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CLEAN AIR ACT: INCENTIVE-BASED UTILITY EMISSIONS REDUCTIONS

HEARING

BEFORE THE

SUBCOMMITTEE ON
CLEAN AIR, WETLANDS, PRIVATE PROPERTY AND
NUCLEAR SAFETY

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDRED SIXTH CONGRESS

SECOND SESSION

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C O N T E N T S

CLEAN AIR ACT: INCENTIVE-BASED UTILITY EMISSIONS REDUCTIONS

WEDNESDAY, MAY 17, 2000

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON CLEAN AIR, WETLANDS, PRIVATE PROPERTY
AND NUCLEAR SAFETY,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:30 a.m. in room 406, Senate Dirksen Building, Hon. James M. Inhofe (chairman of the subcommittee) presiding.

Present: Senators Inhofe, Voinovich, Bennett, Chafee, Lieberman, Lautenberg, and Smith [ex officio].

OPENING STATEMENT OF HON. JAMES M. INHOFE, U.S. SENATOR FROM THE STATE OF OKLAHOMA

Senator INHOFE. The hearing will come to order.

Today is the second hearing on the Clean Air Act reauthorization held by this subcommittee. The first hearing was last October on general reauthorization issues.

Today's hearing will address the multiple EPA regulations addressing the same pollutants as well as a look at the current implementation of the air program by the EPA.

We will have a third reauthorization hearing later this summer where we will be talking about the effects of this on various political subdivision States and local governments.

We will begin today's hearing with testimony from the General Accounting Office. They have conducted two investigations concerning the air act and will be reporting on their findings.

The first report provides a snapshot of the status of the Clean Air Act implementation. The second report addresses the multiple regulatory requirements addressing the same pollutants. Specifically, the report looks at three industries: the refining industry, the utility industry, and the chemical industry.

I requested this report over a year ago because of my concern that the Clean Air Act imposes multiple and sometimes conflicting requirements addressing the same pollutants.

The results are very interesting, for example, there are seven different air programs controlling nitrogen oxides from utilities alone. Refiners are regulated under five different titles of the act. Chemical companies are regulated under seven different programs.

I am glad that earlier this year Chairman Smith took an interest in this issue and how it relates to the utilities. I look forward to continuing my work with him on this issue over the next year.

The second panel will focus this issue, the multiple regulatory environment on the utility industry. This panel will look at the incentive-based utility emissions reduction approach.

The idea is to provide regulator certainty for the utility industry regarding a set of agreed-upon pollutants. Industry and the public would then know what reductions are going to be made and the timing for the reductions.

I will be working with Senator Smith on this approach this year with the goal of having a bill by the end of the year.

I will also be introducing a number of smaller bills this year just for discussion purposes alone, to bring them out so we can talk about the problems that exist, but not actually have anything that we will be offering, saving proposed legislation for the next Congress.

For the purpose of the Utility Emissions Reduction Plan, I have a number of concerns and questions which I hope we can address today and in the coming months.

First, I believe it must be a voluntary program.

Second, I have grave concerns regarding CO_2. I do not support giving EPA the authority to regulate CO_2, even in a voluntary program.

Three, how would companies who have already made large reductions be treated or would they be punished for the initiatives that they have already taken.

Four, how will utilities in areas of the country who have not had to make reductions in the past, particularly the west, be treated should reductions be based on a set of numbers or just reduction percentages.

Here is a quick example of how utility costs impact not only our national economy, but also our State and regional economies.

Last week I met with the president of a steel mill in Oklahoma, right outside of Tulsa, who explained to me that every summer they close production down for several weeks when the utility prices spike during the high summer demand.

Last year they closed for a month because their utility costs reached $150 per ton and with the steel selling at $225 a ton, obviously this just wouldn't work.

A final note on utility deregulation. I am adamantly opposed to including environmental provisions in the dereg bill. Those provisions must be considered by this committee in conjunction with the Clean Air Act reauthorization, not as a separate measure.

With these ideas in mind, we will turn now to the chairman of the parent committee, Senator Smith.

OPENING STATEMENT OF HON. BOB SMITH,
U.S. SENATOR FROM THE STATE OF NEW HAMPSHIRE

Senator SMITH. Thank you very much, Senator Inhofe. Thank you for your leadership on this issue in holding the hearing this morning and having the witnesses here. As you know, we have begun a dialog among all of the stakeholders on how to improve the Clean Air Act and how to address these utility emissions problems.

We are hopeful that we can draft a bill to provide certainty, flexibility, and achieve real environment improvements in our air.

This comprehensive, multi-pollutant approach will include emissions trading, I hope, and significant permit relief, drawing on the phenomenal success of the Acid Rain Program which I didn't think would work, but it did.

In the past, others have raised the prospect of using a comprehensive approach to increase flexibility and improve the environmental performance of power generation. But unfortunately, the Clean Air Act does not allow for that kind of flexibility in terms of compliance.

So the current regime established under the Clean Air Act is too complex and does not produce the expected remission reductions.

Regulators, environmental organizations and the industry seem to agree there must be a better way. We have some differences on how, but we do agree there must be a better way, and that is a start.

There are a dozen regulations for NOx, each with its own deadlines and requirements. This cannot possibly be the most effective way to deal with NOx emissions.

Second, the New Source Review program has been especially confusing. Senator Inhofe said the EPA has issued more than 4,000 pages of guidance documents to explain the original 20 pages of the 1980 regulations and the recent NSR enforcement options could easily lead to five to 10 years of litigation, only to result in control measures that may be redundant or contradictory with controls mandated by regulation.

I have said before, publicly, that it is not good policy, environmental or otherwise, to create policy through the courts and litigation. The policy should be created here, not in the courts.

We need to move away from the unit-by-unit, top down approach to more market-based solutions and get the job done.

Three or four quick points: On certainty, we need to be clear about what emissions reductions are expected and the time-frame for those reductions. If we could get agreement on that, we could get the job done.

The comprehensive approach, if not all pollutants are addressed we do lose some certainty. Future regulations could render meaningless our efforts to allow business planners, not bureaucrats, to create efficient, long-term pollution control strategies.

Flexibility. Provide flexibility through permanent relief and the use of emissions trading as we did in the Acid Rain Program.

Two quick issues on legislation: I think diversification is important. Coal will remain part of our energy mix. Our dialog should focus on our desired environmental outcomes rather than the fuel source It should be voluntary. This program should be voluntary.

I know there is concern that exists with the voluntary approach, but let me at least make my meaning clear. Legislation should create an alternative to the current system.

We need to get out of this box. I have said to everyone who sat down to discuss this, "If you are in the box, don't sit down because you have your mind made up. But if you want to get out of the box and try to come up with a solution, then we can sit down and talk about it." And we have.

Utilities will be able to choose between the current law and our new program. But compliance with either eventually will probably have to be mandatory.

My goal is to device a system that is effective and efficient so that utility companies hopefully will be lining up to support and participate.

I think we can do it. I look forward to the testimony of the witnesses. I thank you, Mr. Chairman, for your leadership on this issue.

Senator INHOFE. Thank you, Senator Smith.

Mr. Lieberman?

OPENING STATEMENT OF HON. JOSEPH I. LIEBERMAN, U.S. SENATOR FROM THE STATE OF CONNECTICUT

Senator LIEBERMAN. Thank you so much, Mr. Chairman, for holding this hearing on this topic which is so critical to our future energy availability and also for our air quality.

I thank Senator Smith, chairman of the overall committee, for the leadership role that he is assuming in this important debate. I appreciate it very much and I look forward to working with both of you on this.

Mr. Chairman, as we all know, there is a national movement going on now toward deregulation in the electricity industry. A significant number of States have already begun to deregulate utilities including my home State of Connecticut which passed legislation in 1998 that begins the process of our own safety regulation.

This time of transition, I think, is also a very important time to take stock of where we are as a country with the provision of power and also, how we are dealing with the pollution that results from that provision of power.

The fact is on the latter that too many of our utilities remain major sources of pollution. Twenty-four percent of industrial NOx emissions and 66 percent of industrial SO_2 emissions come from utilities. Thirty-two percent of mercury and 40 percent of CO_2 come from the power sector as well.

In addition to this, almost 80 percent of the emissions that I have just described come from coal-fired power plants that were installed prior to 1977. These pollutants contribute to serious environmental problems, including smog, acid rain and climate change.

Of course, equally serious, public health problems such as respiratory illness and, in a different sense, contamination of fish and other wildlife.

In the face of these threats, many utilities have now come to realize that we need to enact legislation to address these problems and regulate these pollutants.

I am heartened by industry's evolving commitment to such reductions. The question now before all of us is how to most effectively and efficiently now craft legislation that does just that.

That is why I am particularly grateful for Senator Smith's leadership role here as chairman of the overall committee.

My own approach to these problems is reflected in the Clean Energy Act of 1999 that Senator Jeffords and I introduced. It seems to me that legislation in this area should put forth concrete caps for all four pollutants: NOx, SO_2, mercury, and CO_2.

For reductions over the short term, our legislation happens to specify the date of 2005. I also believe strongly that we need to enact reduction levels that are adequate to protect human health and the environment.

Our bill would also close a loophole in the Clean Air Act that exempts older power plants from rigorous environmental standards.

To ensure fairness in an era of increasing competitiveness, we must strengthen pollution control so that older, dirtier power plants don't gain an unfair share of the markets while polluting at higher rates than cleaner, newer, more efficient utilities.

The good news here is, not uncharacteristically in our age, coming from the technology sector and the technologies that are available today.

Pollution reductions such as those we are discussing are very much within our reach as a result of technological advancements.

Sulfur emissions can be cured by lower sulfur coal use and flue gas desulfurization or scrubbers. Nitrogen oxides can be reduced by using selective catalytic and non-catalytic reduction and by using natural gas instead of coal.

A reduction in mercury can be effected through the use of add-on controls and again, natural gas. CO_2 can also be curbed with the use of natural gas. Again, these are all promising technologies.

With their implementation and the continued leadership of the industry, I believe we can make the needed progress, and it is in the interest of our nation's economy and our people's health.

I look forward to the discussion today and hope we can continue to move together toward an agreement on the best way to craft the most effective legislation possible.

Thank you, Mr. Chairman.

Senator INHOFE. Thank you, Senator Lieberman.

We will be joined by at least three other Senators who are going to be here, Senator Lautenberg, Senator Voinovich and Senator Bennett.

All the rest of the panel does have staff here and they will be submitting questions for the record.

We are going to go ahead and start with the first panel which is GAO. We are going to be following the 5-minute rule. Those of you with kids or grandkids know what red, yellow, green, stop and go means.

So we will try to keep our opening statements at 5 minutes. But you can submit your entire statement and it will be there for the record.

Mr. Wood, why don't you begin?

STATEMENT OF DAVID G. WOOD, ASSISTANT DIRECTOR, RESOURCES, COMMUNITY AND ECONOMIC DEVELOPMENT DIVISION, GENERAL ACCOUNTING OFFICE

Mr. WOOD. Thank you, Mr. Chairman.

As your remarks have indicated, there probably are few laws that are as complex and have such enormous scope as the Clean Air Act. Simply put, its provisions affect the air that all Americans breath.

The Congress last amended the statute in 1990. Since that time we have issued a number of reports and testimonies concerning the hundreds of actions that the law requires of EPA.

The report you are releasing today, while finding that EPA has met the majority of those requirements, in some ways reaffirms issues that we have identified over the past decade.

For example, in 1991 we questioned whether EPA's strategy and resource commitments would enable it to meet requirements for developing emission standards for hazardous air pollutants in accordance with the law's tight timetables.

In today's report we found that EPA was late in meeting 102 of the 120 such requirements with deadlines that have already passed.

Senator INHOFE. Mr. Wood, would you move a little closer to the microphone?

Mr. WOOD. Certainly. In today's report we found that EPA was late in meeting 102 or the 120 such requirements with deadlines that have already passed and will likely be late in meeting some of the remaining requirements.

In 1993, we reported that EPA regulations governing operating permit programs for major sources of air pollution had been delayed by 8 months, and questioned whether EPA or the States were devoting adequate resources to this effort.

In today's report we found that most of the estimated 19,000 sources subject to this provision have applied for permits, but States have issued only about 7,000 permits. A contributing factor is resource shortages at the State level.

In 1997, we testified that the innovative allowance trading program established by the Acid Rain provisions could reduce electric utilities' compliance costs by over $3 billion annually compared with conventional regulatory approaches and could result in even less emissions of sulfur dioxide than originally anticipated.

In today's report, most stakeholders agree that the acid rain provisions have been among the most successful of the Clean Air Act.

During the same decade, EPA has explored alternatives to traditional forms of regulation. EPA has faced pressures to find alternatives due to the sheer cost and complexity of implementing the act.

As noted in my written statement, the large industrial complexes operated by the petrochemical and refinery, chemical manufacturing and electric utility industries are prime examples of sources that are regulated under multiple Clean Air Act programs.

We have reported on a number of EPA's efforts. For example, in 1997 we reported that EPA's efforts to reinvent environmental regulation faced a number of challenges, including a lack of consensus among agency employees as well as among external stakeholders such as State regulators, industry and environmental groups.

And in 1999 we reported that EPA's efforts to develop effective partnerships with State regulators, while providing some benefits, had yet to achieve their potential for improving environmental regulation.

Today's report summarizes discussions with a number of stakeholders highlighting issues that in their views have either helped or hindered effective implementation of the Clean Air Act.

These discussions made a few things clear. First, it is indeed challenging to get consensus. As our report says, stakeholders expressed a wide variety of views.

Second, one of the main sources of contention is the appropriate degree of flexibility that should be allowed to States and regulated sources in meeting environmental requirements.

Third, one of the factors that is generally cited as helpful was the specificity of certain provisions of the Act. At first blush, the latter two observations may seem contradictory. But that is not necessarily the case.

At the risk of over-simplifying, the general message seemed to be that specific ends or goals are helpful, but at the same time, flexible means can help in attaining those goals as long as air quality is protected. Thus, one of the challenges facing the Congress considering reauthorization of the Clean Air Act is determining the appropriate balance between traditional and more flexible regulatory approaches.

We look forward to assisting this committee as it pursues these and other issues in the coming months.

Mr. Chairman, that concludes my prepared remarks. I will be glad to respond to any questions that you or others may have.

Senator INHOFE. Thank you, Mr. Wood.

According to your testimony, the EPA and Congress have tried several different programs or initiatives to provide flexibility from clean air requirements over the past few years.

The EPA tried the clean air power initiative. They also tried several reinvention types of initiatives like the common sense initiatives, Project XL. Congress tried to provide flexibility in 1990 by creating the Title V Permit Program and they ended up with just as many volumes, except it is all in the one volume that we had before.

A lot of these programs hadn't worked in the past. What is your thinking about why the things that we have tried haven't worked?

Mr. WOOD. I am sure there is probably a detailed story behind each of those initiatives that I won't go into. I think in looking over the work that we have done evaluating EPA's initiative, particularly the Common Sense Initiative, and its efforts at reinvention, there are a few common themes.

One is an inability to get consensus among all the stakeholders as to exactly what needs to be done, what the goals should be.

Our report in 1997 sort of comprehensively looking at EPA's efforts to "reinvent" regulations cited a number of things including what I would characterize as internal cultural constraints. EPA is structured in a way that is very media-specific and they consist of silos, if you will, such that the air people are only concerned about air. The water people focus mainly on water, that sort of thing.

Senator INHOFE. Is that more than just the barriers in the Clean Air Act?

Mr. WOOD. In the law? Yes. These are things that transcend the law, in fact transcend all of the environmental laws, although interestingly, the laws themselves are probably one of the causes.

The National Academy of Public Administration, as you may know, issued a couple of reports on EPA in the mid-1990's, and the

statutory framework was one of the things that they thought most needed to be changed.

Senator INHOFE. If it is cultural, it is within the EPA. I mean you have a turf battle going on there. Is there some way, as we look at reauthorization, that we could change this to overcome this?

Have you looked at the problems and what can be done legislatively?

Mr. WOOD. I don't have any specific legislative solution or provisions to recommend. If you look at what the National Academy did, they basically said there needs to be integration across media. In other words, rather than having just a new Clean Air Act, maybe there needs to be more organic legislation.

Senator INHOFE. In looking at the implementation status of the Clean Air Act, I can't help but notice that the 1990 amendments placed 361 statutory deadlines for specific actions.

Has that created any problems for prioritizing work by the EPA?

Mr. WOOD. This was one of the factors that EPA officials cited to us when we asked about why they had been late in meeting some of these statutory deadlines. They cited a number of things. One was the sheer workload. One was the complexity of issues that were not completely foreseen in 1990. Another was various lawsuits that have come up that have in essence diverted resources so that the whole job was made even more difficult.

Senator INHOFE. The lawsuits coming up and then consent decrees?

Mr. WOOD. Those have an effect. It made what was already complex even more so.

Senator INHOFE. We have been joined by Senators Bennett and Voinovich. Did you have any opening comments to make?

Senator BENNETT. No, Mr. Chairman.

Senator INHOFE. Senator Voinovich, do you?

OPENING STATEMENT OF HON. GEORGE V. VOINOVICH, U.S. SENATOR FROM THE STATE OF OHIO

Senator VOINOVICH. Yes, I do, with your permission, Mr. Chairman.

First of all, I want to commend you for continuing the hearings on the clean air reauthorization and I particularly commend you and Chairman Smith for holding today's hearing in an effort to try and create a multi-pollutant incentive-based emission reduction bill.

I believe such an approach will allow utilities to make their necessary emission reductions in an efficient, cost-effective manner, provide the best benefits to public health and the environment and assure electricity reliability.

I would also like to extend a warm welcome to my friend, Jim Rogers, Vice Chairman and CEO of Cinergy in Cincinnati. Cinergy is a responsible corporate citizen in the environmental arena. I appreciate Cinergy's contributions to Ohio's economy and for its civic and philanthropic leadership in southwest Ohio. I am glad that you are here today.

Ohio has realized significant improvements in air quality in recent years. I am not going to go into all the details, but the fact of the matter is that there have been significant improvements in

our State and part of it is because we have got the cooperation of the private sector.

Today our State has attained the current ambient air standards for ozone and particulate matter, but for one area of Cincinnati they qualify, but we haven't got the EPA yet to give them the attainment.

Likewise, NOx emissions have decreased. EPA projected by the end of this year power plant emissions will be 4.6 million tons, a 2.1 million ton reduction since the Clean Air Act was implemented.

Is that enough? No. But the point is that the nation's air is the cleanest it has been in some 20 years. These emission reductions have occurred during the most substantial economic growth that we have experienced in our country.

So often we ignore the progress that we have made. However, we have come to the point now where there will be a significant cost for further reductions. For example, it is estimated that the NOx SIP call will cost Ohio utilities alone $1.5 billion in initial capital improvements, plus annual operation and maintenance costs.

We need to make sure that the further steps we take to reduce utility emissions are based on sound science, are based on analysis, cost and benefits, and reasonable alternatives that provide flexibility for implementation in a cost-effective manner.

However, one of the things that strikes me about the Clean Air Act is the number of requirements that are geared toward reducing the same pollutants.

Bill Tyndall, President of Environmental Services for Cinergy testified last Fall before this subcommittee on the successes and concerns regarding the Clean Air Act. He identified numerous requirements that the utility industry faces to reduce NOx emissions such as NOx SIP call, 126 petitions, the pending 8-hour zone, the $PM_{2.5}$ NASC Standards, New Source Review and regional haze, just to name a few.

He outlined an equal number of requirements to reduce sulfur emissions. It seems there ought to be a way for these companies to come up with a strategy to address future regulations up front, rather than going about these reductions in a piecemeal approach of installing one type of control technology 1 year and a different type several years down the road.

I want to make it clear that I am not saying that emission reductions are bad. While I have some concerns with how the Clean Air Act is being implemented, it is a law to protect and promote public health and clean air.

That law needs to be followed. But what is needed is some clear guidelines and assurances that the Federal Government won't change the rules down the road, and that is what we have over and over again.

Too often, I think, some of what has been going on, Mr. Chairman, is in the political arena. Some groups comes along and off we go. There is a lot of arbitrariness here. It seems to me we ought to know, these are the rules. Here is what you have to do. You meet the standards and you can pretty well put that in the bank.

I don't know what your shareholders think, but if I am a utility shareholder and I don't know what the future looks like, I don't think that is good for your bottom line or for your stock either.

So we need to take a broad look at emission reductions and then provide flexibility for the industry to meet these goals. It is important for industry and the States to know the rules of the game.

This will allow for better planning and implementation of the Clean Air Act requirements and allow those requirements to be implemented in an efficient, cost-effective way to provide the best benefit to the public health and environment.

I see an incentive-based approach as a positive way to ensure that air quality standards are met, but in a more efficient and cost-effective way, Mr. Chairman.

I think that one of the greatest things that we could do for this country would be to sit down with business and the environmental groups and come up with a 10-year plan and say, here is what it looks like, here is what we need to do, and then go for it.

Thank you.

Senator INHOFE. I appreciate, Senator Voinovich, the expertise that you have brought in. I think most people in this room realize that when you were Governor of Ohio, as the chairman of, was it the Air Committee—one of the committees of the National Governors' Conference. So we appreciate that.

I announced before you came in that our next hearing will address the effect of these on various political subdivisions, State and local governments. I know that will be of interest to you.

My time is up, Mr. Wood. I would like to ask you, if you had not done this, the idea of the consent decrees is something that has been bothering me throughout as almost a behavioral pattern of the EPA. Many times these lawsuits are encouraged, in my opinion, by the EPA. I would like to have you list these various actions and the effect that you believe that they have had whether they are resolved by consent decree or not. If you haven't done that, do you think that will be worthwhile?

Mr. WOOD. We will be glad to respond to a question if you would like to submit it afterwards. We have not done that.

Senator INHOFE. All right. Thank you, Mr. Wood.

[The information referred to follows:]

According to officials in EPA's Office of General Counsel and Office of Air Quality Planning and Standards, EPA does not systematically track or maintain records of lawsuits challenging the Agency's plans for complying with Clean Air Act requirements. Agency officials stated that, while lawsuits have been filed for most of the rules and regulations issued pursuant to the Clean Air Act, the court-ordered deadlines generally have been consistent with the Agency's planned timeframes for promulgating such rules and regulations. The officials estimated that several hundred staff-hours would be required to (1) identify and (2) estimate the potential effect on the promulgation schedules of rules and regulations that have been the subject of lawsuits.

Senator INHOFE. Senator Smith?

Senator SMITH. Thank you, Mr. Chairman.

Mr. Wood, when Senator Voinovich finished his remarks, he concluded by saying that we would need to try to come to an acceptable level.

I know the contaminants themselves are not your specific area, but how would you suggest to us as a committee that we set about reaching what would be an acceptable level so we can work with the trading and so forth that we have to do within the utilities and plants to achieve that. What methodology would you suggest we use?

Mr. WOOD. I don't have a specific methodology to suggest. I would say, based on our work, there is a strong sense that clear goals need to be articulated.

Certainly, that was behind the success of Titles IV and VI, the Acid Rain and Stratospheric Ozone, where the statute itself had a clear goal and there was apparent consensus among all the stakeholders that that was what was needed.

However, it is important to understand that in trying to transfer that approach to other pollutants, it won't always work because the characteristics of the pollutants aren't the same.

