	0.16	205.20	0	4,821
TX	P H Robinson	3466	9	1,866,927	2,998	31,414,567	0.19	0.00	118.86	0	642
TX	Parkdale	3455	1	217,958	490	3,667,524	0.27	0.00	118.86	0	215
TX	Permian Basin	3494	7	1,372,962	2,924	23,102,730	0.25	0.00	118.86	0	1,192
TX	Pirkey	7902	19,476	5,265,724	4,749	48,367,080	0.20	0.81	217.74	12,220	1,121
TX	Plant X	3485	3	567,582	961	9,574,608	0.20	0.00	118.56	0	243
TX	Rio Pecos	3526	1	126,610	186	2,130,432	0.17	0.00	118.86	0	26
TX	Sam Seymour	6179	31,798	12,475,799	19,118	121,693,801	0.31	0.52	205.04	13,544	9,991
TX	San Miguel	6183	13,173	3,891,517	7,120	35,744,881	0.40	0.74	217.74	7,811	4,439
TX	Sandow	6648	23,331	4,602,758	7,670	44,670,713	0.34	1.04	206.07	16,630	4,320
TX	T C Ferguson	4937	2	424,581	645	7,713,673	0.17	0.00	110.09	0	67
TX	TNP One	7030	5,132	2,786,458	2,410	25,594,266	0.19	0.40	217.74	1,293	490
TX	Tolk Station	6194	24,874	8,487,915	12,115	82,728,185	0.29	0.60	205.20	12,465	5,910
TX	Tradinghouse	3506	9	1,839,453	5,348	30,952,290	0.35	0.00	118.86	0	3,026
TX	Trinidad	3507	1	149,724	253	2,519,372	0.20	0.00	118.86	0	64
TX	Valley (Texas Utilities)	3508	29	1,041,004	2,177	17,430,343	0.25	0.00	119.45	0	870
TX	Victoria	3443	1	101,357	157	1,705,561	0.18	0.00	118.86	0	29
TX	W A Parish	3470	61,827	20,707,557	16,468	209,105,301	0.16	0.59	198.06	30,461	785
TX	Welsh	6139	35,780	13,245,291	14,931	128,976,413	0.23	0.55	205.39	16,434	5,257
UT	Bonanza	7790	981	4,560,071	6,712	44,445,145	0.30	0.04	205.20	0	3,379
UT	Carbon	3644	6,764	1,532,646	3,378	14,939,629	0.45	0.91	205.18	4,523	2,258
UT	Desert Power Plant	55848	0	79,529	157	1,347,591	0.23	0.00	118.03	0	56
UT	Hunter (Emery)	6165	7,026	10,081,766	19,859	98,263,885	0.40	0.14	205.20	0	12,489
UT	Huntington	8069	13,710	5,863,597	11,183	57,150,984	0.39	0.48	205.20	5,137	6,897
UT	Intermountain	6481	3,648	14,983,662	30,256	146,039,577	0.41	0.05	205.20	0	19,303
VA	Altavista Power Station	10773	105	408,751	562	3,983,875	0.28	0.05	205.20	0	264
VA	Bremo	3796	13,457	1,778,017	4,720	17,329,618	0.54	1.55	205.20	10,857	3,420
VA	Chesapeake	3803	32,344	4,538,996	9,584	44,239,717	0.43	1.46	205.20	25,708	6,266
VA	Chesterfield	3797	73,841	8,854,121	15,832	88,376,578	0.36	1.67	200.37	60,584	9,204
VA	Clinch River	3775	26,997	4,398,664	12,823	42,871,952	0.60	1.26	205.20	20,567	9,607
VA	Clover	7213	2,111	6,777,877	10,138	66,061,187	0.31	0.06	205.20	0	5,184
VA	Glen Lyn	3776	11,681	1,788,428	4,839	17,431,080	0.56	1.34	205.20	9,066	3,531
VA	Possum Point Power Stn	3804	21,006	3,022,331	5,026	31,729,468	0.32	1.32	190.51	16,247	2,647
VA	Potomac River	3788	16,141	2,893,282	6,009	28,199,751	0.43	1.14	205.20	11,911	3,894
VA	Southampton Power Stn	10774	102	426,705	814	4,158,944	0.39	0.05	205.20	0	502
VA	Yorktown	3809	33,031	4,128,014	7,790	45,751,338	0.34	1.44	180.45	26,168	4,359
WA	Centralia	3845	19,032	10,484,141	15,470	102,703,316	0.30	0.37	204.16	3,627	7,767
WI	Alma	4140	7,283	816,078	2,997	7,953,955	0.75	1.83	205.20	6,090	2,401
WI	Bay Front	3982	516	425,832	1,042	4,129,633	0.50	0.25	206.23	0	732
WI	Blount Street	3992	7,180	630,764	1,515	6,432,624	0.47	2.23	196.11	6,216	1,032
WI	Columbia	8023	27,502	7,798,398	11,224	76,007,719	0.30	0.72	205.20	16,101	5,524
WI	Edgewater	4050	17,435	5,440,802	8,751	53,029,274	0.33	0.66	205.20	9,480	4,774
WI	Genoa	4143	15,046	2,005,286	4,449	19,544,647	0.46	1.54	205.20	12,115	2,983
WI	J P Madgett	4271	7,490	2,415,612	4,616	23,543,960	0.39	0.64	205.20	3,958	2,850
WI	Manitowoc	4125	3,105	399,910	633	3,865,273	0.33	1.61	206.92	2,525	343
WI	Nelson Dewey	4054	15,708	1,416,080	5,287	13,598,019	0.78	2.31	208.28	13,668	4,267