We have done some work looking at generic alternatives, for example, cap and trade systems, because that is the very successful approach that was taken with acid rain.

But in that case, the pollutants had characteristics that lent themselves to that approach. They were nationally ambient. They were well-characterized. It was known how they traveled in the atmosphere and how far. They were in a sense fungible—a reduction anywhere was helpful everywhere.

That is simply not the case with all pollutants. Some are much more localized around their source. If a meaningful trading area can't be articulated, then a more flexible approach simply might not work, even if there was an agreed upon goal.

Senator SMITH. Mr. Chairman, I don't have any further questions, but I do want to compliment the witness for his testimony. Your written testimony is very comprehensive in terms of the excessive regulations and in so many cases the industry doesn't know what to comply with.

You do offer some suggestions in there on how to deal with these requirements. It will be very helpful, I think, in terms of what we have to do to come up with legislation.

We appreciate it.

Senator INHOFE. Thank you.

Senator Lieberman?

Senator LIEBERMAN. Thank you, Mr. Chairman.

Mr. Wood, thanks for your very comprehensive report. In it you note that EPA has missed several legislative deadlines. Of course, we are disappointed that that has occurred.

When we passed the Clean Air Act Amendments of 1990 Congress did design the law to maximize accountability, to make sure that the citizens could hold EPA accountable for enacting the rules, and in fact that EPA could hold States accountable for doing their part.

It seems to me that the process is working, especially since EPA has issued these rules, although unfortunately, with a delay.

I want to know if you believe that it is fair to count all the requirements as if they have the same environmental importance.

Mr. WOOD. No. As a matter of fact, I think our written report and testimony as well make clear that they don't all have the same effect.

Senator LIEBERMAN. I appreciate that. To what extent would you say the delay, if you can make this judgment, is accountable to internal EPA bureaucracy and to what extent is it the result of litigation, for instance?

Mr. WOOD. I really don't have any figures. I wouldn't want to speculate. Certainly the litigation was one of several factors that EPA has cited as reasons behind the delays.

Senator LIEBERMAN. In other words the litigants were challenging one or another regulation and therefore it took time.

I was interested in the part of your testimony that mentions the experience EPA had working with the chemical industry to address multiple requirements through the development of the Consolidated Air Rules. Based on your experience looking at those Consolidated Air Rules, how many companies do you think will take advantage of a new consolidated rule as opposed to sticking with the existing regulatory scheme?

Mr. WOOD. It isn't really clear at this time how many will do that. It will depend. Each company has to make a judgment. For some it will mean meeting more stringent requirements. We actually asked this of EPA, if they had an estimate and at this time they do not.

Senator LIEBERMAN. Do you have a sense of how long EPA worked with stakeholders to resolve issues related to that particular regulation?

Mr. WOOD. It was in the range of 3 to 4 years.

Senator LIEBERMAN. Is that a model, if you will, or does the complexity in creating that rule illustrate how long multi-pollutant regulations involving stakeholders from complex facilities might take to develop as we think about multi-pollutant systems here.

Mr. WOOD. I think any change in the status quo is going to take some time, whether it will all be that complicated, I am not sure.

Senator LIEBERMAN. This is a tough question and if you want to offer a first response now and think about and submit later testimony in writing I would be happy to receive it.

The question is whether in your experience with the Consolidated Air Rules with the chemical industry, based on that, you would have any specific guidance to us as we go forward now considering multi-pollutant action regarding utilities.

Mr. WOOD. I guess the best guidance I would offer is that the stakeholders need to take a systematic approach—to first agree on what the goals are. That in itself is a very contentious subject.

After that comes some sort of means for attaining the goal. That opens up its own series of contentious subjects. But, I guess I would recommend a sort of standardized systematic approach in each situation.

Senator LIEBERMAN. That in some ways is maybe an obvious but an important statement that you made about the agreement on goals.

There was reference earlier to the Clean Air Power Initiative discussions in which EPA has been working with the industry discussing how to integrate future requirements.

I know that some of the utility stakeholders have said that it would be premature to discuss strategies for achieving reductions that EPA has not already proposed or certainly not finalized.

Based on that exchange and your own knowledge of this sector—we will hear, of course, from people from the industry in the next panel, but how would you evaluate the willingness of the industry

to commit to reducing multiple air pollutants through an integrated approach?

Mr. WOOD. I don't know if I could generalize across the entire industry. What EPA told us—and also we met with representatives of the utility industry—was that there was an inability to come to an agreement on the goals.

What EPA specifically told us was that there is not always agreement among the stakeholders themselves. In other words, utilities don't necessarily speak with a united voice on all issues.

Senator LIEBERMAN. I know that Senator Smith has initiated this process, but the first hurdle may be the highest hurdle, but a critical one and that is to see if we can have some base line agreement on what our goals are in this process.

Thank you, Mr. Chairman.

Senator INHOFE. Thank you, Senator Lieberman.

Senator Voinovich?

Senator VOINOVICH. I would just like to compliment you on your testimony. I would bring up something I have raised before and you make it clear that EPA has reduced grant funding to State and local governments to help them implement the Clean Air Act Amendments by 25 percent over the last several years to $120 million annually.

That is a lot of money which is needed by State and local governments to fulfill their responsibilities. At the same time, in the 2001 budget of the EPA they are asking for $85 million for a new initiative, the Clean Air Partnership Fund, instead of building on previous programs and giving it the priority.

It seems to me in terms of their priorities they ought to reorder them, particularly during this last year of the administration and try to finish up and do what they already have on the books instead of going on into new areas that quite frankly, they may not be around to implement.

Senator INHOFE. Thank you, Senator Voinovich,

Senator Bennett?

Senator BENNETT. Mr. Wood, I am not sure whether before I got here everybody got a chance to see the chart that is in Figure 1? Is it put up somewhere or do you have it?

Mr. WOOD. We don't have it outside the report.

Senator BENNETT. I call attention to that because I think it is the missing fact in this whole debate. If you listen to the rhetoric about the Clean Air Act and particularly the rhetoric that occurs on the Floor, you would believe that Americans are choking in pollution and that it is getting considerably worse.

If you read a book that has been in the news somewhat, you would believe that the absolution of the internal combustion engine is the most significant, indeed the only hope of the future.

Here you have told us the truth, which is that from 1970 to 1997 vehicle miles traveled in the United States have increased 127 percent. The U.S. gross domestic product has increased 114 percent and the U.S. population has increased 31 percent.

All of these cars and all of this economic activity and all of these people churning out all of these pollutants in that period have seen aggregate emissions decrease by 31 percent.

Mr. WOOD. That is correct.

Senator BENNETT. We seem to be unable to take "yes" for an answer. The congress, the politicians seem to be unable to recognize that things are working.

Instead, we tell ourselves that if we continue to have lawnmowers or, where I come from, snow-blowing machines, we are going to destroy the atmosphere all around us and we are one step away from disaster.

If we don't abolish the internal combustion engine we will all die the day after tomorrow. If we don't agree to the Kyoto Accords, somehow civilization is going to come to a close.

The evidence you have here makes it very clear that we as a society are doing pretty well in getting pollutants under control.

My question to you is, this line that you show in the chart coming continually down ends in 1997. Do you have any sense that in the 3 years from 1997 to 2000 it has continued to come down? Has it bottomed out or is it going up?

Mr. WOOD. I believe it has continued down. The latest trends report that EPA has produced, I think, goes to 1998, and it shows a continued downward trend. I would note that that is the aggregate emissions of, I believe, the six "criteria" or major pollutants.

Four of them definitely have gone down. Two have pretty much stayed the same. They have not declined very much. That is nitrous oxides and ground level ozone.

So in the aggregate, yes, they have gone down, but not each and every one has gone down by the same degree.

Senator BENNETT. Well, I am not suggesting by any means that we don't still have some more to do. But I think in all of this conversation about how disastrous America's air and water may be, we should keep this chart in front of us.

I thank you for making it Figure No. 1, and I hope everybody will recognize that the cleanest air is in the United States.

I have a constituent who travels the world for a living, is in a whole variety of interesting and exotic places, and he has said to me the dirtiest air he has ever experience in his entire life is in Kathmandu. That sounds very exotic, to go live in Kathmandu.

But this is a poor society that does not have the resources to put into an effort to clean up the air, compared to the United States which is a rich society and which has made the investment and which is producing the results.

I think all of us, as we have hearings on the Clean Air Act and clean air discussion must recognize that we are, in fact, doing pretty well, and we are not on the verge of poisoning the entire planet because of the productivity of the American economy.

Thank you, Mr. Chairman.

Senator INHOFE. Thank you, Senator Bennett.

Senator Lautenberg, I don't know whether you had an opening statement or whether you would just like to question the witness here.

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator LAUTENBERG. I have both, but in fairness, having come so late, Mr. Chairman, I will ask unanimous consent that my full opening statement be included in the record.

Senator INHOFE. Without objection.

[The prepared statement of Senator Lautenberg follows:]

STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Mr. Chairman, thank you for holding a hearing on this important topic.

Mr. Chairman, reliable power underpins a healthy economy, but it can also be a major source of environmental pollution. Power plants are the largest industrial source of nitrogen oxides, sulfur dioxide, mercury, and carbon dioxide. These pollutants cause a wide range of severe public health and environmental problems, including global climate change, premature mortality, developmental and neurological damage, increased asthma, and loss of aquatic and forest ecosystems.

We do have programs for controlling the air emissions of power plants, but the programs are fragmented and incomplete. They are, at the same time, less protective of public health and more costly than necessary. I believe public health, the environment, and industry could all benefit from a prudent reform of these air pollution programs. I applaud Chairman Smith for his leadership in such reform. I would urge him to use, as his primary measure of success, the extent to which his reforms demonstrably improve public health and the environment.

I must, in particular, salute Chairman Smith for including carbon dioxide among the pollutants addressed in his reform efforts. Global climate change is probably the most daunting environmental challenge facing us today, and carbon dioxide, of course, is the principal greenhouse gas. Senator Smith's efforts are among the boldest we've seen undertaken to meet the global warming challenge.

Finally, I am proud today to introduce to the subcommittee Mr. Frank Cassidy, President and Chief Operating Officer of PSE&G Power LLC. PSE&G Power is the power generation affiliate of Public Service Electric and Gas Company, New Jersey's largest electric and gas utility companies and one of the largest combined utilities in the nation. I'm pleased to note that Mr. Cassidy is a native son of New Jersey. He holds an electrical engineering degree from New Jersey Institute of Technology and an MBA from Rutgers University.

Mr. Cassidy has more than 30 years of experience with PSE&G and its affiliated companies. Prior to being named president of PSE&G Power, he served as President of PSE&G Energy Technologies, which is a retail energy marketer. He also served PSE&G as Senior Vice President for Fossil Generation and Vice President for Transmission. He knows how to make power, move it, and sell it. I consider PSE&G one of the environmental leaders of the industry, and I'm proud to have the company represented here today by Mr. Cassidy.

Mr. Chairman, and members of the subcommittee, I look forward to his testimony and the testimony of the other witnesses.

Senator LAUTENBERG. I would ask to have a chance when the second panel comes around to say a few words there. But I will try to be brief in each case.

I do have a couple of questions, Mr. Chairman.

In January of this year I was at the South Pole. The ice melt is really worrisome. The water is pouring down those glaciers and they are shrinking at an incredible pace.

Now that is not a figment of my imagination. Nobody is choking down there. But they packed fresh air into little test tubes so people could see what it was like. To suggest that everything is A-OK is just missing the boat.

I am sorry my colleague from Utah didn't have a chance to go along there. I think he would have seen some interesting things.

The highest skin cancer per capita in the world right now is Australia. When kids go to the beach there, they wear hats. They wear full bathing suits. It is demanded by regulation or what have you, because parents don't want their kids to get skin cancer.

They are not willing to say "a hole in the ozone, forget it." There is evidence all over us. The fact that things have come down, and I know in your report here, "Although a change in the economy and other factors affect the emission trends according to the EPA, the

emissions of air pollutants would be much higher without the Clean Air Act.''

Is that your statement or is that——

Mr. WOOD. That is EPA's statement.

Senator LAUTENBERG. Do you believe that?

Mr. WOOD. While we don't have any empirical evidence, I think just about all stakeholders agree that the Act has had an effect on making the air cleaner.

Senator LAUTENBERG. So do you have in any place here the number of asthmatic sufferers in the country or respiratory disease sufferers?

Mr. WOOD. No, we don't.

Senator LAUTENBERG. So while we may not have had pollution grow as rapidly as the economy or car miles or some other factors, there is enormous attention paid to respiratory disease.

Unfortunately, my sister died from an asthma attack when she was at a school board meeting. There are lots and lots of people around this country who don't breath easier because of the strain on their system.

So no, everybody isn't choking to death from pollution, but there is a significant awareness among families, lots and lots of children, I don't have the statistics, but I read that material fairly rigorously about new products coming out.

There is one announced today. I saw it on TV this morning about a new asthma product that may reduce the consequences of asthma.

I cross my fingers and pray that it does because I have a grandson who is affected by it. It is a very unpleasant condition. My daughter says he is wheezing and they have to run to the hospital and so forth.

So while we are not perfect by a long shot, we have an awfully big obligation. If all of the Senators could visit the South Pole, it is an arduous trip, but it is a very worthwhile trip. Because here you see this pristine ice planet being attacked without the noise of explosions or car motors or things of that nature, just whittling away.

Seventy percent of the earth's fresh water is stored in the South Pole, the ice pack. Seventy percent. As that declines and gets mixed with the saline water, saline-affected water, we run serious risks.

So I don't think people are crying wolf. I agree that the progress we have made is really remarkable. There are countries all across this globe, we have all been through when we travel. We see how polluted these places are. But that doesn't excuse us in any way from doing our share.

I was at the Air Summit in 1992 with several Senators and now Vice President Gore. I asked the Interior Minister from one of the Latin American countries why they couldn't stop burning the Amazon.

He said to me, ''One farmer burning an acre of the Amazon can sustain his family for a lifetime. One of your chemical workers in a week does more damage to the environment than that single farmer. If you want our farmers to stop burning those forests, then the United States should pay for it. It is pretty simple. Pay for it.''

So it is our environment, our global environment. We have problems that should only induce us to work harder to accomplish the solutions.

Thank you, Mr. Chairman, for indulging me these questions.

Senator INHOFE. Thank you, Senator Lautenberg.

If there are no further questions we will go ahead and have the next panel come up. Thank you for giving us your time, Mr. Wood.

Mr. WOOD. Thank you.

Senator INHOFE. Now I ask that our second panel come to the witness table. The panel includes Mr. James Rogers, Vice Chairman, President, and CEO of Cinergy Corporation. Mr. Rogers, I want to tell you we appreciate very much your having Bill Tyndall here. He has testified several times and has been a great help to us.

Mr. Charles McCrary, President of the Southern Company Generation; Mr. Frank Cassidy, President and COO of PSEG Power; Mr. Armond Cohen, Executive Director of the Clean Air Task Force; and Mr. Wayne Brunetti, chairman and CEO, New Century Energies.

I believe, Senator Lautenberg, you would like to introduce your constituent from New Jersey.

Senator LAUTENBERG. Mr. Frank Cassidy is the President and Chief Operating Office of our largest power supplier, one of the largest in the country. He has a lot of experience.

Besides having the honor of being a native son of New Jersey, he has had many accomplishments, an engineering degree from the New Jersey Institute of Technology, a prestigious school of science and technology.

He has been with PSEG for more than 30 years. I think it is quite unusual that someone working for a giant utility like PSEG is willing to come here and encourage us to be wary of our pollution and to try and do things to reduce it.

I welcome you here, Mr. Cassidy. I look forward to hearing your testimony. Thank you very much.

Senator INHOFE. Thank you, Senator Lautenberg.

Before we start with the witnesses, I would recognize Senator Smith.

Senator SMITH. Thank you, Mr. Chairman. One group that is not represented here today is the State and local air officials. We do have a letter from the association that represents them.

I would ask unanimous consent that it be placed in the record immediately after the testimony from this panel.

Senator INHOFE. Without objection, it is so ordered.

I would comment that the next subcommittee meeting we have late in the summer, they will be a part of that one.

We will start with Mr. Rogers.

STATEMENT OF JAMES E. ROGERS, VICE CHAIRMAN, PRESIDENT AND CEO, CINERGY CORPORATION, CINCINNATI, OHIO

Senator INHOFE. We will start with Mr. Rogers.

I would like to have you all adhere to the 5-minute rule, since there are five of you here, if you don't mind.

Your entire statements will be made a part of the record. Mr. Rogers.

Mr. ROGERS. Thank you very much. I am President and CEO of Cinergy Corporation in Cincinnati. We are a diversified energy company with most of its U.S. operations located in Ohio, Indiana, and Kentucky.

We own or operate over 16,500 megawatts of generation around the world. In the Midwest we have over 12,000 megawatts. We burn about 28 to 30 million tons of coal a year which makes us one of the largest consumers of coal in the country and almost 98 percent plus of our electricity is generated by burning coal.

There is no power producer in this country more dependent on coal to produce electricity than our company. Consequently, we are pleased that both this subcommittee and the full committee are exploring the possibility of pursuing a comprehensive, multi-pollutant emission reduction program for coal-fired generation in this country.

So let me start out by thanking both subcommittee Chairman Inhofe and full committee Chairman Smith for their leadership and interest in a comprehensive multi-pollutant approach, as well as their staff's hard work in terms of pushing us to where we are today and doing all the behind-the-scenes work to get us to where we are.

I am going to make a couple of quick points. The first point I want to make is that we need a comprehensive approach and we need it as soon as it can get done.

Whether you are an old economy company or a new economy company, the reality is we are living in dog years, not human years. As you all know, there are seven dog years to every human year. As we move forward we need to move on that kind of pace.

I would urge you, as you contemplate moving forward with this, that you live in dog years as we have to in the business world.

The other point I would make is, if you take a look at the regulatory system that we have today, while EPA's current regulatory system for the power sector, while it generates a multitude of regulations and requirements, it is failing.

It is certainly failing to provide a coherent environment to conduct the business of generating and delivering electricity reliably and cheaply.

But it is also failing to make the progress the Nation needs and deserves toward clean air goals. I am convinced that Congress must therefore replace the existing piecemeal regulatory approach with a simple program based on a single set of emission reduction targets for industry.

To give the committee some idea of the avalanche of Federal regulations that my company faces, I have attached two exhibits. Here EEI prepared this for us.

I appreciated Senator Voinovich's comments with respect to the earlier hearing this year. If you really understood this you would see how difficult it is to rationally plan to provide electricity in the future and to meet these sometimes conflicting requirements.

Please don't ask me to explain each of those. They are very complex and beyond my capability. But I want to give you one real life example.

In the decades of the 1990's our company spent $640 million in reducing emissions from our facilities. In the next 3 years we are going to spend $700 million to comply with the NOx SIP call.

But here is an important reality. We spend that money not knowing what the future holds. We spend that money on plants that are 25 and 30 years old, not knowing whether there will be future SO_2s, whether there will be future mercury, whether there will be further CO_2 requirements.

But think about how constrained our position is. For instance, we have several choices. We can spend the money and wait, or, if we knew about future regulations that would change the economics, we may retire the plant. Or, what we may do if we knew the economics of future regulations, we may retire it and burn natural gas and not coal.

But the point of the matter is, we cannot make that kind of decision today because we do not know what the future regulations will be for our company.

With Federal legislation we can provide certain planning horizons, long lead times, market mechanisms and reduced compliance costs for our consumers while locking in progress on key environmental issues.

Now, let me make a point, given the concern of this country today about reliability, and this is to me a very important point: We will be better able to maintain the reliability of our system and our service to our customers, who depend on electricity with E-commerce and the Internet more than ever before in the history of this country, we can do a better job of maintaining reliability if we have certainty with respect our environmental requirements over the next 10 or 15 years.

In my judgment, this is a win for our consumers, it is a win for the environment. It is a win for the industry. To me it explains why there is growing interest in a comprehensive approach.

In my testimony I go into great detail about what comprehensive legislation should look like and how we ought to do that.

But I would like to conclude with a challenge. I want to underscore that we realize that this comprehensive approach to looking at power plant emissions reductions will be a bit hard for some companies to swallow. But it won't be any more difficult than it will be for our company.

It is now time to take this concept to the next level. We urge the committee to avoid polarizing rhetoric, and it is so easy to do in this area, to work across Party lines, as I know you will, and to work with all stakeholders to make this a reality.

It will not be an easy task, but I believe it is a challenge that you must undertake. The future reliability of the nation's energy supply depends on it, and so does the breathing public.

Mr. Chairman, we stand ready to roll up our sleeves and get to work on this task. We are prepared to work in dog years.

Senator INHOFE. Thank you, Mr. Rogers.

Without objection, we will instruct the staff to have your chart as a part of the record here.

[The information referred to follows:]

CHART "A"

Major EPA Air Quality Programs for Electric Power Plants

Current

Ozone NAAQS (1-hour)/SIPs	1970	Title IV (acid rain) permits	1995
SO2 NAAQS/SIPs	1970	Title IV SO2 Phase 1	1995
NO2 NAAQS/SIPs	1970	Title IV NOx Phase 1	1996
Total Suspended Particulates NAAQS/SIPs **	1970	Compliance Assurance Monitoring	1995
Carbon Monoxide NAAQS/SIPs	1970	Credible Evidence	1995
New Source Review	1970	Periodic Monitoring	1995
Citizens' Suits	1970	Mercury Emission Reporting	1999
Prevention of Significant Deterioration	1977	TRI	1999
Class I Areas	1977	NSR Enforcement Initiative	1999
LAER and Offsets for Nonattainment Areas	1977	Title IV NOx Phase 2	2000
Visibility - Section 169A	1977	Title IV SO2 Phase 2	2000
PM-10 NAAQS/SIPs	1978		
Lead NAAQS/SIPs	1978		
Title V Permitting	1992		
Continuous Emission Monitors for SO2 & NOx	1995		
Flow Monitoring	1995		

** Phased out after PM-10 standard

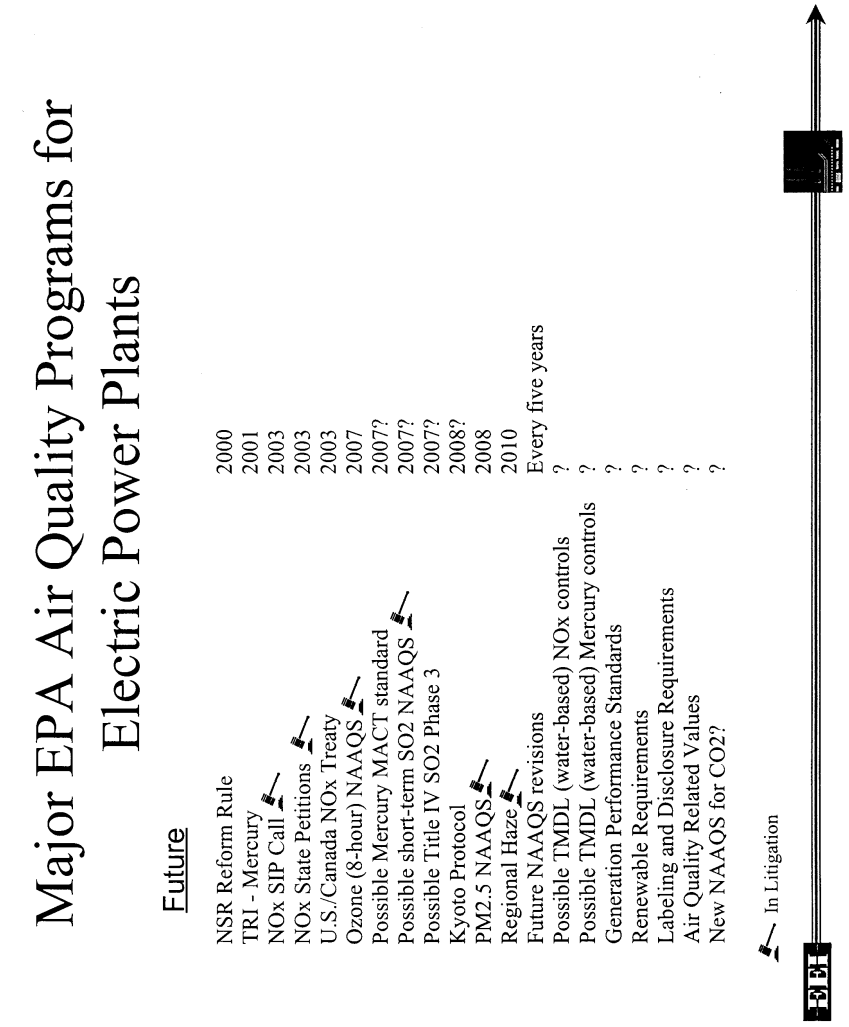

CHART "B"

Senator INHOFE. Mr. McCrary?

STATEMENT OF CHARLES McCRARY, PRESIDENT, SOUTHERN COMPANY GENERATION, BIRMINGHAM, ALABAMA

Mr. MCCRARY. Mr. Chairman and members of the subcommittee, it is a pleasure for me to be here today. I appreciate the opportunity.

My name is Charles McCrary and I am President of Southern Company Generation. Southern Company is the largest generator for electricity in the United States. We operate some 30,000 megawatts of fossil fuel generation. Seventy percent of that generation is fueled by coal. As you well know, coal is the most abundant

domestic supply of energy for generating electricity, supplying 55 percent of the nation's electricity.

There are currently 25 Federal programs to regulate air emissions from electric generating plants. The programs have resulted in significant reductions in emissions from plants over the last decade.

These reductions have occurred at the same time that the generation of electricity has increased, as well as the use of coal.

In the Southern Company alone, while our generation has increased 49 percent, between 1990 and 2010 our emissions of sulfur dioxide as well as nitrogen oxide, have decreased by 42 percent during that same time period. That is a good record of performance, but there are still over a dozen proposed or pending actions that could require more reductions.

In spite of these challenges that these issues bring, I don't think that they are the result of any fundamental problems with the Clean Air Act.

I think Congress did a good job with the Clean Air Act. We think the foundation of the act is sound. Most of the problems associated with the regulatory agenda for electric power generation, we believe, stem from EPA's failure to follow proper procedures and to appropriately apply scientific information. This view has been upheld by courts in key cases.

You have requested our view on incentives for electric utilities to reduce emissions further. We certainly think incentives for voluntary action and market-based systems are always better than a command and control regulatory program.

There are several examples of incentive programs and I would like to discuss a couple of them today. One is the comprehensive approach where many of the pending proposed actions like I mentioned earlier can be combined into one program of emission reductions.

The positives for this approach include potential cost savings as compared to a pollutant by pollutant program and perhaps more efficiency. Some have also seen this approach as giving some regulatory certainty, which is good.

I do not know that this is a good approach or a bad approach. What I do know is that there are certain cautions that we must associate with a comprehensive approach.

We must assure that the approach codifies requirements that are justified on scientific and economic grounds. We must be sure we understand the meaning of certainty, particularly in light of practical abilities associated with health, standards and citizen suits.

Another type of incentive might be the adoption of financial mechanisms such as investment tax credits, production tax credits, and accelerated depreciation.

Last, let me mention the need to enhance programs to facilitate the development and installation of advanced technologies.

At the Southern Company, we believe that development and commercialization of advanced technology is the key to improving environmental performance of electric generation.

We have been leaders in the Department of Energy's clean coal demonstration program and currently operate the Department of

Energy's Power System Development Facility in Wilsonville, Alabama.

No matter which of the various alternatives are considered for improving the means of achieving clean air, we think certain principles should apply. One, any program for control should be based on sound, peer reviewed science as well as an accurate assessment of the advantages that the environment will experience.

Two, targets and timetables for emission controls should reflect environmental needs and priorities and not necessarily rely on a "one size fits all" program.

Three, the air quality control program should consistently utilize unencumbered market-based trading systems. The sulfur dioxide control program under the Acid Rain Title of the 1990 amendments has been very successful.

Mr. Chairman and members of the subcommittee, I do appreciate you letting me express my views. There are many challenges ahead of us and the Southern Company is committed to playing a constructive role during your deliberations on reauthorization.

I would be glad to answer any questions that you or the subcommittee might have.

Senator INHOFE. Mr. Cassidy?

STATEMENT OF FRANK CASSIDY, PRESIDENT, PSEG POWER, LLC, NEWARK, NEW JERSEY

Mr. CASSIDY. Mr. Chairman and members of the subcommittee, Senators, I am pleased and honored to appear before you this morning to represent my company, PSEG, and our coalition, the Clean Energy Group. On behalf of both, I thank you for taking the time to join the dialog among interested representatives of government, our industry, and the environmental community.

Our industry is in the process of fundamental change. The Clean Energy Group supports and embraces the transformation of the electric power industry into a competitive market place.

We share a common concern, however, that the economic benefits of fair and robust competitive energy marketplace and the social and public health benefits of improved air quality will not be achieved unless the relationship between national energy policy and environmental policy is recognized and rationalized.

For this reason, the Clean Energy Group respectfully disagrees with the chairman. We believe very strongly that restructuring of the electric industry must be coordinated with appropriate environmental standards.

While the Clean Energy Group has supported EPA's regulatory initiatives to reduce emission of pollutants traditionally associated with our industry, nitrogen oxide and sulfur dioxide, we also share concerns that compliance delays and litigation spurred by these initiatives during a period of such unprecedented structural change in the industry has contributed to a climate of business uncertainty that is becoming increasingly more difficult to manage.

The strong probability that environmental policymakers will in the near future begin to regulate mercury emissions and that requirements to reduce carbon dioxide emissions are also on the horizon increases concerns that a pollutant-by-pollutant regulatory

strategy will result in a continued cycle of political agitation, litigation and delay.

The Clean Energy Group believes there is a common sense policy solution, an integrated air quality strategy to control and reduce emissions of nitrogen oxide, sulfur dioxide, mercury and carbon dioxide. Our proposal calls for mandatory nationwide caps of these emissions, established dates certain for producing the necessary emissions reductions, and implementation through emissions banking and trading, credit for early reductions and streamlining of the EPA's New Source Review process to provide industry with clear and unambiguous compliance guidelines.

We agree with Senator Smith that such guidelines are necessary. This approach will allow and encourage companies to plan and coordinate emissions control strategies on a comprehensive, multipollutant basis and reduce the potential for stranded investment in pollution control technologies.

It will provide a high degree of certainty for compliance with EPA's New Source Review requirement. It will deliver timely and necessary emissions reductions to help attain national clean air objectives.

It will foster a fair competitive energy market and it will encourage investment in new electric generation capacity that will reduce emissions and enhance electric system reliability.

I would like to summarize briefly the emissions caps and compliance schedules included in the Clean Energy Group proposal. Details are included in a draft legislative proposal attached to my written testimony.

For nitrogen oxide, a two-phase program that would cap emissions at 4.2 million tons by 2003, a target consistent with the EPA NOx SIP Call Rule for 19 Eastern States.

And a further 50 percent reduction to 2.1 million tons by 2008. A 4.5 million ton cap on sulfur dioxide emissions by 2008 which represents a 50 percent reduction below Phase 2 requirements of the Acid Rain Program.

This goal is consistent with meeting proposed national air quality standards for fine particulates.

We anticipate EPA is likely to begin mercury regulation later this year. We are calling for a two-phase program which would require a 50 percent reduction and a 26-ton emissions cap by 2008 and, if necessary, further reductions to cut emissions 70 to 90 percent below current levels by 2012.

For carbon dioxide we are proposing an initial control strategy that would stabilize emissions at 1990 levels resulting in a 1.9 billion ton emissions cap also by 2008.

Further reductions in the 2012 timeframe would be implemented in accord with national Climate Change policy as it evolves.

Mr. Chairman and members of the subcommittee, the Clean Energy Group believes that an integrated, coordinated approach will provide the direction and regulatory certainty that will facilitate business planning, make investments decisions more rational, and ultimately deliver to our nation necessary improvements in air quality at costs that are reasonable and fairly allocated.

Again, I am honored by the opportunity to make this statement. I will be happy to respond to your questions.

Senator INHOFE. Thank you.
Mr. Cohen?

STATEMENT OF ARMOND COHEN, EXECUTIVE DIRECTOR, CLEAN AIR TASK FORCE, BOSTON, MASSACHUSETTS

Mr. COHEN. Thank you very much, Mr. Chairman. Thank you for the opportunity to speak this morning.

I am speaking not just of behalf of the Clean Air Task Force, but on behalf of the national campaign called "Clear the Air," the National Resources Defense Council, the Izaak Walton League of America and nine citizens groups representing hundreds of thousands of people throughout the United States, in this case particularly concentrated in the Midwest and Southern part of the United States.

I have submitted an extensive written statement and a couple of exhibits extracted from that statement. What I would like to do in my 5 minutes is just highlight a few key points, maybe respond to some of the things that have been said this morning. First, I do want to acknowledge that Senator Bennett said that there have been some substantial air quality improvements around the nation. That used to be celebrated and acknowledged.

I will point out that in the power sector where those reductions have occurred, for example, in nitrogen oxides and sulfur dioxides, they have come as a result of regulation by the Congress, often bitterly opposed by industry, but ultimately put through.

In the case of mercury and other toxic pollutants and CO_2, there are projected substantial increases from the power sector over the next 10 to 15 years if no policy is put in place to address those measures. So I think the glass is certainly half full.

We have a long way to go. Just taking the example of SO_2, these are exhibits that appear as attachments to my testimony. As an example of one pollutant, we have one pollutant still driving some very significant problems throughout the United States.

As you can see in the upper left there is a plot of basically the power plant SO_2 concentrations. Each of those dots represents a power plant and its relative sulfur dioxide emissions.

In the lower left what you see is a map of the ultra-fine soot, deadly soot particles, so-called PM–2.5 and the distribution, as you get to the red colors you see more dense concentrations.

Interestingly, a lot of the heat in this debate has been about the Midwest or the Southeast allegedly polluting the Northeast. As you can see, at least with respect to sulfur, the bulk of the impacts from PM–2.5, which are at least half driven by power plant sulfur emissions, are concentrated in the heartland in the South.

Likewise, as you turn to the lower right you see a continued persistent problem with acid deposition, again concentrated not just in the Northeast where a lot of the traditional publicity has been, but throughout the Southeast where forests, rivers, lakes, streams are in danger of acidification and need significant further sulfur reductions for recovery.

In the upper right you see the visual impact in the Shenandoah National Park of sulfate from power plants, at least in part. About half of the haze-driven problems in the eastern parks come from power plant sulfate.

On the left you see what it looks like on a pretty good day when the sulfate isn't drifting in from power plants. That represents maybe 10 percent of the days we get in the Shenandoah.

The 10 percent worse days on the right, those are days when power plant sulfate is driving reductions in visibility of up to 80 percent from natural background levels.

These are serious problems. Yes, progress has been made, but these are not acceptable situations. Just as one example, PM–2.5, just to go to Senator Smith's home State, we reference a study that was released 2 weeks ago by the Harvard School of Public Health.

Just two coal-fired power plants in Massachusetts, and the Harvard School of Public Health study estimates that those two power plants alone result in about 160 premature deaths annually in Massachusetts and in New Hampshire, I am sure predominately due to the deposition, sulfur deposition and PM-2.5.

So we do have significant challenges ahead of us. The power sector does contribute a significant share of these problems. We are not saying that there hasn't been progress, but I think as the other panelists have agreed, there needs to be more.

As far as policy directions, I think the first thing we have to do is look to where the States are going. New York, Massachusetts, Texas, Connecticut have all taken steps or have moved toward significant steps to control power plan air pollution.

Governor Pataki supported a 50 percent cut in sulfur and NOx, for example and is seriously considering mercury and CO_2 as part of the package.

The States are sending you a signal that the status quo is not good enough. The air is not clean enough. Governor Bush signed into law during the last legislative session in Texas a bill that would cut some power plants emissions significantly. I think that indicates where public opinion is going.

I have also attached several news articles from Ohio, other Southern and Midwestern States. You will see a lot of opinion leaders, editorial boards beginning to say, "The current Clean Air Act is not stringent enough with respect to power plant emissions.

I am heartened to see that utilities are joining in that chorus and I applaud Jim Rogers, Frank Cassidy's company and others who have asserted leadership to move us to a better place.

I would like to think that we have defined the playing field now and now it is just a matter of timetables and numbers, some of which are our proposals which we have up there on a placard and we can discuss in detail.

The last point, Mr. Chairman, is voluntary versus mandatory. I just urge you to consider that breathing is not a choice. We don't have a choice of whether to get up every morning and breath. I don't think that it is appropriate and my organization doesn't think it is appropriate to have a voluntary compliance with regulations that make it safe to breath.

The history of voluntary programs in air pollution control has been very mixed. Our concern is that if we go down the voluntary track it will be 5 years, 10 years before we figure out it hasn't worked as it traditionally has not.

I am prepared to cite examples. Then we will have to get on with the mandatory regime and we have lost 10 years of progress.

Thank you very much and I look forward to your questions.

Senator INHOFE. Thank you, Mr. Cohen.

Mr. Brunetti?

STATEMENT OF WAYNE BRUNETTI, CHAIRMAN AND CEO, NEW CENTURY ENERGIES, DENVER, COLORADO

Mr. BRUNETTI. Thank you, Mr. Chairman, for having this hearing this morning to talk about——

Senator INHOFE. We acknowledge, Mr. Brunetti, that you folks supply our panhandle out in Oklahoma.

Mr. BRUNETTI. We do.

Senator INHOFE. We appreciate the fine job you do out there.

Mr. BRUNETTI. Thank you for that acknowledgement.

Mr. Chairman, New Century Energies is a public utility holding company that serves 1.6 million customers in Colorado, Texas, Wyoming, New Mexico, Kansas, and as the Chairman pointed out, the panhandle of Oklahoma. We will soon be in the process of merging with Northern States Power Company that is based in Minneapolis, Minnesota, to become Xcel Energy which will serve 3.1 million customers in 12 States and will have a generating capacity of about 22,000 megawatts, a rather large company, the eighth largest in the country.

As I am sure you know, much of the electricity in the West is generated by coal-fired plants using low-sulfur content Western coal.

For example, 74 percent of the electricity generated by our company comes from coal-fired facilities. The use of Western coal, even in uncontrolled plants, typically results in SO_2 emissions lower than two-thirds of the country's coal-fired power plants.

Air quality concerns in the west are somewhat different from many areas in the nation. Most of the country's national parks, wilderness areas and Class I areas are in this region. Our citizens are naturally concerned about impacts on those areas.

Another factor adding to the regional challenge is growth. As many of you know, the metropolitan Denver area is among the fastest growing areas in the country and our company struggles to meet the power supply demands of this growth. As in other parts of the country, the West has grappled with the Clean Air Act rigidity and the EPA's inflexibility. In recent years we have been opposed by the EPA under the Clean Air Act that has made it very difficult to meet our requirements.

We have some examples of that. Before I conclude my testimony, I would like to share one with you today. Earlier this year our subsidiary public service company in Colorado attempted to obtain a prevention of significant deterioration permit for a new gas-fired generating plant at the Fort St. Vrain plant site.

Rather than install EPA's preferred nitrogen-oxygen control equipment, we proposed as part of the application to make great NOx reductions at a much lower cost at other power plants in our system.

This approach received the approval and support of the State of Colorado and the environmental community in Colorado. EPA, however, rejected it as an affront to the integrity of the Clean Air Act.

Our dealings at the State level stand in dramatic contrast to the problems with EPA. I think you will find our recent experience interesting.

NCE is committed to being responsive to our customers' needs. A few years ago we did conduct a survey of our customers which indicated 62 percent of our customers were willing to pay a little more for cleaner air. We realized our best opportunity to address this concern was in Denver. Public Service Company operates three coal-fired plants in the metro area. In 1997, after much study of different alternatives, we proposed a voluntary emissions reduction program to reduce sulfur dioxide emissions from these plants by 70 percent and NOx by 40 percent. We took this proposal to a wide range of interested parties including the environmental community, business, labor unions, coal suppliers and the local air quality planning agency and certain appropriate State agencies.

The result of our collective efforts was Senate Bill 142 which was passed by the General Assembly in 1998. Senate Bill 142 encourages the Colorado Air Pollution Control Division to enter into flexible, voluntary emission reduction agreements with stationary sources.

This is based upon three principles. It grants regulatory assurance, for instance we have a 15-year assurance that what we are doing will stay in place.

Second, it provides flexibility that we could not receive under traditional command and control programs.

For example, in Senate Bill 142, Public Service Company of Colorado reached an agreement that granted substantial flexibility in the form of annual emission averages, flexible tonnage caps and trading emissions between different plans.

Third, it ensured regulatory companies can recover its costs. The resulting agreement between Colorado and our company is a win-win proposition unlike traditional command and control approaches taken by the EPA.

I do not believe that under the Clean Air Act we could have reached such an agreement with the EPA. As compared with our Denver Emission Reduction Program, EPA's regulation of air quality appears to be broken, as I gave you an example in the Fort St. Vrain.

The committee is to be commended for exploring this new approach of regulating air quality. I believe that there are four important concepts that have to be there to make it successful: flexibility, regulatory assurance, cost recovery and State control.

Thank you for the opportunity, Mr. Chairman.

Senator INHOFE. If my calculations are right, in order to adjourn when we are supposed to we will have to confine our questions of each panel member to 6 minutes and that will keep us on schedule.

Let me first of all pose the same question to all five of you here. There has been a lot of talk about the Clean Air Act and of course, NOx and SO_2 are pollutants. Do you think CO_2 is a pollutant?

We will start with you, Mr. Rogers. These are yes or no questions.

Mr. ROGERS. I do not think it is a pollutant under the EPA definition.

Senator INHOFE. Mr. McCrary?

Mr. MCCRARY. No, sir, not under the Clean Air Act. It is, though, a greenhouse gas.

Senator INHOFE. Mr. Cassidy?

Mr. CASSIDY. Senator, I don't have an opinion of a legal definition under the Clean Air Act. I would say that if a more broad definition of a pollutant is used, the science and the direction of public policy seems to be saying to me that if a pollutant is a resource in the wrong place then it could be defined as a pollutant.

Mr. COHEN. Mr. Chairman, the Clean Air Task Force, like Mr. Cassidy's company, doesn't have a legal position on that. I think some of our member groups may, so I am not going to step into those waters.

Senator INHOFE. Mr. Brunetti?

Mr. BRUNETTI. Mr. Chairman, not under the Act, we don't believe it is a pollutant.

Senator INHOFE. On the first panel, Mr. Wood said the Clean Air Act was one of the problems with the failure of the clean air power initiative because it didn't provide the flexibility needed.

Do each of you agree, and do you think the Clean Air Act needs to be amended to provide the flexibility that we are discussing today?

Mr. Rogers?

Mr. ROGERS. I do. I will say, if you look at the amendments of the Clean Air Act of 1990, one of the great breakthroughs in that legislation is that it provided for emission allowance trading.

That is translated into agreement with tougher targets, but it also is translated in lower false compliance. That is a wonderful example of setting a target but allowing companies the freedom to select the best way to meet the target.

Senator INHOFE. Thank you.

Mr. MCCRARY. Mr. Chairman, I believe that the Clean Air Act is fundamentally sound. Once again, I think that one of the problems with the Clean Air Act is the way it is implemented. If it is based on sound science, I think the Clean Air Act does provide some flexibility, particularly with the advent of emissions trading.

Senator INHOFE. Mr. Cassidy?

Mr. CASSIDY. Both from a flexibility and a business certainty point of view, we do believe that the Clean Air Act should be amended to make provisions for the kind of proposal that I discussed.

Senator INHOFE. Mr. Cohen?

Mr. COHEN. Mr. Chairman, the groups I represent support flexibility and market-based mechanisms subject to the caveat that I have put on the board, that we are going to need to work through some discussion.

As Exhibit 7 in my testimony shows, for some pollutants or ultimate pollutants such as PM–2.5, it is clear that there are very significant local impacts in urban areas of some of these plants where you have a lot of population concentrations.

There are a couple of bills out there with recommendations as to how to limit trading for those circumstances where local impacts are especially significant.

But subject to that caveat, I think we support flexibility Title IV, Acid Rain type approach for nitrogen, sulfur, certainly CO_2, and I

think mercury may be another case where we have hot spot issues that will need to be looked at as we refine legislation.

But in general the concept and approach is one we support.

Senator INHOFE. Thank you, Mr. Cohen.

Mr. Brunetti?

Mr. BRUNETTI. Mr. Chairman, as I pointed out with our Senate Bill 142 in the State of Colorado where flexibility is key, we believe that the Act can be enhanced to improve the flexibility of getting the end result.

Senator INHOFE. Thank you. I know this will be difficult. But I would like to ask each one of you what you think is the No. 1 issue that will be the most difficult to solve as we try and move forward toward a legislation solution toward the emission bill, just one.

Mr. Rogers, be No. 1.

Mr. ROGERS. I love this leadoff. I would rather do cleanup.

Senator INHOFE. All right, let's start with Mr. Brunetti.

[Laughter.]

Mr. BRUNETTI. I will get even with Mr. Rogers after the meeting here.

[Laughter.]

Mr. BRUNETTI. One of the key items is regulatory assurance, long-run playing. I think that from running a large utility, what I like to see is the rise in 15 years without changing. And I think that is going to be difficult to achieve.

Senator INHOFE. Mr. Cohen?

Mr. COHEN. Your question reminds me of something you pose to a witness. I was supporting once in a deposition where the questioner began, "What is the weakest part of your testimony?"

So again, venturing in, I would say that I think that there is a broad consensus that on the sulfur, nitrogen oxide and toxic pollutant mercury agenda there is probably more convergence at this point on numbers than there probably is on the CO_2 issue.

My guess is that will be a little harder to tackle and we will have to be quite clever about how we do it.

Senator INHOFE. All right. We are almost out of time here.

Mr. Cassidy?

Mr. CASSIDY. I think what is striking is the remarkable degree of unanimity among everybody who spoke, the committee, and ourselves at the policy level. An approach of this type is something that we should implement.

I thought Senator Voinovich was eloquent in saying that we would be doing the country a great service if we came to grips with these issues.

I think the toughest part is going to be in deciding on the details, timeframes, amounts, and which pollutant. That is the case where input should come from all stakeholders and should be decided by yourselves.