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
WV	Kammer	3947	39,096	3,694,206	13,174	36,005,905	0.73	2.17	205.20	33,695	10,473
WV	Kanawha River	3936	15,863	2,615,492	6,168	25,492,185	0.48	1.24	205.20	12,039	4,256
WV	Mitchell	3948	56,009	8,641,348	29,598	84,222,422	0.70	1.33	205.20	43,376	23,281
WV	Mountaineer (1301)	6264	43,224	8,628,159	12,911	84,095,132	0.31	1.03	205.20	30,609	6,604
WV	Mt Storm	3954	23,370	12,818,015	39,876	124,931,890	0.64	0.37	205.20	4,631	30,506
WV	North Branch Power Stn	7537	519	441,430	694	4,302,362	0.32	0.24	205.20	0	371
WV	Phil Sporn	3938	40,246	5,052,086	13,185	49,240,607	0.54	1.63	205.20	32,860	9,491
WV	Pleasants	6004	41,909	7,705,840	13,714	75,105,622	0.37	1.12	205.20	30,643	8,081
WV	Rivesville	3945	4,412	570,550	2,027	5,560,922	0.73	1.59	205.20	3,578	1,610
WV	Willow Island	3946	14,457	1,369,017	5,946	13,314,118	0.89	2.17	205.65	12,460	4,947
WY	Dave Johnston	4158	19,978	7,060,151	15,019	68,812,962	0.44	0.58	205.20	9,656	9,858
WY	Jim Bridger	8066	20,087	16,620,442	30,842	161,996,430	0.38	0.25	205.20	0	18,692
WY	Laramie River	6204	11,134	14,070,159	18,960	137,136,046	0.28	0.16	205.20	0	8,674
WY	Naughton	4162	19,310	5,709,909	12,913	56,844,778	0.45	0.68	200.89	10,783	8,649
WY	Neil Simpson II	7504	707	1,054,090	821	10,433,989	0.16	0.14	202.05	0	38
WY	Wyodak	6101	8,291	3,661,351	4,697	35,685,720	0.26	0.46	205.20	2,938	2,020
	TOTAL		**10,166,099**	**2,209,251,861**	**4,375,637**	**22,176,699,100**				**7,148,204**	**2,720,095**

Note: The emissions rate for each pollutant is measured in pounds per million British thermal units (BTU).

APPENDIX B. EMISSIONS FROM DIRTY POWER PLANTS: BY STATE

State	# Plants	# Dirty	SO2 (tons)	CO2 (tons)	NOx (tons)	Excess SO2 (tons)	Excess NOx (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	23	15	129,763	44,988,352	94,954	65,912	61,284
Kentucky	27	21	482,647	97,480,110	198,089	342,240	126,630
Louisiana	33	14	101,730	39,528,438	74,893	57,036	39,361
Maine	8	1	1,982	397,061	564	1,294	219
Maryland	13	10	255,345	31,276,143	71,354	208,034	47,658
Massachusetts	19	7	90,479	17,837,375	27,354	62,675	13,304
Michigan	34	19	342,751	73,385,533	131,460	234,016	77,080
Minnesota	20	14	100,939	40,404,999	86,289	42,225	56,684
Mississippi	23	9	67,045	23,152,173	43,637	37,211	24,125
Missouri	29	17	231,771	69,800,734	137,066	129,821	90,360
Montana	4	3	20,650	18,062,625	35,130	1,323	21,945
Nebraska	13	9	67,342	23,374,128	47,008	33,289	29,838
Nevada	10	7	49,233	22,250,574	44,674	25,774	27,216
New Hampshire	4	3	43,935	5,073,218	6,624	36,157	2,735
New Jersey	19	5	47,798	8,650,484	25,820	34,703	19,193
New Mexico	13	7	50,815	32,832,042	78,225	11,003	53,327
New York	60	19	229,191	37,511,586	59,780	176,234	28,278
North Carolina	20	17	462,964	71,904,826	145,175	357,691	92,465
North Dakota	7	7	140,534	36,937,498	75,947	89,642	50,501
Ohio	45	23	1,132,060	133,632,891	368,254	936,843	270,553
Oklahoma	23	14	106,308	46,792,731	85,416	46,589	46,533
Oregon	6	1	12,262	4,126,996	8,401	6,229	5,384
Pennsylvania	48	26	889,386	108,295,123	200,137	742,533	120,515
Rhode Island	5	0	0	0	0	0	0
South Carolina	18	12	199,105	39,676,024	82,428	143,875	53,182
South Dakota	5	1	11,756	3,668,330	14,954	6,393	12,272
Tennessee	12	7	333,570	63,831,223	154,347	251,217	107,570