Senator INHOFE. Thank you, Mr. Cassidy.

Mr. McCrary?

Mr. MCCRARY. I think one of the big problems is going to be defining what certainty is and the practical reality of how you achieve certainty through a long timetable.

Senator INHOFE. And last, Mr. Rogers.

Mr. ROGERS. I love it. The devil is in the detail and the most difficult detail to work through is going to be CO_2, both in terms of levels and timing.

Senator INHOFE. Thank you very much.

Senator SMITH.

Senator SMITH. Thank you very much, Mr. Chairman.

Mr. Cohen, I know you can't speak for everyone, but would your group be willing to accept any statutory change that would allow forbearance, for want of a better work, on a plant-by-plant basis to achieve the overall reductions if those reductions were less than what we would project otherwise?

Mr. COHEN. I don't think we could commit to that in that case in every plant. I am not trying to be evasive, but we have begun to look more closely in the last year or two with some of these local plant impacts and the issues that may be associated with large dirty plants and plants near big urban centers.

Those may pose a special problem. So I think that has to be a process of discussion. A couple of the current bills out there capture that by having a general trading provision subject to some further analysis of local plants.

So I am not in a position today to make a blanket statement that as long as the national caps are OK there is no need to look at plant-specific impacts.

Senator SMITH. The reason we are asking, obviously, is that in an attempt to put together such a comprehensive bill, we would need to try to have as much agreement as possible with all the stakeholders. So if you have further thoughts on that that you could provide to us, we would appreciate it.

What about on the issue of coal. Some of your critics would say that your goal is to eliminate all coal use. Is there a role that you can envision for coal in the nation's energy supply?

Mr. COHEN. There certainly is. I think it would be certainly quite unrealistic to think that coal, even if that were our objective to phase it out, which it is not, it would be quite unrealistic to think that we can do that in anything like the next couple of decades.

The target emission rates that we put out there for proposal, we believe can be met for the foreseeable future having less of a share in the total energy mix, but still a very significant share.

Senator SMITH. Mr. McCrary, can you voluntarily accept stricter emission limits and limits on unregulated pollutants in order to achieve flexibility under the NSR permit program and some certainty?

Mr. MCCRARY. Yes, sir, I think I could, as long as those pollutants were based on scientific research.

Senator SMITH. Mr. Rogers, what do you think will the areas of greatest concern? This is almost like the question that Senator Inhofe asked. What would be of greatest concern to your colleagues in trying to put together a comprehensive bill that deals with all the stakeholders?

Each utility is different in its own way in terms of what upgrades that they have done and what they haven't done. What worries you the most about us trying to put together a bill that would be acceptable to all of you?

Mr. ROGERS. I think we could work very effectively toward meeting an agreement on NOx and SOx, and I think even with respect to how to deal with mercury. I think we can do that.

Again, I think CO_2 is an area where you are going to have the greatest difficulty in terms of reaching some agreement in terms of the level and the target date.

I also think the issue of how do you assure certainty, which was really Wayne's point, that is going to be a very difficult thing because it is almost impossible to bind future Congresses with respect to changes that will be made.

My judgment is that we will be able to work out way through that and achieve a comprehensive approach that works for everybody, regardless of the position that they started this debate with.

Senator SMITH. Well, as you can tell from the hearing that Senator Inhofe is holding, we are in the information-gathering mode.

Let me just say to all of you and anyone else who has any suggestions or thoughts or ideas that would help us, we welcome those and the door is open. We would certainly appreciate it from any stakeholder or potential stakeholder here, whatever thoughts you have as we try to put together a bill.

Thank you, Mr. Chairman.

Senator INHOFE. Thank you, Senator Smith.

Senator Lautenberg?

Senator LAUTENBERG. This has been an interesting, and I think informed panel. The contrast in views is relatively narrow. I don't mean to discuss the sharp differences, but one of the things that kind of surprises me, if I may say, and that is the definition of what is CO_2, as not a pollutant.

I noticed that several of you were careful to say that it is not defined under current rules. Does it pose a concern altogether because it is not a pollutant under the traditional definition?

Mr. Rogers?

Mr. ROGERS. I think the way I would respond to your question is to make a point. We are all very careful in terms of the way we responded to that question earlier.

Here is the point: If it is perceived as a pollutant under the Clean Air Act, can they give EPA the authority to do whatever they want with it regardless of the science?

So the reality is, from a practical standpoint, many of us believe that the appropriate place to deal with the CO_2 issue is before Congress where all points of view will be carefully considered.

So from my view, a technical view, I do not view it as a pollutant for purposes of giving the EPA the authority to do whatever they want whenever they want in any manner they want.

Senator LAUTENBERG. So it is not that it is not a material to be really concerned about. I appreciate your candor. We are kind of walking on eggs here.

Let me ask Mr. Cassidy a question. If you are concerned about mercury emissions, I think it is fair to say that that is a major threat. Do you think it is possible to reduce mercury emissions from power plants by 90 percent, if I heard the commentary right?

Mr. CASSIDY. Senator, there are technologies that are being tested now that we think are very promising. One very important ben-

efit of implementing this comprehensive approach is that more plants will be built testing those technologies.

I do think that if 90 percent emission reductions are necessary that we will have the technology to do so.

Senator LAUTENBERG. Should we therefore allow trading or prohibit the trading of mercury emissions? We allow trading of nitrogen oxide. Would that help in our quest to get it to a 90 percent reduction level?

Mr. CASSIDY. I think it would. Let me just clarify the differences between the emissions that we are talking about. I think it is very well accepted at this point that sulfur dioxide, nitrogen oxides, and carbon dioxide are regional, national and global problems that lend themselves to a trading regime with national caps.

Mercury is a little more complicated. There is a vaporous form of mercury that does travel long distances and could be subject to this same kind of mechanism.

To the extent that there are local issues that Mr. Cohen referred to, I think they should be taken care of at the local level.

Mr. COHEN. Senator Lautenberg, if I could just add for a moment to my comment earlier, the evidence we have is that something like 20 percent of the mercury outfall from the stacks land within a close range of the power plants.

This is often a problem because plants are often located near water bodies that are also places where people fish, and particularly low-income people rely on this for a lot of their diet.

So we think there are some significant equity issues and local contamination issues posed by a completely unconstrained mercury trading system that would allow, say, a continued level of mercury emissions in existing plants in some places.

But I don't have a pat answer on how you reconcile that right now.

Senator LAUTENBERG. The question was asked earlier about coal and how necessary it was to continue using it and so forth. I think, Mr. Cohen, you were very clear. You said that even if you want to, you could not dispose of it.

The demand for electricity all over our country is burgeoning. I mean, the growth in the economy has produced that kind of reaction. I think it is important that we fulfill that demand Another question is, if we didn't have coal as our primary, and I am not suggesting that we rid ourselves of that resource, is there anything that you have seen thus far as an appropriate alternative long range that could be less threatening to the environment if a decision was made along the way to reduce or eliminate as much use of coal as we have? Mr. Rogers. Senator, I would quickly say that the statistics, to try and make the point clear, 55 percent of the electricity in this country is generated using coal. In the Midwest over 82 percent of the electricity is generated by burning coal. Senator Lautenberg. What about the 45 percent remainder in the national production? You say 55 percent use coal?

Mr. ROGERS. Fifty-five percent nationally. Eighty-two percent in the Midwest. So in the Midwest we are more dependent on coal than the average for the country. But my view is there may be a couple, but no significant coal-fired based load plants being built today.

Nearly all generation is gas-fired. Now, having come out of the gas industry, there is a limit on our ability to use gas. I remember back 10 years ago when it was a 16 TCF market. It is almost a 30 TCF market.

There are limits in terms of how much gas will be available and what impact that will have on the price of natural gas over a longer period of time.

It is promising and they have really improved the efficiency of those turbines, but the reality is that there are limits even there in terms of moving totally to natural gas.

The other thing is that there are a lot of new technologies being tested, particularly fuel cells. But many of the fuel cells use gas or use hydrogen. So while there are fuel cells being tested, and our company alone is testing two different fuel cells a day. We are testing a micro-turbine technology.

The reality is that those technologies have not become commercial, nor will the pricing of electricity from those machines match the prices we have today.

But my point here I think is very important. If we have comprehensive legislation and we, as a major operator of coal facilities, know that, we can then do our analysis in a way and with specific targets 5 years out, 10 years out.

My belief is the belief in technology. Our country will put more money into these new technologies. We will commercialize new ways to produce electricity and through the commercialization the prices will come down.

There will be replacement sources for electricity that we are using today that we are burning coal to deliver.

So one of the most significant things about this legislation is that it will stimulate significant investment in technologies.

I believe our country has the ability to solve that problem.

Senator LAUTENBERG. May I use the in-house technique here and ask you, each one of you, a yes or no answer? That is——

Senator INHOFE. Senator Lautenberg, you have already gone 2 minutes over your time.

If it is a yes or no question, that would be fine.

Senator LAUTENBERG. Do any of you see nuclear returning to our country as a source, a new nuclear facility coming back as a source of production?

Mr. ROGERS. No, not in the near term.

Mr. COHEN. Not in my lifetime.

Mr. MCCRARY. Not in the near future.

Mr. CASSIDY. Not in the near future.

Mr. BRUNETTI. Not in my lifetime.

Senator LAUTENBERG. Thank you very much.

Senator INHOFE. Thank you.

Senator Voinovich?

Senator VOINOVICH. One of the things that has not come out in all of this discussion is the issue of all of this in terms of the people who consume energy in this country and the impact that some of these initiatives have on the reliability of energy and electricity in this country and also the costs connected with some of these initiatives in terms of our competitiveness in the world marketplace.

It seems to me that one of the things that ought to be done is that ought to be captured and that should also be on the table if you are talking about balancing things.

Too often we just have the environmental on the one side and we don't give consideration here, and some would argue that all we talk about is the reliability and economics and forget the environment.

It is interesting that all of you agree that a comprehensive approach would make sense.

The question I have is, do you think it is possible that those of you that are involved in this could sit down and set up some type of task force that would involve a representative group of people from business, industry and environment groups to come up with some overall comprehensive plan that you would at least lay on the table for us to give consideration to or at least come in with an agreement on three-quarters of this and say, the other 25 percent we don't agree on and you will have to reconcile that on your own. Is that possible?

Mr. BRUNETTI. Senator, I will start with that. Absolutely, I think it is possible. The constituency we brought together in Colorado was quite diverse, as I pointed out, to get Senate Bill 142 passed. It included the full environmental community, State agencies, labor, and coal industry. We came to agreement.

It was not an easy process. It was a very difficult process. Now, whether you could ever get a larger group, multi-State with different interests to get to that point Probably not 100 percent, but I certainly think on some fundamentals that you could get agreement on some underlying principles.

I think you saw some of that today.

Senator VOINOVICH. Mr. Cohen?

Mr. COHEN. I think it is possible and I think it is worth a try. You may be aware that there are discussions going on right now bilaterally and what not and a lot of discussion in the industry.

I think that that has great promise. The devil certainly is in the details, but I think it is worth a shot if we want to get something done in an expeditious timeframe.

Senator VOINOVICH. Mr. Cassidy?

Mr. CASSIDY. I agree with the previous speakers. I would say to the extent that Congress could provide a forcing function it might get it done in dog years rather than in regular years.

Senator VOINOVICH. I am sorry. What did you say?

Mr. CASSIDY. To the extent that Congress could provide a forcing function to keep progress moving forward, I think that would be helpful.

Senator VOINOVICH. Mr. McCrary?

Mr. MCCRARY. Senator, all things are possible but nothing is real easy. I think certainly we can all agree on principle. I think the difficulty is going to come in the details.

Senator VOINOVICH. Mr. Rogers?

Mr. ROGERS. Senator, I am the chairman of the environmental committee for EEI and within our industry we have been working over the last year to build a consensus around the notion of pursuing comprehensive legislation.

I can say as an industry, and it doesn't include everybody, but by and large our industry is prepared to move forward on comprehensive legislation.

The key is to be able to sit down with a set of different stakeholders because your point is one of the most important points.

The cost of this is critical to the success of our companies; not our companies, but to the companies in this country in the future who are competing in a global economy.

The piecemeal approach, in our judgment, translates into higher prices for consumers. Comprehensive will translate into lower prices.

I think everybody at this table recognizes that, both the environmental groups as well as industry. That is why I have great hope that if we can sit down and work through the process and have these informal conversations that we can get there.

But I do believe, as Frank suggested, that at the end of the day you all have to drive. You have to whip and drive this and it will be your drive that will get us across the goal line.

Senator VOINOVICH. This is my second year. I have watched and you get polls on either side of the aisle and what happens is you end up getting nothing done and spending hours and hours.

It seems to me that what you are all talking about here is really important to the future of our nation in terms of its competitiveness and also in terms of our environment.

If you could try to put something together and really work at it, you know, we want to do something that is good. That means like anything else, there are compromises that have to be made.

But it seems to me that compromising in consideration of having an overall term plan is well worth it in terms of, I think, the bottom line to your companies reliability and also, I think also, quite frankly, to the environment with people just pulling in different directions and not a whole lot getting done. So I would encourage you to do that.

Mr. Brunetti, I am interested to know how did you do what you did in Colorado? I am out of time, but in terms of the regional—which region are you in, by the way, in terms of the EPA?

Mr. BRUNETTI. Region 8.

Senator VOINOVICH. How did you do what you were able to do without them messing it up?

Mr. BRUNETTI. Actually they were involved in discussions. This all started with a customer survey. We try to drive our company from the customer's point of view. As I mentioned, 62 percent of our customers said they were willing to pay a little bit more for cleaner air.

So we said, OK, we want to run the business from that standpoint. How do we go about it? What do we do and how do we go about it?

We solicited information from the environmental community and the State health department. We started crafting a plan to present to the Colorado legislature. It was coalition building.

As has been mentioned, the devil is always in the details and the details sometimes got messy. But we did, at the end, resolve them and come up with a uniform approach which everybody agreed to.

EPA was in those discussions and they did not mess this one up—yet.

Senator VOINOVICH. Mr. Cohen, do you know what they did out there?

Mr. COHEN. I am familiar with the general arrangements. The direction was right. I have some quarrel with the details, but I think the general approach of multi-pollutant approaches, broad-scale coverage and even incentives is something we are willing to consider as part of the bargain.

I could submit in writing some of the critiques, things we would like not to see replicated at the Federal level from that particular arrangement, but I think those were more details than conceptual.

Senator VOINOVICH. Thank you.

Senator INHOFE. Thank you, Senator Voinovich.

Let me just make an observation. From the last question that Senator Lautenberg asked and the quick replies we had from everyone, as you know the NRC is under the jurisdiction of this committee. They have completed the first re-licensing of a nuclear plant at Calvert Cliffs in just 2 years as opposed to some 10 years that people were speculating about. I thought I would throw that out and get it in the record.

Senator BENNETT.

Senator BENNETT. Thank you, Mr. Chairman. I will followup a little on the same comment. Most of my questions have been asked so I won't go through them. But Senator Lautenberg's question and the comments about what do we do if we don't go to coal does raise the overall question of where are we going to get the power in the future.

European countries have gone increasingly nuclear. We, indeed, are the only western, highly developed country, whatever, that does not go in that direction. Coal is the dominant source.

Mr. Cohen, you seem like a reasonable fellow. I am delighted to have you here.

Mr. COHEN. My colleagues are getting very nervous.

Senator BENNETT. When you get that kind of a phrase from a politician like me, you are in trouble. Out where we come from we have a little bit of difficulty getting the environmental community to recognize that we need power.

There is a controversy brewing now on the Columbia River with the demand from the environmental community that we take down all of the dams and thereby give up the hydroelectric power.

In my State there is a strong effort getting mounted, fortunately it doesn't seem to be getting anywhere, but given the long view a lot of people have, it might get somewhere to take down the Glen Canyon Dam and drain Lake Powell.

The question that I ask is: Where are you going to go to replace that power? I think you would all agree that hydroelectric power is pretty clean power. There is not a lot of pollution that comes out of hydroelectric power.

Now, one of the ironies, and I am old enough now to remember this, when the debate occurred here in Congress as to whether or not the Glen Canyon Dam should be built in the first place, the Sierra Club came in and opposed it on the grounds that we would never as a nation need that much power and that certainly Ameri-

ca's energy needs would never be so great. We would have surplus power, we would never ever need it.

Then, some of the witnesses said, "If by some chance we are wrong and we will at some unforeseen point need the power out of the Glen Canyon Dam, we wouldn't need the dam because look at all the low-sulfur coal at Kaparowitz that could be burned to provide the power."

We just had the President a few years ago use the Antiquities Act to prevent the mining of low-sulfur coal at Kaparowitz on environmental grounds.

If we can't mine low-sulfur coal, if we can't use hydroelectric power, if we can't have nuclear power—you know, what are we going to do as the power needs of this country continue to go up.

Mr. Cohen, I would just hope you would put in a kind work, if you will, for hydroelectric power among your friends because——

Mr. COHEN. The tasks are growing by the minute.

Senator BENNETT. Because they don't seem to like the idea of any kind of power.

Mr. COHEN. Senator, I respectfully disagree with that characterization that we are unconcerned about reliability or the ability to maintain adequate supplies.

Senator BENNETT. I am not saying you are. As I said, you strike me as a reasonable fellow.

Mr. COHEN. Warned, warned.

Senator BENNETT. It is who you hang out with.

Mr. COHEN. More generally, I think that all of us could look at all of each other's statements over a period of 20 years and point out the contradictions and the twists and turns.

I think the best approach is sort of a non-ideological one. I think that is what we are proposing, to look at the emission targets that are being proposed. Let's do some analysis.

Some of my colleagues are doing analysis of the kinds of targets that were proposed. Let's see if we can get there in a reasonable timeframe at a reasonable cost with the fuel supplies we have.

I think the obvious answer here, if you are here for the short term, is going to be some expansion in the use of natural gas. We believe on our first look that the supplies are adequate at a reasonable cost to meet these targets in these kinds of timeframes, decade-type timeframes.

With respect to coal, I will say that there are some promising technologies on the horizon, to gasify coal, for example. Mr. McCrary's company is experimenting with some of that. They have had some recent successes that may well make that a much more environmentally viable fuel for the future as it is now a very economically viable fuel.

I also agree with Jim Rogers that over the 10, 15, or 20 year period we probably will drive a lot of things, new technologies, decentralized technologies that we can't foresee right now.

But none of the groups that I am representing today certainly have an anti-coal position, an anti-hydro position on principle.

I think what we are saying is, here are the targets we think are necessary to protect human health and the environment. We will have to push on some of the numbers but I don't think there is really a credible body of opinion that says we can't get there with

some of the conventional sources that we have at our disposal today.

Senator BENNETT. Thank you. You confirm that you are a reasonable fellow.

I have nothing further, Mr. Chairman, except that throughout all of this debate, let's deal with the science, not the superstition. Let's look at alternatives. I am willing to look at wind and solar and other things as alternatives, too. I don't want to be as narrow as I am suggesting that some other people are.

But let's recognize that bottom line, somebody has to burn something or turn something or we are not going to have any lights. Thank you.

Senator INHOFE. Thank you, Senator Bennett.

We are at the time that we were supposed to conclude this meeting. But I know Senator Chafee and probably Senator Lieberman would like to make comments or ask questions. Try to restrict it to 5 minutes, if you could.

Senator CHAFEE. I am just here to listen. I think that the further we do push the envelope on clean air the more it will profit our country. The Third World countries are certainly struggling with standards far below us. I just think the technology we develop in pushing the envelope that we can eventually export.

A friend who was in Beijing said they couldn't see the street from the 32nd flood or his hotel because of the power plants in the region.

This is something we can export, so let's just keep pushing the envelope.

Senator INHOFE. Thank you, Senator Chafee.

Senator Lieberman?

Senator LIEBERMAN. Thank you, Mr. Chairman, for your courtesy. Mr. Chairman, I apologize to you and the witnesses. I had a meeting of the Armed Services Committee that I had to attend.

I appreciate the opportunity to question briefly. I have looked at the testimony that was submitted. I appreciate it very much.

I understand that there is some concern about what might be called a cascading regulatory effect that might preempt the implementation of the kind of comprehensive approach we are talking about, a regulatory effect from within EPA.

I wonder if you could give me any of your industry's sense of a time line necessary for developing and adopting the kind of multipollutant approach that we are talking about here in order to avoid that so-called cascading regulatory effect?

Mr. Cassidy, since I happen to have met you yesterday, I am going to pick on you.

Mr. CASSIDY. I think what you are referring to, Senator, is that as time marches on additional requirements under existing legislation come into play. As I mentioned, we expect the process by which mercury will be regulated to start later in the year.

I am not sure I can give you a specific timeline, but it certainly argues that we get through this process very quickly if we are going to realize the benefits of it.

Senator LIEBERMAN. Mr. Rogers?

Mr. ROGERS. Senator, from my perspective, in my opening statement I talked about living in dog years and not human years. It

is very important that in business we live in dog years, whether you are an old or new economy company.

My hope would be, and I am a pragmatist on this, my hope would be that a lot of the heavy lifting could get done over the next three to 4 months, I think the probability of getting comprehensive legislation this year is very slim, given my sense of the political dynamics of an election year.

But I think the reality is that the hard work can get done and we can be in a position in January or February—there will be a lot of other very important issues on the plate then—but I think if we have done our hard work now we will be ready to go then.

I think that ought to be a goal that we have. There is a sense of urgency about getting this done. It is easy to debate it, but it is important to make a decision.

Senator LIEBERMAN. That is a helpful response. We should realize it and attempt to realize that goal.

Let me ask a broader question, and I would welcome a response from anyone on the panel. I notice one argument against the voluntary approach and for a mandatory one is that the voluntary approach potentially penalizes companies that opt in by allowing their non-participating competitors a market edge.

Companies that have invested in state-of-the-art controls, as I said before, it seems to me, should not face a competitive disadvantage against counterparts as States undergo utility restructuring.

A similar concern is that companies may chose to opt in only their cleanest plants, which is to say those closest to compliance, while leaving the dirtier units in the traditional regulatory framework.

I would be interested in hearing views on that issue from all of you or any of you, but particularly from what might be called both sides of the debate.

Mr. COHEN. Senator, I think you missed my earlier statement, but the organizations I represent are opposed to a voluntary approach period, mainly for that reason. The historic track record of these programs is non-impressive in terms of enlistment, precisely because folks are being asked to step up to the plate and disadvantage themselves.

So it is hard to answer your refinement on that question because the initial threshold is that we don't support a voluntary approach.

Senator LIEBERMAN. I was familiar with your testimony. I did see it. How about somebody on the other side to make the case for the voluntary procedure?

Mr. Brunetti?

Mr. BRUNETTI. The best description, Senator, about the approach we did in Colorado, because it is concerned as we restructure the industry that if you have a voluntary approach, do something ahead, that at the time you put you plants at some competitive disadvantage.

The approach that was taken in Colorado is that the State legislature allowed those costs to go on the wires so no matter what happens to the industry, it does not put the power plants themselves at a competitive disadvantage.

So we have addressed it that way.

Second of all, dealing with this, you know, you are going to opt in your best plants and keep the—the approach we took there is that reductions applied for a group of plants in a region where there was an air shed area and no plant got deteriorated.

In other words, every plant improved somewhat, some more than others, but no plant had any deterioration at all. We did not opt in all the plants. So that is the approach we took. Whether it would work on a broader scale, I cannot say.

Senator LIEBERMAN. Would anyone else on the panel want to comment?

Mr. CASSIDY. I would just say I have a couple of problems with the voluntary approach. The way I tend to think of that is that you can choose to stick with what we have today or you can opt for the new path.

Now, the people who chose to stick with what we have today, we still have all the problems that we have been talking about all along today; litigation, uncertainty and the like.

Second, if a company can choose which path to go on, they will chose the least costly path, perhaps the path that doesn't get us to the environmental position that we seek and as Mr. Cohen mentioned earlier, we may end up 10 years from today finding that we have not gotten where we need to get.

I think a mandatory approach that sets national tonnage caps is more appropriate and more like to work.

Mr. ROGERS. Senator, I would add to that this sort of refinement. I believe the targets have to be specific. They have to be mandatory and they have to be over time. There is a relationship between the target levels and the timing. I think that is a very important sort of calculus that needs to be understood.

My view of voluntary is around how you comply with the targets. That is to me the voluntary nature of this. Where we are given the flexibility to use technologies, retire plants, change the technology at the plant, convert to gas. I mean there are a lot of ways to skin the cat.

So my view is that the voluntary part of this is in the "how." The mandatory part of this is in the targets and the dates.

Senator LIEBERMAN. Thank you all for very thoughtful responses.

Thank you, Mr. Chairman.

Senator INHOFE. Thank you, Senator Lieberman.

The time has come to conclude this. I want to thank all of you for coming.

Mr. Rogers, I am particularly aware of the sacrifice you made to be here and I appreciate it very much.

I have another committee meeting, so I have to leave.

We are adjourned.

[Whereupon, at 11:38 a.m., the subcommittee was adjourned, to reconvene at the call of the Chair.]

[Additional statements submitted for the record follow:]

STATEMENT OF SENATOR BOB SMITH, U.S. SENATOR FROM THE STATE OF NEW HAMPSHIRE

Good Morning. I would like to thank Senator Inhofe for his leadership in holding this hearing on a multi-pollutant approach to reducing utility emissions and all of the witnesses for appearing before us here today.

In January I announced my intention to start a dialog among all stakeholders on how to improve the manner in which the Clean Air Act addresses utility emissions. I plan to draft a proposal that will provide both the certainty and the flexibility necessary to achieve real environmental improvements in a timely manner. This system should include clear limits on emissions of nitrogen, sulfur, carbon and mercury, as well as emissions-trading programs and significant permit relief. We can improve the Clean Air Act if we draw lessons from the phenomenal success of the Acid Rain Program, in achieving its pollution goal with the least transaction cost.

I do not claim credit for this idea. The utility sector, environmental community, and numerous State and Federal Government officials have, from time to time, raised the prospect of using a comprehensive approach to increase flexibility and improve the environmental performance of power generation. But the Clean Air Act does not allow for such flexible terms of compliance. The current regime established under the Clean Air Act is too complex and has not produced the expected emission reductions. State regulators, environmental organizations and much of the utility industry seem to agree that there must be a better way to regulate emissions.

Let me cite just two examples:

1. There are a dozen regulations for NOx, each with its own deadlines and requirements. This cannot possibly be the most effective way to deal with NOx emissions.

2. The New Source Review, or NSR, program has been especially confusing. Senator Inhofe noted at his field hearing in Cincinnati that EPA has issued more than 4000 pages of guidance documents to explain the original 20 pages of its 1980 regulations. EPA has been working for several years now on a rule revision, but to no avail. EPA's recent NSR enforcement actions could easily lead to 5 or 10 years of litigation only to result in control measures that may be redundant of or contradictory with controls mandated by regulation. I know we can find a more efficient system.

We need to move away from a unit by unit, top-down approach to more market-based solutions. We must provide certainty, use a comprehensive approach, and provide flexibility.

On Certainty.—We need to be clear about what emissions reductions are expected and the timeframe for these reductions. This will allow for efficient implementation by utilities and will provide air quality planners and others a common baseline when considering the need for emission limits from other sources.

A Comprehensive Approach.—If not ALL pollutants are addressed, we lose certainty. Without addressing all pollutants now, future regulations could render meaningless our efforts to allow business to create efficient, long-term pollution control strategies.

Flexibility.—We should provide flexibility in compliance through the use of emissions trading and other market-incentives. Title IV of the Clean Air Act the Acid Rain Program proved that flexibility can drive down the cost of compliance. Also, we have had 100 percent compliance with that program with many reductions made ahead of schedule. The actual costs of compliance are less than half the lowest estimate originally given. No other Federal, environmental program can claim this remarkable accomplishment.

Broad relief from the NSR and permit programs is also a necessary component of any legislation. If a utility hits its emission targets, individual changes at any one plant would no longer be critical to Federal environmental policy.

I would like to address two additional issues regarding this legislation.

Coal.—Coal is and will remain an important part of our future energy mix. Our dialog should focus on our desired environmental outcomes rather than attempting to dictate the use of a particular fuel source.

Voluntary participation.—I believe this program should be voluntary. I know that some concern exists with a voluntary approach, but let me at least make my meaning clear. This legislation should be an alternative to the current system. The utilities would be granted a period after enactment of the legislation to choose between the current law or our new program. Once that decision was made, however, compliance would be mandatory.

My goal is to devise a system so effective and so efficient that the utility companies will be lining up to participate. I think we can do it, and I look forward to the testimony of today's witnesses.

May 16, 2000.

Senator BOB SMITH, *Chairman,*
Senate Committee on Environment and Public Works,
Senate Office Building,
Washington, DC 20510–6175.

DEAR SENATORS SMITH AND BAUCUS: We are writing to you on behalf of the State and Territorial Air Pollution Program Administrators (STAPPA) and the Association of Local Air Pollution Control Officials (ALAPCO), the national associations of State and local air pollution control agencies in the 54 States and territories and over 150 major metropolitan areas across the United States. We wish to thank you for the opportunity to participate in your process for developing a comprehensive and integrated strategy aimed at regulating air pollution from the power generation industry. We endorse this process and applaud you for your leadership in proceeding with this approach, and offer our assistance as you further refine this concept and develop legislation.

Since the adoption of the Clean Air Act in 1970, Federal, State and local governments have made significant progress in reducing air pollution in our country. Notwithstanding this effort, our nation continues to have substantial and unacceptable air pollution problems. According to EPA's National Air Quality and Emissions Trends Report, 1998 (published in March 2000), there are approximately 105 million people in this country who reside in areas that exceed at least one of the Federal health-based air quality standards. Additionally, the report indicates that, as of December 1998, over 2,506 water bodies in this country are under fish consumption advisories (for certain fish), resulting, in part, from toxic emissions into the air that deposit into these lakes, streams and ponds.

According to recent information, electric utilities still represent one of the most significant sources of these and other pollutants. For example, EPA's National Air Quality and Emissions Trends Report, 1998, indicated that the electric industry is responsible for 67 percent of sulfur dioxide emissions, which contribute to acid rain and fine particulates (PM2.5), and 25 percent of nitrogen oxide emissions, not only a principal cause of ground-level ozone, but a contributor to the formation of fine particles, as well. Moreover, according to EPA's Study of Hazardous Air Pollutant Emissions from Electric Utility Generating Units-Final Report to Congress, (1998), electric utility steam generating units emit 67 hazardous air pollutants, including mercury, arsenic, nickel and dioxin. In fact, electric generators are one of the largest sources of mercury in this country, responsible for more than one-third of anthropogenic mercury emissions. Finally, EPA estimates that 37 percent of the carbon dioxide emissions in the United States are released by power plants (EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990–1997, 1999).

In light of these significant problems, STAPPA and ALAPCO believe that measures to further reduce emissions from the power generating industry are essential. Furthermore, a comprehensive and integrated approach for regulating the industry could offer substantial assistance in ameliorating many of these problems. Our associations offer these preliminary comments on this concept, which you may want to consider as you develop legislation.

First, and perhaps most importantly, a comprehensive and integrated power generation proposal could lead to far greater environmental gains than the existing Clean Air Act. In particular, it could provide an excellent opportunity to regulate multiple pollutants in an integrated and holistic manner, including nitrogen oxides, sulfur dioxides, mercury and carbon dioxide. Moreover, it could enhance opportunities for pollution prevention and sustainability, as well as promote more expeditious compliance.

Second, an integrated approach could offer enormous advantages to the regulated community. Today, the power generation industry is subject to almost a dozen separate and disparate programs to reduce air pollution. Many of these regulate different pollutants and impose dissimilar compliance deadlines. These include, among others, New Source Review requirements, interstate transport regulations (i.e., the requirement for State Implementation Plans for nitrogen oxides, or the "NOx SIP Call"), control requirements for meeting National Ambient Air Quality Standards (i.e., particulate matter, ozone and sulfur dioxide), acid rain control requirements, regional haze protection, controls for mercury and other hazardous air pollutants, environmental requirements associated with electricity restructuring and States' carbon dioxide requirements.

These different programs targeting the power generation industry, along with their varying requirements and deadlines, have led to considerable uncertainty and cost inefficiencies for the regulated community. A comprehensive proposal, like the one you are developing, could provide far greater certainty for the regulated commu-

nity by granting relief from additional requirements for a specified period of time. In addition, it could promote enormous cost efficiencies in developing and implementing control measures for these pollutants.

Third, a comprehensive and integrated approach could also increase efficiency and certainty for State and local air quality regulators. The efficiencies would extend not only to devising strategies for addressing air pollution control problems from power generators but also to reviewing and revising operating permits.

STAPPA and ALAPCO have investigated the benefits of integrating multiple pollutant control strategies for various industrial sectors, including the power generation industry. In a report we published in October 1999, Reducing Greenhouse Gases and Air Pollution: A Menu of Harmonized Options, we identified hundreds of regulatory measures and policy options that could be implemented at the Federal, State and local levels. We then selected four areas—New Hampshire; Atlanta, Georgia; Louisville, Kentucky; and Ventura, California—and, with the assistance of the air agencies, modeled technologically feasible and cost-effective strategies that could lead to multiple pollution control benefits in those areas. This modeling illustrated that measures to achieve substantial emissions reductions for a variety of pollutants are available to all areas through the selection of optimal control strategies designed to meet the needs of their specific circumstances. We have shared copies of this report with your staff and would be happy to provide further information on the study if you desire.

Recognition of the wisdom of an integrated approach is increasing among environmental regulators, utility regulators and State energy officials alike. Recently, for example, STAPPA and ALAPCO participated in a process that is consistent with the intent of your legislation. In March 2000, STAPPA and ALAPCO met with leaders of the national associations representing State energy commissioners, State utility regulatory commissioners and State environmental commissioners. The purpose of the gathering was to discuss opportunities and barriers to pursuing multiple pollutant strategies that would help meet environmental requirements and be energy efficient and reliable. Many of the States represented at the meeting pledged to continue discussions within their communities, not only with their governmental counterparts, but also with other important stakeholders. This process is ongoing and another, much larger meeting of these groups is planned for September 2000 to continue and expand these discussions.

While we are in favor of a comprehensive and integrated approach to reducing emissions from power generation, we do believe there are several areas in which we need to exercise caution. For example, although we support flexibility in the regulations to reduce costs for the regulated industry (e.g., emissions trading), we must ensure that there will not be localized adverse environmental impacts. In addition, we strongly believe that interpollutant trading of certain toxic substances, such as mercury, should not be included as part of a trading program. We believe it is possible to craft a program, however, that provides flexibility without compromising these important principles.

We look forward to continuing our participation in developing your legislative proposal. We believe that legislation containing an integrated, comprehensive strategy, if structured properly, could lead to increased environmental protection at an accelerated rate, result in substantial cost efficiencies and increased certainty for both the regulated community and the regulators and reduce litigation. Clearly, many of the details of such a proposal will be controversial and will need to be negotiated, including the stringency of emission limits or performance standards, the deadlines and schedules and whether the program is mandatory or voluntary. However, we are confident that, working together, we can devise a beneficial and worthwhile legislative proposal.

Thank you for this opportunity to provide you with our views on this important subject. Please do not hesitate to contact either of us or Bill Becker, STAPPA/ALAPCO's Executive Director, if you have any questions or require additional information.

Sincerely,

RONALD C. METHIER,
President of STAPPA.

MARCIA T. WILLHITE,
President of ALAPCO.

STATEMENT OF HON. GEORGE V. VOINOVICH, U.S. SENATOR FROM THE STATE OF OHIO

Mr. Chairman, I want to commend you for continuing hearings on Clean Air Act reauthorization. In particular, I commend you and Chairman Smith for holding today's hearing in an effort to try to create a multi-pollutant, incentive-based emission reduction bill. I believe such an approach will allow utilities to make their necessary emission reductions in an efficient and cost-effective manner, provide the best benefits to public health and the environment, and ensure electricity reliability.

I would also like to extend a warm welcome to Jim Rogers, Vice Chairman, President and CEO of Cinergy Corporation in Cincinnati. Cinergy is a responsible corporate citizen in the environmental arena. I appreciate Cinergy's contributions to Ohio's economy and for its civic and philanthropic leadership in Southwest Ohio. I am pleased that Mr. Rogers could join us today.

Ohio has realized significant improvements in air quality in recent years. Overall the ozone level in Ohio has gone down by 25 percent and in many urban areas, it has gone down by 50 percent in the past 20 years.

In addition, when I first entered office as Governor in 1991, most of Ohio's urban areas were not attaining the 1-hour ozone NAAQS standard. By the time I left office in 1998, all cities had attained the standard, except one. However, Cincinnati is now meeting the standard and is awaiting action by the EPA to be redesignated as in attainment.

We've seen similar results across the nation. For instance, sulfur dioxide emissions from utilities peaked in 1975 at 18.3 million tons, but these were reduced to 13.1 million tons by 1997.

Likewise, NOx emissions have decreased. EPA projected that by the end of this year, power plant NOx emissions will be 4.6 million tons a 2.1 million ton reduction since the Clean Air Act was implemented.

Is that enough? No, but the point is that the nation's air is the cleanest it has been in 20 years. And these emission reductions have occurred during substantial economic growth. So often we ignore the progress we have made.

However, we have come to the point now where there will be significant costs for further reductions. For example, it is estimated that the NOx SIP call will cost Ohio utilities alone $1.5 billion in initial capital investments plus annual operation and maintenance costs. We need to make sure that the further steps that we take to reduce utility emissions are based on sound science, are based on an analysis of costs and benefits and reasonable alternatives, and provide flexibility for implementation in a cost-effective manner.

However, one of the things that strikes me about the Clean Air Act is the number of requirements that are geared toward reducing the same pollutants. Bill Tyndall, Vice President of Environmental Services and Federal Affairs at Cinergy Corporation, testified last fall before this subcommittee on the successes and concerns regarding the Clean Air Act. He identified numerous requirements that the utility industry faces to reduce NOx emissions such as the NOx SIP call, the 126 petitions, the pending 8-hour ozone and PM2.5 NAAQS standards, New Source Review and Regional Haze just to name a few. He outlined an equal number of requirements to reduce sulfur emissions.

It seems there ought to be a way for these companies to come up with a strategy to address future regulations upfront rather than going about these reductions in a piecemeal approach of installing one type of control technology 1 year and a different type several years down the road.

I want to make it clear that I'm not saying that making emission reductions are bad. While I have some concerns with how the Clean Air Act is being implemented, it is the law to protect and promote public health and clean air. And that law needs to be followed. But what is needed are some clear guidelines and some assurances that the Federal Government won't change the rules down the road.

We need to take a broad look at emission reductions and then provide flexibility for the industry to meet those goals. It is important for industry and the states to know the rules of the game.

This will allow for better planning and implementation of Clean Air Act requirements and allow those requirements to be implemented in an efficient and cost-effective way to provide the best benefit to public health and the environment.

I see an incentive-based approach as a positive way to ensure that air quality standards are met, but in a more efficient and cost-effective way.

Thank you, Mr. Chairman. I look forward to today's testimony.

STATEMENT OF DAVID G. WOOD, ASSOCIATE DIRECTOR, ENVIRONMENTAL PROTECTION ISSUES, RESOURCES, COMMUNITY, AND ECONOMIC DEVELOPMENT DIVISION, UNITED STATES GENERAL ACCOUNTING OFFICE

Mr. Chairman and members of the subcommittee: I am pleased to be here today to discuss issues concerning the implementation of the Clean Air Act, a comprehensive Federal law that regulates air emissions from stationary and mobile sources. The act was last reauthorized and amended by the Congress in 1990. Those amendments—particularly the first six titles of the law—require the Environmental Protection Agency (EPA) to take a number of actions such as issuing new regulations and guidance documents, undertaking research studies, and preparing reports for the Congress. The amendments established statutory deadlines for many of these actions.

As you requested, my testimony today will focus on EPA's implementation of the Clean Air Act Amendments and on sources regulated by multiple provisions of the act. Specifically, I will discuss (1) the status of EPA's implementation of requirements established by the 1990 amendments; (2) the views from stakeholders—State governments, local programs, industries that are regulated under the act, and environmental advocacy groups—on the issues that have either helped or hindered the implementation of the 1990 amendments; (3) examples of emission sources subject to regulation under more than one Clean Air Act program; and (4) the status of EPA's efforts to facilitate compliance for such sources. This testimony is based on our April report and ongoing work for this subcommittee that relates to emission sources affected by multiple provisions of the act. We will issue a report on the latter work this month.

In summary, we found the following:

As of February 2000, EPA had completed the majority of the 538 required actions it identified under the 1990 amendments' first six titles. However, not all the requirements were met within the statutory deadlines: EPA missed the statutory deadlines for 198 of the 247 requirements with deadlines by February 2000, and will likely miss 62 of the 108 future statutory requirements with deadlines (primarily requirements to establish new standards for certain hazardous air pollutants). EPA officials attributed the agency's inability to meet its statutory deadlines to (1) its increased emphasis on obtaining stakeholders' review and involvement during the development of regulations, which added to the time needed to issue regulations, and (2) technical, policy, or legal issues that were not fully anticipated in 1990.

Stakeholders provided a variety of views on the issues that have helped or hindered the implementation of the six titles. A number of stakeholders expressed the view that flexibility in the amendments has helped their implementation; for example, the trading system for sulfur dioxide emissions, under which utilities that reduce their emissions below required levels may sell their allowances to other utilities to help them meet their requirements. This allows electric utilities to achieve required sulfur dioxide emissions reductions at a lower cost. Also, stakeholders cited the specificity of goals and requirements as helpful; for example, the title dealing with stratospheric ozone depletion listed the affected chemicals and the dates for their eventual phase-out. Stakeholders cited inadequate resources at the State and local levels to effectively implement and enforce the amendments as a factor that has hindered implementation.

The large industrial complexes operated by the petrochemical and refinery, chemical manufacturing, and electric power industries are prime examples of sources regulated under multiple Clean Air Act programs. For example, the emissions of nitrogen oxides from electric power plants are controlled under six programs, including those for controlling acid rain, ground-level ozone, and fine particles and programs for improving visibility. In addition, petrochemical refineries are regulated under five different titles of the 1990 amendments, and individual chemical plants may be regulated by as many as seven different statutorily authorized programs. Additional State and local requirements may also apply to the same industrial emissions sources.

EPA has embarked on a number of initiatives to reduce the regulatory workload and facilitate compliance for such facilities. These include two industry-specific efforts and other generic approaches, such as establishing total plant-wide emissions limits, to introduce more flexibility in the overall regulatory rulemaking and permitting processes. EPA's two industry-specific efforts are the Consolidated Air Regulation and the Clean Air Power Initiative. The Consolidated Air Regulation is intended to incorporate all Federal air regulations that affect the synthetic organic chemical manufacturing industry into a single set of regulations. This proposed regulation, currently pending approval by the Office of Management and Budget, would reduce the regulatory burden and enhance enforceability by having one set of emis-

sions controls and monitoring, record keeping, and reporting requirements. The Clean Air Power Initiative is an effort to develop new regulatory approaches for controlling nitrogen oxide and sulfur dioxide from electric power plants. According to EPA and industry officials, efforts on this initiative have been suspended because of disagreement within the industry as well as within EPA over the appropriate level for proposed sulfur dioxide and nitrogen oxide reductions.

Background

The Clean Air Act, enacted in 1963 and substantially overhauled in 1970, is a comprehensive Federal law that regulates air emissions from stationary and mobile sources. This law authorizes EPA to, among other things, establish National Ambient Air Quality Standards to protect public health and welfare. In large part, the 1990 amendments to the Clean Air Act were intended to meet unaddressed or insufficiently addressed problems. The major provisions of the amendments are contained in the first six titles.

- Title I of the 1990 amendments establishes a more comprehensive approach for States to implement, maintain, and enforce the National Ambient Air Quality Standards.
- Title II contains provisions for controlling air pollution from motor vehicles, engines, and their fuel.
- Title III establishes new requirements to reduce the emissions of hazardous air pollutants (often called "air toxics") that are known or suspected of causing cancer or other serious health effects.
- Title IV establishes the acid deposition control program to reduce the adverse effects of acid rain by reducing annual emissions of pollutants, which are precursors of acid rain.
- Title V establishes a national permit program to ensure compliance with all applicable requirements of the act and to enhance EPA's and the States' ability to enforce the act. Title V requires the States to establish permit programs.
- Title VI establishes provisions to protect the stratospheric ozone layer.

Each of these titles requires EPA to, among other things, promulgate regulations, publish final guidance for State air pollution control programs, and issue various research reports to the Congress. Most of the requirements involve promulgating regulations to implement the act. Once the regulations are promulgated, it is generally up to State and local air pollution control agencies to enforce their provisions, with oversight from EPA.

Status of EPA's Implementation of the Clean Air Act Amendments of 1990

While EPA has completed the majority of the actions required by the 1990 amendments, it has not done so in accordance with all statutory deadlines. EPA missed the statutory deadlines for 198 of the 247 requirements with deadlines by February 2000. Furthermore, according to EPA officials, it is unlikely that the agency will meet the deadline for 62 of the 108 remaining statutory requirements (primarily requirements to establish new standards for certain hazardous air pollutants). Specifically, the officials do not believe they will meet the November 15, 2000, deadline for establishing standards for hazardous air pollutants.

EPA officials cited several factors explaining why the agency has missed deadlines including: (1) its increased emphasis on obtaining stakeholders' review and involvement during regulatory development, which added to the time needed to issue regulations; (2) the setting of priorities to manage the work load resulting from the 1990 amendments, which created a tremendous number of new responsibilities for EPA; (3) complications associated with the startup and effective implementation of new programs (e.g., operating permits and air toxics), which posed technical, policy, or legal issues that were not fully anticipated in 1990; (4) competing demands caused by the work load associated with EPA's response to lawsuits challenging some of its rules; and (5) the emergence of new scientific information and other factors that led to major Clean Air Act activities that did not arise from the 1990 amendments, such as the effort to reduce the regional transport of ozone pollution throughout the East.