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 Unites 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/chief/trends/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/chief/trends/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 NOx 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, 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 on fish populations.* Ecological Applications 6(2): 422-437.

[23] Bulger, A.J. et al. "Current, reconstructed past, and projected future status of brook trout streams in Virginia." *Canadian Journal of Fish and Aquatic Sciences*. Volume 57: 1515-1523.

[24] See, e.g., Droscoll, et.al, "Acidic deposition in the Northeastern United States: Sources, inputs, ecosystem effects and management strategies." *Bioscience*. 51(3); and McLaughlin, et.al., "The impacts of acidic deposition and global change on high-elevation southern Appalachian spruce-fir forests", from *The productivity and sustainability of southern forests ecosystems in a changing environment*. Springer-Verlag, New York: 255-77.

[25] Driscoll et.al., *Acid rain revisited: Advances in scientific understanding since the passage of the 1970 and 1990 Clean Air Act Amendments.* Hubbard Brook Research Foundation. Science Links Publication 1(1).

[26] "Joint Explanatory Statement of the Committee of Conference," Report No. 95-564, 95th Congress, 1st Sess., reprinted in Congressional Research Service, A Legislative History of the Clean Air Amendments of 1977, at 531.

[27] 42 U.S.C. 7411.

[28] H.R. Rept. 95-294, 185; 1977 CRS Legislative History, 2652.
[29] National Academy of Public Administration, for the U.S Congress and the Environmental Protection Agency. A Breath of Fresh Air: Reviving the New Source Review Program, April 2003.
[30] United States Energy Information Administration, Analysis of Strategies for Reducing Multiple Emissions from Power Plants, December 2000, p. 60.
[31] In February 2000, Tampa Electric Company settled with EPA, agreeing to install emissions control equipment and pay civil penalties for NSR violations. Later that year two other agreements were announced, but were not finalized, and talks between those parties have not proceeded under the Bush administration.
[32] Meet the Press transcript, February 13, 2000.
[33] Brad Knickerbocker, "Bush's reversal on utility emissions divides cabinet." *Christian Science Monitor.* March 15, 2001.
[34] Transcript of October 11, 2000 presidential debate available at http://www.c-span.org/campaign2000/transcript/debate_101100.asp.
[35] "Groups blast Bush for reversing position on emissions reductions." Article posted at CNN.com, insidepolitics, March 15, 2001 at 7:17 AM EST.
[36] Andrew Revkin, "Despite Opposition in Party, Bush to Seek Emissions Cuts." *New York Times.* March 10, 2001.
[37] See http://www.whitehouse.gov/news/releases/2002/02/clearskies.html for complete language of the Clear Skies Initiative.
[38] Former EPA Administrator Carol Browner Statement on Changes to the New Source Review Program of the Clean Air Act, November 22, 2001. Available at http://www.usnewswire.com/topnews/prime/1122-118.html.
[39] "Politics and pollution." *New York Times.* August 28, 2003.
[40] STAPPA/ALAPCO press release, August 27, 2003, available at www.4cleanair.org.
[41] "Wheeze and bear it: Ignoring public health data, EPA gives a huge break to polluting power plants." *Philadelphia Inquirer.* August 29, 2003.
[42] "Backsliding on clean air." *Chicago Tribune.* August 29, 2003.
[43] "Time enough: The Clean Air Act set allowances for aging power plants. President Bush wants relief beyond the intent of the law." *Akron Beacon Journal.* August 29, 2003.
[44] "Purple Haze: Administration deceptively thwarting Clean Air Act." *Houston Chronicle.* August 29, 2003.
[45] "The skies are murkier with 'clean air' rule." *The Nashville Tennessean.* September 2, 2003.
[46] Analysis compiled from data available at http://www.epa.gov/airmarkets/.
[47] Analysis compiled from data available at http://www.epa.gov/airmarkets/.
[48] 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.
[49] Analysis compiled from data available at http://www.epa.gov/airmarkets/.