It is important to recognize that in terms of their ultimate impact on the environment, all requirements are not equal. For example, a requirement that EPA issue a rule on monitoring a limited number of stationary sources in a single industry has neither the complexity nor the impact of a provision that requires dozens of States to submit implementation plans to attain a major national ambient air quality standard. The latter is inherently more difficult to accomplish and often requires States and local agencies to pass legislation and issue, adopt, and implement rules. Certain programs are implemented largely by States and require extensive, continuing interaction between EPA and the nation's Governors, State legislators, county

officials, State and local regulators, and others on numerous complex requirements while others are implemented solely by EPA.

Views of Key Stakeholders on Major Issues Affecting Implementation of the Clean Air Act Amendments of 1990

The stakeholders we interviewed from environmental groups, industrial groups, and State and local governments stated that the Clean Air Act Amendments of 1990 have had positive effects on the environment by reducing pollutant emissions. However, the stakeholders had differing views on the issues that either helped or hindered the effective implementation of specific provisions.

Extent of Flexibility in Meeting Requirements

One of the overarching issues affecting implementation cited by stakeholders is the tension between allowing States and sources of pollution the flexibility to develop their own approaches for achieving air quality improvements and using a more prescriptive "command and control" approach. For example, the title IV acid rain program, as designed by the Congress and implemented by EPA, attempted to strike a balance between traditional command and control principles—which specify where and how emissions reductions must be achieved—and the flexibility of market-based measures for reducing air pollution. Specifically, this program uses a market-based approach to allow electric utilities to trade sulfur dioxide allowances with other utilities. Utilities that reduce their emissions below the required level can sell their extra allowances to other utilities to help them meet their requirements. Stakeholders from environmental and industrial groups and State and local governments told us that the flexibility provided by the acid rain program's sulfur dioxide emissions allowance-trading system enabled the required emissions reductions to be achieved at a lower cost than that estimated at the time the amendments were passed. Other stakeholders pointed out that because the legislation specified the reduction goals and identified the power plants that were required to achieve these reductions, the program was administratively more efficient to implement.

According to some stakeholders, adopting more market-based approaches like the acid rain program is a particularly effective way of achieving greater flexibility. In their view, this program has shown that an aggregate "cap" on emissions, which permits individual sources to trade allowances, can lead to lower-cost emissions reductions than those under the traditional command and control approach used in other programs. EPA officials agreed that the "cap and trade" approach can reduce emissions at a lower cost (and, in some cases, reduced pollution levels as well) than those under a traditional command and control approach. However, they pointed out that to work effectively, cap and trade programs traditionally require a well-known population of sources with extremely well-characterized emissions and control costs. According to EPA, in some circumstances, other forms of economic incentive programs and approaches (e.g., open market trading and emission fee programs) can be added to the existing regulatory structure and can provide incentives for reductions from other source categories when accountability is adequate. For this reason, EPA has issued rules and guidance that allow States and other stakeholders to consider a variety of economic incentive approaches to both reduce costs and gain improved environmental quality.

Specificity of Requirements

Several stakeholders identified the specificity in the amendments or in implementing regulations as an important factor affecting implementation. For example, according to a State and local government organization, specifying the amount of sulfur dioxide emissions reductions to be achieved and the specific power plants where the reductions were to come from made it easier to achieve the required reductions in sulfur dioxide emissions. The stratospheric ozone provisions of title VI—which specify the affected chemicals and the timeframes for their eventual phaseout—were also cited by stakeholders as an example of successful implementation.

Adequacy of Funding

The States, State organizations, and environmental groups that we interviewed all commented that State and local governments need additional funding to more effectively implement the requirements of the amendments. According to a director of an organization that represents all State and local governments, there is currently a $140 million annual shortfall in funds for implementation of the Clean Air Act at the State and local government levels.

EPA awards grants to the States and local government agencies to help them implement the amendments. However, the agency has reduced this funding over the last several years by 25 percent, to $120 million annually. According to a State and local government organization, EPA justified the decrease by considering the funding available to States and local air pollution control agencies through permit fees

(which are assessed on regulated sources for permits required by the Clean Air Act). However, according to a stakeholder representing an environmental group, there is a scarcity of funds from permits because States have been under pressure to keep the fees low. EPA officials stated that they work jointly with States and local agencies to establish priorities on the basis of available funding and, through work plan negotiations for grants, have been successful in directing grant funds toward agreed-upon priorities.

Examples of Sources Subject to Multiple Clean Air Act Regulatory Programs

Because the act is structured to address different aspects of the nation's air pollution problems, some sources are regulated by more than one statutory program. For example, industrial emissions sources such as petroleum refineries, chemical manufacturing facilities, and electric power plants are sometimes regulated under multiple provisions of the act and numerous associated Federal air regulations.

Petrochemical and Refinery Industry

Petrochemical and refinery facilities are regulated under all of the first five titles of the 1990 amendments and a multitude of EPA regulations designed to implement the legislative provisions. In addition to the large number of existing air regulations, the industry is faced with planning and implementing measures to comply with a host of new requirements beginning in 2000.

According to industry officials, efforts to comply with one program by controlling emissions of a pollutant from a single facility may have the unintended effect of increasing emissions of other pollutants from elsewhere in the same facility. For example, title II requires the petroleum industry to reduce sulfur levels in gasoline to help produce cleaner fuels for motor vehicles. Producing these cleaner fuels, however, requires changes in the refining process that may increase the emissions of other pollutants including such hazardous air pollutants as benzene, formaldehyde, and mercury from emission points within the refineries.

EPA officials told us that while they do not expect this to occur at all refineries, it could occur at some. According to the officials, this case illustrates how separate requirements can serve different, but equally important purposes. The low-sulfur gasoline requirements will work nationwide to help ensure that air quality improves significantly in areas where mobile sources are a primary source of pollution. On the other hand, permitting requirements for statutory sources ensure that an individual facility's emission increases do not contribute to a local air quality problem.

Chemical Manufacturing Industry

Within chemical manufacturing facilities, individual emission sources such as storage tanks may be subject to four or five different regulatory programs. At any given facility, all or part of the following—in addition to obtaining title V operating permits—may apply: (1) meeting standards for new source construction permitting, (2) reducing the emissions of hazardous air pollutants, (3) meeting new source performance standards, and (4) complying with visibility protection requirements.

According to industry officials, the act's regulatory process is an especially complex system and it is not always clear which emission reduction requirements are applicable to a specific source. For example, the emissions of pollutants known as volatile organic compounds (VOC's) are subject to regulation under title I of the 1990 amendments, but some are also considered to be hazardous air pollutants, which are regulated under title III. Thus, the same facility may be subject to meeting regulatory requirements associated with each title. According to industry officials, in some cases, EPA has recognized the title III requirement (under which the source must meet emissions levels associated with maximum achievable control technology standards) as the most stringent, and so the VOC emissions control requirements are considered to be satisfied through demonstrated compliance with the technology standards. According to an industry official, however, EPA has, in some situations, required that facilities report or demonstrate compliance with both emissions reduction requirements.

Electric Power Industry

Electric-power-generating facilities may be subject to more than a dozen Federal air regulations and initiatives that have different objectives, timeframes, and compliance requirements. For example, the emissions of nitrogen oxides from power plants are subject to regulation under several title I programs, including (1) the national ambient air quality standards program, (2) the new source review program for minimizing air pollution from large new stationary sources; and (3) the visibility improvement program. Nitrogen oxides emissions are also controlled under the title IV acid deposition program, which is targeted at specific electric utility plants. According to industry officials, some of the regulations affecting the same air pollut-

ants and emissions sources can make it difficult for the industry to accurately determine the applicability of each of the requirements and to develop effective emissions control strategies.

EPA Efforts to Address Sources Affected by Multiple Clean Air Act Requirements

Recognizing that individual facilities are regulated under multiple programs, EPA has undertaken initiatives to reduce the regulatory workload and facilitate compliance for such facilities. These include two industry-specific efforts—the Consolidated Air Regulations and the Clean Air Power Initiative—and several generic approaches to introduce more flexibility and stakeholder involvement in the rulemaking and permitting processes.

Consolidated Air Regulations

One of the administration's initiatives aimed at reinventing environmental regulations was to consolidate Federal air regulations, so that all Federal air requirements for an industry would be incorporated into a single set of regulations. EPA used the regulations applicable to the synthetic organic chemicals manufacturing industry for its pilot study of the feasibility of consolidating and streamlining existing Federal air quality regulations. The synthetic organic chemical manufacturing industry was selected for the pilot because of the large number of air regulations that apply to the industry's facilities and the similarity in many of the requirements in the existing regulations. The resulting single set of regulations, which incorporates all of the applicable requirements for 16 different air regulations that affect the industry, is referred to as the Consolidated Air Regulations. Participation in the consolidated regulations by facilities will be voluntary; facilities may choose to continue being regulated under the 16 separate regulations or the consolidated regulations. EPA's objectives are to (1) reduce the regulatory burden, (2) facilitate implementation and compliance, and (3) ensure the continued environmental protection and enforceability of the regulations. Proposed by EPA in October 1998, the consolidated regulations are currently being reviewed by the Office of Management and Budget.

The Consolidated Air Regulations are intended to maintain the current levels of health and environmental protection benefits currently afforded by the 16 existing regulations and also to ensure the same degree of emission controls as the existing regulations do or a greater degree than they do. However, the level of human health and environmental protection may be greater in some instances because the regulations will require some facilities (that choose the consolidated regulations) to meet more stringent emissions reductions or requirements.

Because of the reduced burden afforded by the Consolidated Air Regulations, some sources are expected to elect to comply with the consolidated regulations despite the more stringent requirements. However, according to EPA officials, it is unclear at this time how many of the synthetic organic chemical manufacturing facilities will elect to participate because the consolidated regulations requirements may require some to achieve larger emissions reductions than they are currently required to meet under the older air regulations. EPA officials acknowledge that progress has been slower than expected because of difficulties in getting the chemical industry to agree on specific environmental protection requirements in the consolidated regulations and their reluctance to accept the more stringent emission reductions.

Clean Air Power Initiative

The concerns about the electric power generating industry's costs to control multiple pollutants under several provisions of the Act added by the 1990 amendments prompted EPA to initiate the Clean Air Power Initiative (CAPI). In consultation with electric power industry representatives, EPA developed an integrated regulatory strategy for sulfur dioxide and nitrogen oxides emitted from power plants. The purpose of this collaborative effort was to seek new approaches to pollution control that would improve public health and the environment but simultaneously cost less and reduce the number and complexity of current and expected requirements. EPA began the CAPI in 1995 by meeting with interested stakeholders to discuss more cost-effective alternatives to pollution control and developing a model that could analyze the costs and emissions implications of different reduction scenarios for sulfur dioxide and nitrogen oxides.

However, the lack of complete support within the electric power industry ended the initial effort in late 1996 without agreement, according to EPA officials. Some stakeholders believed that the controls suggested under the CAPI were not desirable or cost-effective, according to an EPA official, because they had not yet been required through rulemaking. According to officials at Edison Electric Institute, the initiative ended because (1) there was substantial disagreement over the science underlying EPA's proposed new controls for sulfur dioxide and nitrogen oxides; (2) EPA could not provide any regulatory certainty should a program be mutually

agreed to; and (3) certainty could result only from amending the act, which neither stakeholder wanted to pursue.

In late 1998 and throughout 1999, EPA staff participated in the Edison Electric Institute Air Quality Integration Dialogue at which EPA and industry staff explored an integrated approach for controlling pollution from the electric power industry. The dialog had broad industry participation as well as EPA staff participation. The White House Climate Change Task Force also attended these meetings. The Dialogue was intended to promote a free exchange of ideas and analysis at a staff level concerning new or potentially upcoming regulatory actions to address air emissions of sulfur dioxide, nitrogen oxides, carbon dioxide, and mercury.

EPA continues to believe that over the next several years, it will probably be necessary for the power industry to achieve large reductions of sulfur dioxide and nitrogen oxides. According to agency officials, there continues to be considerable interest in developing an integrated approach to address cost-effective strategies for implementing multiple air regulations. EPA has had a number of followup discussions and expects to continue interactions with industry representatives on this topic.

Other Initiatives to Address Multiple Regulation Issues

In addition to the Consolidated Air Regulations and the Clean Air Power Initiative, EPA has developed other regulatory approaches to provide industry with more flexibility to achieve the necessary reductions in air pollution, while still providing accountability for the results. For example, EPA allows facilities to average the emissions from all emissions points and to use trading programs in order to provide more flexibility in how and where an industrial facility chooses to reduce its air emissions. In some cases, EPA has set plant wide limits that control total emissions that are allowed to be released from an individual plant. These efforts provide latitude to industries in choosing how and where to reduce emissions.

EPA has also worked with individual industries to eliminate duplicating or overlapping regulatory requirements. For example, EPA worked with industry organizations, such as aerospace and shipbuilding and coating operations, to set limits for VOCs and toxic air pollutants and with the pharmaceutical industry to give it more flexibility in complying with new source performance standards for storage tanks.

Furthermore, EPA and various stakeholders began, in 1993, to identify opportunities for developing "cleaner, cheaper, smarter" environmental protection strategies that were tailored toward environmental protection and would consider the unique circumstances of different industries. EPA, along with States, environmental and public interest groups, and the environmental justice community worked with six industries—petroleum refining, printing, iron and steel, computer and electronics, metal finishing, and auto manufacturing—to find better ways to manage environmental responsibilities. With the completion of the Common Sense Initiative—one of EPA's efforts to "reinvent" environmental regulation—EPA is applying the lessons learned to other sections of the act.

Mr. Chairman, this concludes my prepared statement. I would be pleased to respond to any questions you may have.

Contact and Acknowledgements

For further information regarding this testimony, please contact David G. Wood at (202) 512–6111. Individuals making key contributions to this testimony included William McGee, Harry Everett, Odell Pace, and Karen Keegan.

[Report of the General Accounting Office, April 2000]

AIR POLLUTION: STATUS OF IMPLEMENTATION AND ISSUES OF THE CLEAN AIR ACT AMENDMENTS OF 1990

(Letter Report, April 17, 2000, GAO/RCED–00–72)

April 17, 2000

The Honorable JAMES M. INHOFE, *Chairman,*
Subcommittee on Clean Air, Wetlands, Private Property, and Nuclear Safety,
Committee on Environment and Public Works,
U.S. Senate.

DEAR MR. CHAIRMAN: The Clean Air Act,[1] last reauthorized and amended by the Congress in 1990, provides for a number of related programs designed to protect health and control air pollution. The Clean Air Act Amendments of 1990 established new programs and made major changes in the ways that air pollution is controlled. The amendments require the Environmental Protection Agency (EPA) to take a number of actions—such as issuing new regulations and guidance documents, undertaking research studies, and preparing reports to the Congress—and specify a deadline for many of them. The majority of these requirements are found in the amendments' first six titles; EPA has identified 538 such requirements, 361 of which have a statutory deadline. Additionally, the amendments specify deadlines for states and local air pollution control agencies—who play a pivotal role in implementing the Act—to respond to the rules promulgated by EPA.

With reauthorization of the Clean Air Act impending, you asked us to provide information on the implementation of the first six titles of the 1990 Clean Air Act amendments.[2] Specifically, you asked us to (1) provide information on the status of EPA's implementation of the requirements established by the 1990 amendments and (2) obtain views from state governments, local programs, industries that are regulated under the Act, and environmental advocacy groups (collectively referred to as stakeholders) on the issues that have either helped or hindered the implementation of the 1990 amendments.[3]

Results in Brief

As of February 2000, EPA had identified 538 requirements under the 1990 amendments' first six titles, of which 409 have been met. Of the requirements that have been met, 162 had no statutory deadlines, and the remaining 247 had statutory deadlines before the end of February 2000. EPA missed the statutory deadline for 198 of these 247 requirements with a deadline. Of the 129 requirements that the agency has not met, 6 had a statutory due date prior to February 2000, 108 have a statutory due date after February 2000, and 15 do not have a statutory due date. EPA will likely miss 62 of the 108 future statutory requirements, which are related to establishing new standards for hazardous air pollutants. EPA officials attributed the agency's missing of statutory deadlines to several reasons, including (1) an increased emphasis on stakeholders' review and involvement during the development of regulations, which added to the time needed to issue regulations; (2) the setting of priorities to manage the workload resulting from the 1990 amendments, which created a tremendous number of new responsibilities for EPA; and (3) complications associated with the startup and effective implementation of new programs, including technical, policy, or legal issues that were not fully anticipated in 1990.

Stakeholders provided a variety of views on the issues that have helped or hindered the implementation of the six titles. The following were the most commonly cited issues:

- The degree of flexibility allowed for states and regulated pollution sources to determine how they will achieve required air quality improvements. A number of stakeholders expressed the view that flexibility in the Act has helped implementation. For example, according to stakeholders, the emissions allowance-trading system—under which utilities that reduce their emissions below required levels can sell their allowances to other utilities to help them meet their requirements—estab-

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[1] 42 U.S.C. 7401–7626. Unless otherwise stated, in this report, "the Act" refers to the Clean Air Act as amended in 1990.

[2] This report does not address the implementation of requirements established prior to the 1990 amendments.

[3] A list of specific stakeholders contacted for this report is in Appendix VII.

lished by the title dealing with acid rain is a good example of flexibility. This allows electric utilities to achieve required sulfur dioxide emissions reductions at a lower-than-expected cost. One of the challenges facing the Congress in considering the reauthorization of the Clean Air Act is determining the appropriate balance between traditional command and control approaches and more flexible approaches that allow states and local air pollution control agencies and other stakeholders to implement the most cost-effective strategies, while meeting national air quality goals.

- The extent to which goals and requirements are clearly specified in the statute or regulations. For example, stakeholders cited the specificity in the Act's title dealing with stratospheric ozone depletion, which listed the affected chemicals and the dates for their eventual phase-out, as contributing to the successful implementation of that title.
- The adequacy of resources at the state and local level to effectively implement and enforce the statute. Stakeholders cited inadequate resources as an example of where the implementation of the 1990 amendments has been hindered.

Background

The Clean Air Act, enacted in 1963 and substantially overhauled in 1970, is a comprehensive Federal law that regulates air emissions from stationary and mobile sources. This law authorizes EPA to, among other things, establish National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. The goal of the 1970 amendments was to set and achieve the standards in every state by 1975. The setting of pollutant standards was coupled with directing the states to develop state implementation plans applicable to appropriate sources in the state. The Congress amended the statute again in 1977 primarily to set new goals or dates for attaining the standards, since many areas of the country had failed to meet the deadlines.

In large part, the 1990 amendments to the Clean Air Act were intended to meet unaddressed or insufficiently addressed problems. The major provisions of the amendments are contained in the first six titles. Each of these titles requires EPA to, among other things, promulgate regulations, publish final guidance for state air pollution control programs, and issue various research reports to the Congress. Most of the requirements involve promulgating regulations to implement the Act. Once the regulations are promulgated, it is generally up to state and local air pollution control agencies to enforce their provisions, with oversight from EPA.

- Title I of the 1990 amendments establishes a more comprehensive approach for states to implement, maintain, and enforce the NAAQS.
- Title II contains provisions for controlling air pollution from motor vehicles, engines, and their fuel.
- Title III establishes new requirements to reduce the emissions of hazardous air pollutants (often called "air toxics").
- Title IV establishes the acid deposition control program to reduce the adverse effects of acid rain by reducing the annual emissions of pollutants that are precursors of acid rain.[4]
- Title V establishes a national permit program to ensure compliance with all applicable requirements of the Act and to enhance EPA's and the states' ability to enforce the Act. Title V requires the states to establish permit programs.
- Title VI establishes provisions to protect the stratospheric ozone layer.

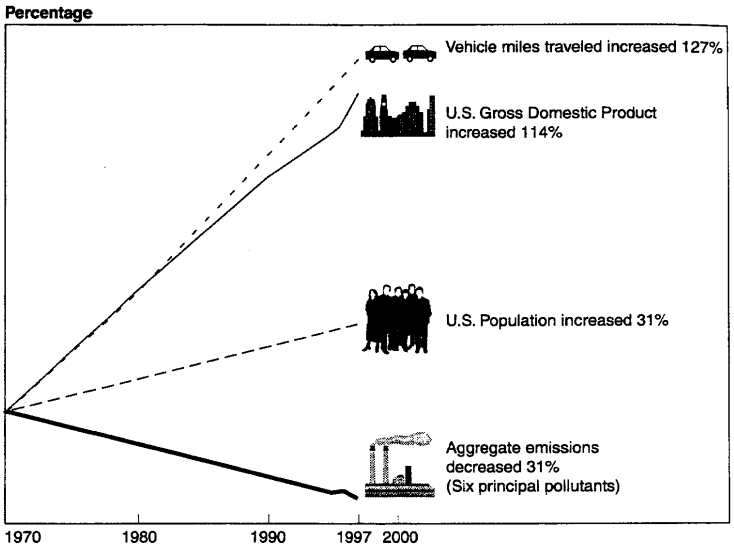
Although the Clean Air Act is a Federal law covering the entire country, the states are responsible for carrying out much of the statute. Under the law, EPA sets limits on how much of certain pollutants can be in the air anywhere in the United States. This ensures that all Americans have the same basic environmental protections. The 1990 amendments set deadlines for EPA, states, local governments, and businesses to reduce air pollution. These deadlines were designed to be more realistic than the deadlines in previous versions of the law.

According to EPA, by many measures, the quality of the nation's air has improved in recent years. Great strides have been made in combating urban air pollution, toxic air pollution, depletion of the stratospheric ozone layer, and acid rain. Specifically, ground-level ozone, particulate matter, and carbon monoxide emissions have been reduced; the emissions of toxic air pollution are expected to decrease by 1.5 million tons a year; production of the most harmful ozone depleting chemicals has

[4] Acid deposition is caused mainly by coal that is burned in large electrical utility plants in the Midwest. When the coal is burned, large amounts of sulfur dioxide are released. It is then carried by winds toward the East Coast of the United States and Canada, where the acids become part of rain, snow, or fog in the area, or remain in gas or particle form and settle onto land as dry deposition. Falling to earth, acid rain can damage plant and animal life as well as lakes and streams.

ceased; sulfur dioxide emissions have been cut by more then 5 million tons from the 1980 level; and motor vehicles and fuels are far cleaner than in 1990 as a result of revised emissions standards. As shown in figure 1, while the United States enjoyed major increases in population, gross domestic product, and vehicle miles traveled, the aggregate emissions of the six criteria pollutants decreased by 31 percent from 1970 through 1997.[5]

Figure 1: U.S. Population, Vehicle Miles Traveled, U.S. Gross Domestic Product, and Aggregate Pollution Emissions, 1970-97



Source: EPA's *National Air Quality and Emissions Trends Report* (1997)

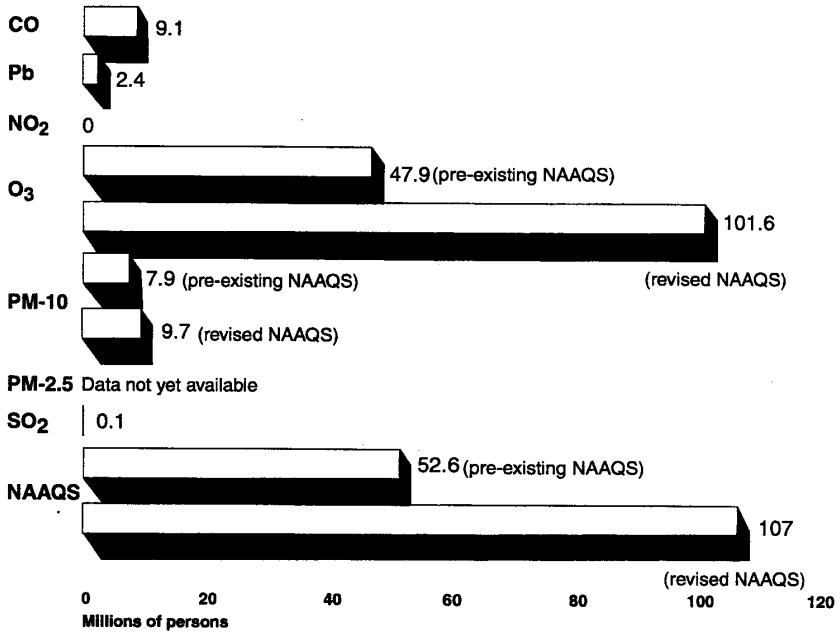
Although changes in the economy and other factors affect emissions trends, according to EPA, the emissions of air pollutants would be much higher without the Clean Air Act. EPA's Assistant Administrator for Air and Radiation has stated that the implementation of the Clean Air Act Amendments of 1990 has substantially cut air pollution over the past 9 years.[6] The stakeholders we interviewed—including environmental groups, industrial groups, and state and local governments—also agreed that the 1990 amendments have had a positive effect on the environment.

However, according to EPA's Assistant Administrator, the Nation still has a long way to go to reach the agency's goal of clean air nationwide. For example, as shown in figure 2, in 1997, approximately 107 million people lived in counties with air pollutant concentrations that exceeded national ambient air quality standards.

[5] The six criteria pollutants are ozone, carbon monoxide, particulate matter, sulfur dioxide, nitrogen oxide, and lead. Thea are called criteria pollutants because the Agency set permissable levels for them on the basis of "criteria" or information on the effects on public health or welfare that may be expected from the presence of such pollutants.

[6] Testimony of the Assistant Administrator, Office of Air and Radiation, Environmental Protection Agency, before the U.S. Senate, Committee on Environment and Public Works, Subcommittee on Clean Air, Wetlands, Private Property, and Nuclear Safety (Oct. 14, 1999).

Figure 2: Number of People Living in Counties With Air Quality Concentrations Above the Level of the National Ambient Air Quality Standards in 1997 (numbers in millions)



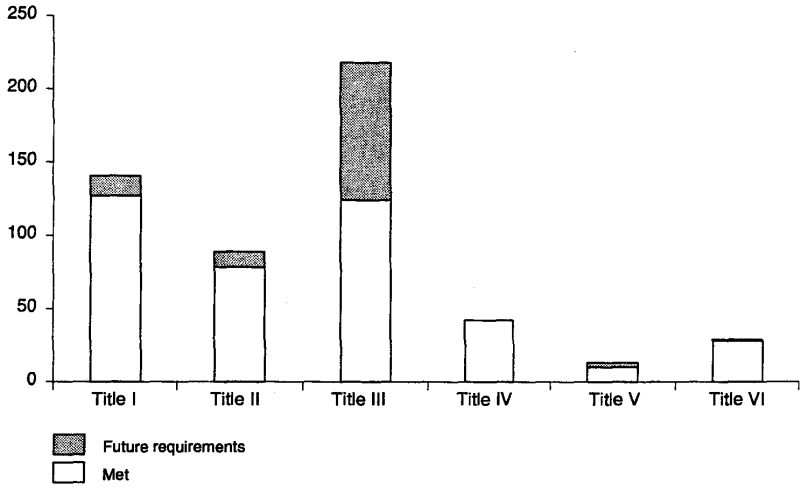
CO	Carbon monoxide
Pb	Lead
NO_2	Nitrogen dioxide
O_3	Ozone
PM-10	Particulate matter 10 microns
PM-2.5	Particulate matter 2.5 microns
SO_2	Sulfur dioxide
NAAQS	National ambient air quality standards

Source: EPA's *National Air Quality and Emissions Trends Report* (1997).

STATUS OF EPA'S IMPLEMENTATION OF THE CLEAN AIR ACT AMENDMENTS OF 1990

As of February 2000, EPA had completed the majority of the actions required by the 1990 amendments. As shown in figure 3, the bulk of the future requirements relate to establishing new standards for hazardous air pollutants under title III, which will be completed in 2002, according to EPA officials' estimates. However, not all the requirements were met within the statutory deadline, and EPA officials indicated that additional requirements may be met after the specified statutory deadline, particularly those for the hazardous air pollutants. The status of implementing each of the amendments' six major titles is detailed in appendixes I through VI.

Figure 3: Status of Requirements



Note: There are six unmet requirements (one in title I, three in title III, and two in title IV) that had a statutory due date prior to February 2000. These six requirements are not included in figure 3.

Source: GAO's analysis of EPA's data.

Note: There are six unmet requirements (one in title I, three in title III, and two in title IV) that had a statutory due date prior to February 2000. These six requirements are not included in figure 3.

It is important to recognize that in terms of their ultimate impact on the environment, all requirements are not equal. For example, a requirement that EPA issue a rule on monitoring a limited number of stationary sources in a single industry has neither the complexity nor the impact of a provision that requires dozens of states to submit implementation plans to attain a major national ambient air quality standard. The latter is inherently more difficult to accomplish and often requires states and local agencies to pass legislation and issue, adopt, and implement rules. Certain programs are implemented largely by states and require extensive, continuing interaction between EPA and the nation's Governors, state legislators, county officials, state and local regulators, and others on numerous complex requirements. Other programs are implemented by EPA.

Overall, as of February 2000, EPA had fulfilled 409 of the 538 requirements that it identified to implement the amendments' first six titles. Of the 409 requirements that have been met, 247 had a statutory due date and 162 did not. The majority of actions required for five of the six titles have been completed. For example, EPA has completed 126 of 141 requirements implementing the NAAQS under title I.

The 129 remaining requirements include promulgating regulations for states and local air pollution control agencies to enforce, as well as other requirements described in the amendments. Of the 129 requirements that are unmet, 6 had a statutory due date prior to February 2000, 108 have a statutory due date after February 2000, and 15 do not have a statutory deadline. About one-half of these unmet requirements are for establishing standards for hazardous air pollutants: EPA is to promulgate 62 Maximum Achievable Control Technology (MACT) standards due by the statutory deadline of November 15, 2000.[7]

EPA missed the deadline for 198 of the 247 statutory requirements with a deadline through February 2000.[8] According to EPA officials, it is unlikely that the

[7] These technology-based standards require the maximum degree of reduction in emissions that EPA determines achievable for new and existing sources, taking into consideration the cost of achieving such reduction, health and environmental impacts, and energy requirements.

[8] EPA has historically been tardy in meeting statutory deadlines. We previously recommended that EPA implement a rulemaking tracking system to aid the agency in meeting statutory deadlines, but EPA has not taken action on this recommendation. See Clean Air Rulemaking: Track-

agency will meet the deadline for 62 of the 108 remaining statutory requirements. Specifically, the officials do not believe they will meet the November 15, 2000, deadline for establishing standards for hazardous air pollutants.

EPA officials cited several factors explaining why the agency has missed deadlines, including the following: (1) increased emphasis on stakeholders' review and involvement during regulatory development, which added to the time needed to issue regulations; (2) the setting of priorities to manage the workload resulting from the 1990 amendments, which created a tremendous number of new responsibilities for EPA; (3) complications associated with the startup and effective implementation of new programs (e.g., operating permits and air toxics), which posed technical, policy, or legal issues that were not fully anticipated in 1990; (4) competing demands caused by the workload associated with EPA's response to lawsuits challenging some of its rules; and (5) the emergence of new scientific information and other factors that led to major Clean Air Act activities that did not arise from the 1990 amendments, such as the effort to reduce regional transport of ozone pollution throughout the East.

EPA officials stated that they do not believe they will meet the November 15, 2000, deadline for all of the remaining 62 MACT standards. (The agency took over 9 years to promulgate 92 existing MACT standards. According to EPA, these 92 MACT standards included some of the largest and most contentious categories.) The 1990 amendments require that if EPA fails to finalize the regulations within 18 months after the statutory deadline date, states must develop their own standards. According to EPA officials, this would be very expensive and cumbersome. However, the officials estimate that they can promulgate the required standards within 18 months after the deadline, noting that while the agency has missed previous MACT deadlines, it has virtually always issued the standards within 18 months of the deadline. According to EPA, in no case has any state had to develop its own case-by-case MACT determinations.

VIEWS OF KEY STAKEHOLDERS ON MAJOR ISSUES AFFECTING IMPLEMENTATION OF THE CLEAN AIR ACT AMENDMENTS OF 1990

The stakeholders we interviewed from environmental groups, industrial groups, and state and local governments stated that the Clean Air Act Amendments of 1990 have had positive effects on the environment by reducing pollutant emissions. However, the stakeholders had differing views on the issues that either helped or hindered the effective implementation of the specific provisions. Key stakeholders' views on the major issues affecting the implementation of each of the amendments' first six titles is detailed in appendixes I through VI.

The stakeholders we interviewed from environmental groups, industrial groups, and state and local governments identified three areas that affected the implementation of the specific provisions of the amendments: (1) the extent to which flexibility is allowed in meeting the requirements, (2) the specificity of requirements, and (3) the adequacy of funding at the state and local levels.

Extent of Flexibility in Meeting Requirements

One of the overarching issues affecting implementation cited by stakeholders is the tension between allowing states and sources of pollution the flexibility to develop their own approaches for achieving air quality improvements and using a more prescriptive "command and control" approach. For example, the title IV acid rain program, as designed by the Congress and implemented by EPA, attempted to strike a balance between traditional command and control principles—which specify where and how emissions reductions must be achieved—and the flexibility of market-based measures for reducing air pollution. Stakeholders from environmental and industrial groups and state and local governments told us that the flexibility provided by the acid rain program's sulfur dioxide emissions allowance-trading system enabled the required emissions reductions to be achieved at a lower cost than that estimated at the time the amendments were passed.[9] Other stakeholders pointed out that because the legislation specified the reduction goals and identified the power plants that were required to achieve these reductions, the program was administratively more efficient to implement.

According to some stakeholders, adopting more market-based approaches like the acid rain program is a particularly effective way of achieving greater flexibility. In

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ing System Would Help Measure Progress of Streamlining Initiatives (GAO/RCED–95–70 , Mar. 2, 1995).

[9] Title IV of the amendments uses a market-based approach to allow electric utilities to trade SO_2 allowances with other utilities. Utilities that reduce their emissions below the required level can sell their extra allowances to other utilities to help them meet their requirements.

their view, this program has shown that an aggregate "cap" on emissions, which permits individual sources to trade allowances, can lead to lower-cost emissions reductions than those under the traditional command and control approach used by EPA in other programs. EPA officials agreed that the "cap and trade" approach can lead to lower-cost emissions reductions (and, in some cases, reduced pollution levels as well) than those under a traditional command and control approach. However, they pointed out that to work effectively, cap and trade programs traditionally require a well-known population of sources with extremely well characterized emissions and control costs. According to EPA, other forms of economic incentive programs and approaches (e.g., open market trading and emission fee programs), in some circumstances, can be added to the existing regulatory structure and can provide incentives for reductions from other source categories when accountability is adequate. For this reason, EPA has issued rules and guidance that allow states and other stakeholders to consider a variety of economic incentive approaches to both reduce costs and gain improved environmental quality.

Concerned that future emissions reductions may be more expensive and difficult to accomplish, a state and local government organization official and other stakeholders cited a need for EPA and the states to provide flexibility in achieving further emissions reductions. According to one state official, allowing the states more creativity and flexibility is a way to get a better "bang for the buck" in emission reductions. He added that EPA should provide oversight but give the states the flexibility and incentive to meet the requirements themselves. We have reported several times in recent years on EPA's evolving efforts to provide states with more flexibility and to "reinvent" environmental regulation, under the Clean Air Act and other statutes, by incorporating more flexible approaches and a greater focus on environmental results. [10]

An industrial stakeholder observed that the Clean Air Act Amendments of 1990 allow EPA to use innovations such as trading mechanisms that would provide needed flexibility but that EPA had not used these innovations except in the acid rain program. However, EPA officials cited several examples that, in their view, illustrate the use of more flexible approaches.

- The Ozone Transport and Assessment Group—a national work group consisting of representatives of EPA, the Environmental Council of the States, and various industry and environmental groups—identified flexible and cost-effective strategies to address the long-range transport of ozone. These strategies, including emissions trading programs, were incorporated in the agency's 1998 rule requiring 22 states and the District of Columbia to revise their state implementation plans to mitigate the transport of ozone through a reduction in nitrogen oxides. The rule allows states flexibility to choose the best mix of controls to meet statewide emissions budgets. [11] EPA also published as guidance for states a "model rule" for achieving these emissions reductions through a cap-and-trade program.
- On the basis of the experience with the acid rain trading program, the Ozone Transport Commission developed a nitrogen oxides trading program for states in the Northeast, with EPA's assistance.
- In developing measures to be included in state implementation plans to improve visibility, EPA gave states the option of applying the best available retrofit technology on a source-by-source basis or developing an emissions trading program. EPA also cited the regional planning bodies that have been formed to address visibility impairment and regional haze issues as another example of flexibility.
- EPA's recent rule to reduce emissions from cars and light-duty trucks allows averaging, banking, and trading to provide additional flexibility to both vehicle manufacturers and gasoline refiners.

According to one stakeholder, the state implementation plan process—under which each state develops a plan for implementing, maintaining, and enforcing air quality standards—needs to be better coordinated and more flexible in order to address situations in which pollution from one state contributes to the air pollution problems in another.

EPA officials also noted that the agency worked with states and regions to design guidance on economic initiative programs that can be adopted to provide for the

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[10] See Environmental Protection: Challenges Facing EPA's Efforts to Reinvent Environmental Regulation (GAO/RCED–97–155 , July 2, 1997), Environmental Protection: EPA's and States' Efforts to Focus State Enforcement Programs on Results (GAO/RCED–98–113 , May 27, 1998), and Environmental Protection: Collaborative EPA-State Effort Needed to Improve New Performance Partnership System (GAO/RCED–99–171 , June 21, 1999).

[11] 63 Fed. Reg. 57, 356 (1998). This rule has been the subject of litigation. On March 3, 2000, a Federal appeals court rejected most challenges to the rule, upholding EPA's authority to promulgate it. Michigan v. EPA, No. 98–1497 (D.C. Cir. Mar. 3, 2000).

cost-effective implementation of the national ambient air quality standards. EPA believes that this guidance provides states with a great deal of flexibility in developing their implementation plans for achieving the air quality standards.

Specificity of Requirements

Several stakeholders identified the specificity in the Act or in implementing regulations as an important factor affecting implementation. According to an environmental group stakeholder, statutory provisions that specified the expected quantity of emissions reductions and identified the categories of sources that were expected to achieve the reductions have been more successfully implemented. For example, according to a state and local government organization, specifying the amount of sulfur dioxide emissions reductions to be achieved and the specific power plants where the reductions were to come from made it easier to achieve the required reductions in sulfur dioxide emissions. The stratospheric ozone provisions of title VI—which specify the affected chemicals and the timeframes for the eventual phase-out of their use—were also cited by stakeholders as an example of successful implementation.

Adequacy of Funding

The states, state organizations, and environmental groups that we interviewed all commented that state and local governments need additional funding to more effectively implement the requirements of the Act. According to a director of an organization that represents all state and local governments, there is currently a $140 million annual shortfall in funds at the state and local government levels.

EPA awards grants to the states and local government agencies to help them implement the Clean Air Act. The agency has reduced this funding over the last several years by 25 percent to $120 million annually. According to a state and local government organization, EPA justified the decrease by considering the funding available to states and local air pollution control agencies through permit fees (which are assessed on regulated sources for permits required by the Clean Air Act). However, according to a stakeholder representing an environmental group, there is a scarcity of funds from permits because states have been under pressure to keep the fees low. EPA officials stated that they work jointly with states and local agencies to establish priorities on the basis of available funding and, through work plan negotiations for grants, have been successful in directing grant funds toward agreed-upon priorities.

One state government stakeholder commented that much of the burden of implementing the Clean Air Act has now shifted from EPA to the states. For example, EPA provides grant funds for the purchase of equipment, but states are expected to provide a matching share of the money needed to operate it. Such a problem may surface in the case of the new monitors for particulate matter. EPA paid for the monitors, and, as we reported in 1999, is funding their operation and maintenance.[12] However, future funding for operation and maintenance was uncertain. According to EPA, the Clean Air Act recognizes that the states are principally responsible for its implementation, and through the appropriations of grant funds, the Federal Government participates in aiding the states in meeting their obligations.

OBSERVATIONS

The Clean Air Act is a large and complex statute. The nature of the pollutants covered by specific titles varies greatly in terms of, among other things, the distances they travel once airborne and how they interact with other pollutants in different climates and weather conditions. Moreover, the numbers of sources vary greatly depending upon the pollutant. One of the challenges facing the Congress in considering the Clean Air Act's reauthorization is determining the appropriate balance between traditional command and control approaches and more flexible approaches that allow state and local air pollution control agencies and other stakeholders to implement the most cost-effective strategies, while meeting national air quality goals. In this regard, the acid rain provisions in title IV could offer a worthwhile model for some other air quality problems by setting national emissions reduction goals and, at the same time, encouraging market-based approaches to achieve the national goals.

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[12] See Air Pollution: EPA's Actions to Resolve Concerns With the Fine Particulate Monitoring Program (GAO/RCED–99–215 , Aug. 12, 1999).

AGENCY COMMENTS

We provided EPA with a draft of this report for review and comment. The agency stated that presenting a broad account of the status of its implementation of the Clean Air Act in a single report was difficult and offered several suggestions for framing the implementation status in a broader contextual perspective. We agree with the general thrust of these comments and have made changes to the report where appropriate.

Specifically, EPA emphasized that an assessment of the Act should focus on results such as emissions reductions, air quality improvements, and the increased protection of public health and the environment and emphasized that these improvements can be achieved through cost-effective methods that allowed for economic growth. We added information in the report on emissions reductions, national air quality improvements, and the increased protection of public health and the environment. The agency also pointed out that the report focuses on the 1990 amendments' implementation without discussing related activities resulting from requirements established in prior clean air statutes, such as the requirement for periodic review and, if appropriate, revision to the national ambient air quality standards. Our objective was to review only the status of requirements added by the 1990 amendments. We made it clear that the report does not provide information on other requirements. EPA also stated that given the Act's ambitious agenda and the reality of finite resources, the agency gave priority to implementing requirements that offered the greatest impact, which resulted in missed statutory deadlines for other requirements. We added this statement to the discussion of why EPA has missed deadlines. Last, we made changes to include EPA's views that the agency endeavored to implement the 1990 amendments in a flexible manner that best achieves air pollution reductions and that while the market-based cap and trade program has been highly effective in reducing sulfur dioxide emissions, it may not be the best tool for every environmental problem. The agency provided technical comments that updated and clarified information in the report; we incorporated these comments where appropriate. Appendix VIII contains the full text of the agency's written comments.

SCOPE AND METHODOLOGY

To obtain information on the status of EPA's implementation of the Clean Air Act Amendments of 1990, we held discussions with the EPA officials who manage EPA's work load under the amendments' first six titles. As agreed with your staff, we did not review the status of implementing the 1990 amendments' remaining titles. We also did not address the status of implementing the requirements established prior to the Clean Air Act Amendments of 1990. We also obtained and reviewed EPA documentation entitled Implementation Strategy for the Clean Air Act Amendments of 1990. This document is updated periodically, provides an overview of the regulatory framework envisioned by the Clean Air Act Amendments of 1990, and provides information on what EPA has accomplished and what is left to be accomplished. We analyzed this documentation, including the most recent update in March 1999, and prepared a table of the requirements under each title, the requirements met by and after the established deadlines, and the unmet requirements. In order to ensure an accurate-as-possible count of the requirements, we asked EPA to review our table of requirements, and EPA suggested changes, which we have incorporated. For the requirements that were late in being met, we obtained agency officials' reasons for the delay. This analysis provides the extent to which EPA has met its requirements under the Clean Air Act Amendments of 1990 but does not show the extent to which the states and industry have actually implemented the requirements promulgated by EPA. We recognize that a tabulation of the requirements is only the first step in determining the status of implementation because of the relative complexities of the different provisions in the Act. For example, certain titles require extensive, continuing interaction among EPA and state and local regulators, while others do not.

To obtain the views of key stakeholders on the major issues affecting the implementation of the Clean Air Act Amendments of 1990, we interviewed and received information from organizations that were interested and affected parties, including environmental groups, manufacturing associations, and state and local government agencies. (See app. VII for a listing of the organizations selected.) We coordinated our selection of organizations with EPA to ensure the representation of a good cross section of the key stakeholders involved with the implementation and oversight of the Clean Air Act Amendments of 1990. We asked representatives from these associations for their views on the implementation of the Clean Air Act Amendments of 1990, including factors that could either help or hinder effective implementation. We also obtained documentation of the National Governors Association's comments

on the implementation of the Clean Air Act Amendments of 1990. We did not independently verify the information provided by the stakeholders. For each issue presented by the stakeholders, we asked for examples to support the points they were making. In some cases, examples were provided. We also asked EPA officials with responsibility for implementing the Act to review and comment on the issues raised by the stakeholders.

We performed our work from May 1999 through February 2000 in accordance with generally accepted government auditing standards.

As arranged with your office, unless you announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. At that time, we will send copies of this report to the Honorable Carol M. Browner, Administrator, Environmental Protection Agency, and other interested parties. We will make copies available to others on request.

If you have any questions about this report, please contact me at (202) 512–6111 or William F. McGee at (919) 899–3781. Key contributors to this report were Gregory P. Carroll; Hamilton C. Greene, Jr.; Karen Keegan; and Everett O. Pace.

Sincerely yours,

DAVID G. WOOD, *Associate Director,*
Environmental Protection Issues,
General Accounting Office.

APPENDIX I

TITLE I—NATIONAL AMBIENT AIR QUALITY STANDARDS

The Clean Air Act authorizes the Environmental Protection Agency (EPA) to set national standards to protect human health and welfare from emissions that pollute ambient air. As a first step in this process, EPA is required to list harmful pollutants that are discharged in relatively large quantities by a variety of sources across broad regions of the country. The Act requires EPA to determine National Ambient Air Quality Standards (NAAQS) for these so-called "criteria pollutants."[13] NAAQS are currently in place for six air pollutants: ozone, carbon monoxide, sulfur dioxide (SO_2), nitrogen dioxide, lead, and particulate matter. EPA has been regulating these criteria pollutants since the 1970 Clean Air Act amendments were enacted. However, title I of the 1990 amendments established a more comprehensive approach for states to implement, maintain, and enforce the NAAQS to further help reduce criteria pollutants.

STATUS OF REQUIREMENTS

To accomplish the objectives of title I of the Clean Air Act Amendments of 1990, EPA identified 141 requirements. These requirements included promulgating new regulations, such as enhanced monitoring for ozone, nitrogen dioxide, and volatile organic compounds; publishing final guidance for state plans to implement the NAAQS; and issuing reports to the Congress on volatile organic compounds emissions from the use of consumer and commercial products. The status of these requirements is shown in table 1.

Table 1

Status of Requirements Designed for National Ambient Air Quality Standards

Require Requirements with statutory deadlines	Number
Met on time	16
Met late	48
Unmet—deadlines prior to February 2000	1
Deadlines after February 2000	14
SUBTOTAL	79
Requirements without statutory deadlines[1]	62
Total	141

[1]EPA has met all 62 requirements.

[13] These pollutants are called criteria pollutants because the agency sets permissible levels for them on the basis of "criteria" or information on the effects on public health or welfare that may be expected from the presence of such pollutants.

EPA's most recent data show that it has taken the required action to meet 64 of the 79 title I requirements established with a specific statutory deadline in the legislation. However, in 48 instances, the agency completed the required action after the statutory deadline had passed. According to EPA, it missed deadlines in the 1990 amendments owing in part to competing demands placed on the agency and other stakeholders by Clean Air Act issues not arising from the 1990 amendments. For example, in the development of new air quality standards for ozone and particulate matter, an extensive scientific consultation process occurred. The emergence of new scientific information documenting the importance of regional ozone transport led to EPA's extending the deadlines for state submittal of ozone plans for many areas, and engaged states and EPA in a 2-year process to conduct modeling studies and to study potential solutions. That process led to EPA's nitrogen oxides State Implementation Plan call, which was another major effort. In addition, many of the title I requirements were delayed because of litigation. EPA has recently been delayed in implementing recent revisions to the NAAQS for ozone and particulate matter and in implementing its plan to mitigate the interstate transport of ozone because of two recent court rulings in May 1999. As a result, several requirements planned for completion in 1999 and 2000 have been put on hold.

According to EPA officials, the ongoing litigation on particulate matter and ozone is the largest obstacle preventing EPA from successfully completing the requirements of title I of the 1990 amendments. EPA has implemented the bulk of title I requirements.

VIEWS OF KEY STAKEHOLDERS ON MAJOR ISSUES AFFECTING IMPLEMENTATION OF TITLE I OF THE CLEAN AIR ACT AMENDMENTS OF 1990

The stakeholders we spoke with from environmental and industrial groups and state and local governments recognize the benefits of title I and acknowledge that cleaner air has resulted from it. As shown in table 2, the concentration of criteria pollutants affecting national air quality has decreased significantly from 1978 to 1997.

Table 2

Long-Term Percent Changes in National Air Quality Concentration
Numbers in Percentages

Pollutant	Air quality concentration percent change, 1978–97
Carbon monoxide	−60
Lead	−97
Nitrogen dioxide	−25
Ozone	−30
Particular matter	Data not available
Sulfur dioxide	−55

Source: EPA's National Air Quality and Emissions Trends Report (1997).

However, stakeholders, including environmental groups and states, expressed concern with the process of implementing title I and gave several suggestions on how to improve the requirements or change the legislation. In particular, stakeholders support making improvements—such as better coordination between states and EPA and more flexibility—to the State Implementation Plan (SIP) process, which is required by all states to implement, maintain, and enforce the NAAQS. In addition, stakeholders expressed their concern with the inconsistency in the way that states implement NAAQS, which is generally allowed by the Act, and suggested that the Act provide for better coordination between EPA and the states to address these inconsistencies on a regional basis. Last, other stakeholders expressed their concerns with specific provisions in title I of the Act that exempt older facilities from the emissions standards that apply to newer facilities.

State Implementation Plans Process

Several stakeholders, including the environmental and state groups we spoke with, support making changes to the SIP process required by all states when they implement the NAAQS. According to one stakeholder we met with, the SIP process needs to be coordinated better, more flexible, and based on performance. The stakeholder added that more flexibility was needed in the SIP process so that coordination between state and local entities and EPA can be more effective, especially when pollution from one state contributes to the air pollution problems in another. Accord-

ing to EPA officials, under section 126 of the Clean Air Act, any state may petition EPA to set emissions limits for specific sources of pollution in other states that significantly contribute to its air quality problem. Petitions were filed by eight states in 1997 and three additional states and the District of Columbia in 1999. In December 1999, EPA granted final approval of four of the eight petitions filed in 1997. By granting these four petitions, EPA found that certain large electric utilities and large industrial boilers and turbines violated a Clean Air Act prohibition against significantly contributing to air pollution in other states.

According to an independent research organization we met with, a late SIP puts a state transportation agency in a bind because EPA can automatically withhold Federal funds. As a result, state planners must plan for two scenarios—one with Federal funds and one without them. Using two scenarios results in additional planning time. According to EPA officials, the 1990 amendments to the Clean Air Act direct EPA to apply certain sanctions to areas that fail to comply with the Act's requirements. These officials stated that one of these sanctions—the withholding of Federal highway funds—takes effect only after a state or nonattainment area is 2 years late in submitting the required SIP revision. Before such sanctions are invoked, the Governor's office and other government officials are made aware of the pending action and also are advised of what must occur to remove the sanction.

According to the independent research organization we met with, a change to the current SIP process is supported. Under the change, credit will be given not only for planned programs, but also for going back and validating information through actual performance. For example, states are currently receiving SIP credits for instituting inspection and maintenance programs, but the credits are based solely on EPA's model—not on validating actual emissions testing. According to EPA officials, EPA does not discourage a state or area from validating its reduction credits. EPA reviews state validations by assessing the rate at which a state is reducing its total emissions.

Regional Solutions for Ozone

Several stakeholders expressed their concern with the inconsistency in states' approaches for implementing NAAQS, which are generally allowed by the Clean Air Act, and suggested that the Act provide for better coordination between EPA and the states to address these inconsistencies on a regional basis. One stakeholder stated that the differences in states' approaches for implementing NAAQS need to be addressed, particularly in regions with ozone problems because ozone is a regional problem—not just a state problem. The stakeholder recommended that EPA be granted more authority to impose regional solutions to solve the interstate transport of ozone pollution. According to this stakeholder, one solution would be for the SIP process to be run on a regional basis. Another stakeholder suggested that in the area of ozone transport, there is a need for better coordination between states because none of them has the authority to require the others to take any particular action.

According to EPA, the agency has taken significant steps toward reducing ground-level ozone in the eastern half of the United States. Through a 2-year effort with the Ozone Transport Assessment Group, EPA worked in partnership with the 37 easternmost states and the District of Columbia, industry representatives, and environmental groups to address the regional transport of ozone. According to EPA, the process resulted in a comprehensive analysis of technical information related to ozone transport, including modeling and monitoring data. The Ozone Transport Assessment Group recommended flexible and cost-effective strategies for reducing the long-range transport of ozone and ozone precursors, including the development of trading and market-based incentives.

The solution to the ozone problem, however, has not been realized. In September 1998, EPA promulgated the nitrogen oxide State Implementation Plan call, a final rule requiring 22 states and the District of Columbia to mitigate the interstate transport of ozone through reductions in nitrogen oxides.[14] The final rule required the affected states to submit their State Implementation Plan revisions by September 1999, but on May 25, 1999, the U.S. Court of Appeals for the D.C. Circuit indefinitely stayed the deadline for submission of the required plans.[15] According to EPA, this court ruling delayed actions that would result in the reduction of actual nitrogen oxide emissions. On March 3, 2000, however, the Federal appeals court rejected most challenges to the rule, upholding EPA's authority to promulgate it.[16] The court

[14] 63 Fed. Reg. 57, 356 (1998).
[15] Michigan v. EPA, No. 98–1497 (D.C. Cir. May 25, 1999).
[16] Michigan v. EPA, No. 98–1497 (D.C. Cir. Mar. 3, 2000).

ruled, however, that EPA had improperly included 3 of the 22 states in the State Implementation Plan call.

In another ruling, the U.S. Court of Appeals, D.C. Circuit, remanded EPA's rules revising NAAQS for particulate matter and ozone.[17] EPA is seeking a review of the Court of Appeals decision in the Supreme Court.

Grandfather Clause for Old Power Plants

According to one environmental stakeholder, the most ineffective provision of the Clean Air Act is the grandfather language in section 111 (b)(6), which exempts coal-fired power plants existing at the time the Act was amended in 1977 from the emissions standards that apply to newer facilities unless changes are made requiring permit modifications. According to this stakeholder, when this exemption—which covers most coal-fired power plants in the United States—was adopted, it was expected that these plants would be retired after approximately 30 years of operations and that the entire fleet of power plants would be replaced with lower-emitting, more-efficient facilities. According to this stakeholder, in practice, this provision has created an incentive for the owners of these older, dirtier power plants to continue to operate them long after their expected retirement dates and has slowed the development of cleaner replacement capability.

This stakeholder added that the grandfather provision in title I imposes significant costs on society in terms of human health effects (e.g., medical costs for respiratory ailments and premature deaths) and environmental impacts (e.g., forest productivity losses, contaminated water bodies, and reduced visibility). According to this stakeholder, as the electric industry is deregulated, it is also increasingly clear that this provision has anticompetitive effects—making it difficult or impossible for new power plants to enter markets dominated by grandfathered plants, and consequently, limiting electric consumers' choice in the market. Any change in this provision would require a change in legislation.

In November 1999, the Department of Justice and EPA took enforcement actions against 32 coal-fired power plants, charging the companies with illegally releasing massive amounts of air pollutants for years. Because of the Clean Air Act grandfather provision, utility companies were not required to retrofit those existing plants with new air pollution equipment unless the utilities undertook major modifications of those plants. The government asserts that the utilities made major modifications to their plants in order to extend their life and to avoid the costs of building new plants, without installing new pollution control equipment, which resulted in tons of illegal emissions of pollutants. According to the EPA Administrator, the companies that owned the power plants had illegally retooled old, pollution-spewing coal plants without notifying regulators, without getting the necessary permits, and without installing new equipment to reduce emissions and meet pollution standards that apply to new plants. Most of these enforcement actions are still pending.

APPENDIX II

TITLES I AND II—MOBILE SOURCES

Provisions for controlling air pollution from motor vehicles, engines, and their fuels are contained in both title I and title II of the Clean Air Act Amendments of 1990.[18] Mobile sources include cars, trucks, buses, trains, aircraft, motorcycles, construction and farm equipment, boats and marine vessels, and lawn and garden equipment. The Clean Air Act Amendments of 1990 provides for emissions reductions from transportation sources by emphasizing the following:

- Title II, emission standards for motor vehicles: Develop more stringent emissions standards for cars, buses, trucks, and nonroad vehicles and engines, such as construction equipment, boats, lawn and garden equipment, and locomotives.
- Title II, clean fuels: Develop reformulated gasoline, diesel fuel, and oxygenated fuels to reduce carbon monoxide emissions.
- Titles I and II, inspection and maintenance and onboard diagnostics: Develop programs to identify faulty emission controls and ensure that vehicles remain clean in actual customer use.

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[17] American Trucking Ass'ns. v. U.S. EPA, No. 175 F. 3d 1027, on rehearing 195 F. 3d 4 (D.C. Cir. 1999).

[18] In this report, we have included the discussion of major issues affecting the implementation of mobile sources programs from both title I and title II in this appendix. EPA's Office of Transportation and Air Quality and state and local air pollution control agencies operate their mobile source programs as one program.

• Title I, clean transportation alternatives: Develop strategies to encourage transportation alternatives to address vehicle travel growth.

STATUS OF REQUIREMENTS

To accomplish the mobile source objectives of the Clean Air Act Amendments of 1990, EPA identified 89 requirements.[19] These requirements include promulgating new regulations to establish Federal programs that resulted in cleaner passenger vehicles, trucks, and buses and cleaner-burning gasoline and diesel fuel. The amendments also authorized EPA for the first time to set national emissions standards for non road vehicles and engines, such as locomotives, boats, and marine vessels; lawn and garden equipment; and engines used in construction and agricultural equipment. The status of the implementation of these requirements is shown in table 3.

Table 3

Status of Requirements Designed for Mobile Sources

Requirements with statutory deadlines	Numbers
Met on time	6
Met late	21
Deadlines prior to February 2000	0
Deadlines after February 2000	0
Subtotal	27
Requirements without statutory deadlines[1]	62
Total	89

[1] EPA has met 51 of the 62 requirements.

EPA's most recent data show that it has taken the required action to meet all 27 of the mobile source requirements established by the legislation. However, as indicated in table 3, EPA was late in meeting 21 of its requirements. According to EPA officials, there were several reasons why the rules were late. One reason for the rules' lateness was that EPA began to operate differently in the early 1990's by bringing in more people to get their input and comments before issuing the rules. As a result, according to EPA, the process took longer but, in the end, turned out better because by the time the requirements were completed, most stakeholders were in agreement.

EPA officials believe that one of its greatest challenges will be to find ways to reduce emissions from motor vehicles, whose numbers and miles traveled continued to increase every year. According to EPA, despite the tremendous success of the Federal program to reduce motor vehicle emissions over the past 25 years, they still represent the single largest category of air pollution in most cities around the country. An example of this challenge is the potential for an increase in the number of diesel-powered passenger vehicles that may enter the market in the coming years. The trend to more diesels is driven in part by their better fuel efficiency compared with gasoline engines. Diesels, however, produce significantly greater amounts of particular matter and nitrogen oxide than gasoline counterparts, according to EPA. Working with manufacturers of diesel engines to develop clean diesels for the future is one of the great challenges facing EPA in meeting the nation's clean air goals.

VIEWS OF KEY STAKEHOLDERS ON MAJOR ISSUES AFFECTING IMPLEMENTATION OF TITLES I AND II OF THE CLEAN AIR ACT AMENDMENTS OF 1990

Several stakeholders from environmental and industrial groups agree that titles I and II of the 1990 amendments have made a significant impact on reducing pollution from mobile sources. For example, one environmental group stated that the emissions requirements for new vehicles have been quite effective in reducing emissions, as have the reformulated gasoline fuels programs. EPA estimates that oxygenated fuels reduced ambient carbon monoxide concentrations 7 to 14 percent overall for the winter seasons from 1986 to 1994. These groups, however, believe that improvements can and should be instituted in two areas involving mobile sources: (1) the inspection and maintenance programs and (2) considering and regulating pollution control devices and fuel requirements as one system.

[19] The number of requirements identified in this section relates to title II requirements only.

Inspection and Maintenance Program

According to some state and local government stakeholders, and an independent research organization, although the inspection and maintenance program for in-use motor vehicles has resulted in significant reductions in emissions in the past, they are concerned that public support for the program may not remain. One state agency commented that improvements in the inspection and maintenance program, such as including the use of technology to lessen the program's costs, are needed if it is to continue receiving public support. In addition, the cost of the inspection and maintenance program has already led to declining support. Opposition to EPA's enhanced inspection and maintenance regulation—including the reluctance of some state legislatures to provide the legislative authority and funding needed to implement these programs—caused many states to delay implementation several years after the required start date of 1995. [20]

Opposition to what they view as the stringent requirements of the program led to the reluctance of some state legislatures to authorize and fund it. In order to decrease the cost, some stakeholders believe that there must be increased emphasis put on using new state-of-the-art technology, such as roadside testing using remote sensors, that is available to identify vehicles in need of repair. A stakeholder commented that these high-tech solutions to the identification of high-pollution-emitting vehicles are available but that they are not being used to the degree that they should. This stakeholder added that other types of in-use testing, such as remote-sensing devices, should be used instead of relying solely on inspection and maintenance facilities to identify vehicles needing repair. According to EPA officials, the agency currently allows states to use remote-sensing technology in their inspection and maintenance program as a form of "clean screening." These same officials said that a state might elect to use remote sensing to identify clean vehicles, whose owners would then be informed that it was unnecessary to bring their vehicles to an inspection and maintenance facility. In EPA's opinion, however, remote-sensing technology has not yet been demonstrated as a reliable alternative to replace standard inspection and maintenance testing. A stakeholder believes that the on-board diagnostic equipment, which is required in 1996 and newer model vehicles, should be used to identify problems in pollution-emitting vehicles instead of relying solely on inspection and maintenance equipment. According to EPA officials, on-board diagnostic equipment has been proven to be accurate in identifying high-emitting vehicles, on the basis of a recently completed 2-year test program. On-board diagnostic equipment has also been proven to reliably identify malfunctioning components and allow for more accurate diagnosis of vehicles' emission control systems than was possible with previous technology. EPA is currently working on a plan that will incorporate on-board diagnostic checks as part of state inspection and maintenance programs, and according to the agency, it will be implemented as soon as practical.

Vehicle Pollution Control Devices

According to one industrial stakeholder, the effectiveness of vehicle pollution control devices depends upon the types of fuels that are used in engines. The use of inferior fuels leads to less than desirable results in emissions reductions. Therefore, when one system is adopted without the other, opportunities for improving air quality are lost. The stakeholder is concerned that this interrelationship is sometimes overlooked. For example, according to this stakeholder, several northeastern states decided to require vehicles sold there to meet the pollution control requirements applicable to vehicles sold in California. The industrial group we interviewed commented that these states required California's vehicle standards but did not require California's fuels standards, and, thus, the effectiveness of the control devices was diminished. In addition, this group stated that the Clean Air Act should be changed to make it clear that advanced-technology vehicles like those required under the California standards should be used with cleaner-burning fuels like those required under the state's standards. EPA officials pointed out that in its recently announced vehicle program rulemaking, the agency, for the first time, considered vehicles and fuels as an integrated system and regulated each in a single rulemaking.

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[20] See Air Pollution: Delays in Motor Vehicle Inspection Programs Jeopardize Attainment of the Ozone Standard (GAO/RCED–98–175 , June 15, 1998).

APPENDIX III

TITLE III—HAZARDOUS AIR POLLUTANTS

Title III of the Clean Air Act Amendments of 1990 established a new regulatory program to reduce the emissions of hazardous air pollutants, specifying 189 air toxics whose emissions would be controlled under its provisions. The list includes organic and inorganic chemicals, compounds of various elements, and numerous other toxic substances that are frequently emitted to the air. Title III was intended to reduce the population's exposures to these pollutants, which can cause serious adverse health effects such as cancer and reproductive dysfunction.

Under the hazardous air pollutant program prior to title III, EPA identified only seven hazardous pollutants in 20 years and then developed emission standards for those pollutants using a risk-based approach. The approach of the new program differs from this in that, as a first step, title III identifies the pollutants to be regulated and directs that EPA impose technology-based standards, or Maximum Achievable Control Technology (MACT) standards, on industry to reduce emissions. As a second step, once EPA finishes the technology-based standards, it is to consider the remaining risks to the public and issue health-based standards to address such risk.

The Act requires EPA to publish the technology-based emissions standards for both major and area sources from 1992 to 2000. The Act also required EPA to publish a list of source categories by November 15, 1991, for these hazardous pollutants, but the agency did not do so until July 16, 1992. At that time, EPA listed 174 source categories. The Clean Air Act established milestones for issuing the MACT regulations as follows:

- Twenty-five percent of the MACTs to be issued by November 15, 1994.
- Fifty percent of the MACTs to be issued by November 15, 1997.
- One hundred percent of the MACTs to be issued by November 15, 2000.

STATUS OF REQUIREMENTS

To accomplish the objectives of title III of the 1990 Clean Air Act Amendments, EPA has identified 221 requirements. The implementation status of these requirements is shown in table 4.

Table 4

Status of Requirements Designed for Hazardous Air Pollutants

Requirements with statutory deadlines	Number
Met on time	15
Met late	102
Deadlines prior to February 2000	3
Deadlines after February 2000	94
Subtotal	214
Requirements without statutory deadlines[1]	7
Total	221

[1] EPA has met all seven requirements.

Note: The numbers in table 4 do not include the requirement for EPA to conduct residual risk determinations for each of the final MACT standards.

EPA's most recent data show that it has taken the required action to meet 117 of the title III requirements established by the legislation, although 102 of these were met late. As shown in table 4, EPA has 94 unmet requirements with statutory deadlines after February 2000. Ninety-two of the 94 requirements are to be addressed with the promulgation of 62 MACT standards. EPA took more than 9 years to promulgate the first 92 MACT standards. However, according to EPA, over that time period, it has taken much initiative in expediting the MACT development process. Nonetheless, EPA officials do not believe they will meet the November 15, 2000, deadline for all of the remaining MACT standards but estimate that they will do so for about three MACT standards. While they do not anticipate meeting the deadline for 59 MACT standards, they do believe they can promulgate the rules within 18 months after the deadline. This is significant in that the Clean Air Act requires that if EPA fails to finalize the rules within 18 months of the deadline, the states themselves must develop their own standards. According to EPA, this would be very expensive and cumbersome. EPA officials point out that while the agency has missed previous deadlines, it has virtually always issued the standards within 18

months of the deadline, and in no case has any state had to develop its own case-by-case MACT determinations.

According to EPA officials, the development of the MACT standards requires a significant amount of time and money. They explained that many previous requirements were met late because of the need to prioritize, given resource limitations, the time needed to develop the policy framework and infrastructure of the MACT program, and the complexity and stakeholder participation involved with some industrial source categories. EPA noted that the successful completion of the remaining MACT requirements is contingent upon adequate resources.

VIEWS OF KEY STAKEHOLDERS ON MAJOR ISSUES AFFECTING IMPLEMENTATION OF TITLE III OF THE CLEAN AIR ACT AMENDMENTS OF 1990

Although EPA has not finished the technology-based standards, the stakeholders from an industrial group, environmental group, and state governments we interviewed stated that the program has been very effective, resulting in the reduction of millions of tons of air toxics and smog-forming volatile organic compounds from the air.

In the second step in the program to control hazardous air pollutants, EPA will assess the risk remaining to the public from these pollutants once the technology-based standards are in place. If necessary, the agency would then publish health-based standards to address that risk. It is in this second phase that some stakeholders from environmental and industrial groups, and state and local governments believe EPA will have the most difficulty. For example, one of the problems mentioned is that EPA will lack the necessary data to do the residual risks assessments.

Stakeholders are concerned that the second step—involving residual risk assessments—; will be problematic. This second step will involve the evaluation of the risks remaining after the technology-based standards are in place and setting standards that are based on the risks to the public's health from air toxics remaining in the air. One industrial stakeholder commented that the "residual risk" program will be more difficult for EPA to implement, since it will involve defining what "risk" is, and "how clean is clean," as well as modeling issues. According to EPA officials, the agency is mandated to set a residual risk standard if the existing MACT standard does not protect the public health with an ample margin of safety. EPA outlined the general approach that it will use to make decisions whether to set residual risk standards in its peer-reviewed 1999 Report to Congress (EPA–453/R–99–001). The report states that, for carcinogens, EPA will continue to apply the 1989 Benzene National Emission Standard for Hazardous Air Pollutants, commonly referred to as the Benzene rule, which laid out EPA's approach for making decisions under the ample margin of safety language. Given that residual risk assessments will assess noncancer risks as well as cancer risks, EPA stated that it will use the best available models to assess residual risk and plans to apply them consistently.

In developing an overall approach to the residual risk program, EPA believes it may be able to learn from several states that have had risk-based programs. For example, over the last 15 years, Georgia has addressed residual risk by doing its own screening and modeling of the health effects of air toxics and set its own standards for allowable concentrations of toxins in the air. In addition, according to an industrial stakeholder, the upcoming residual risk program will require EPA to know a lot about individual industries and require an intensive data collection effort. According to EPA officials, they recognize that in many cases, conducting residual risk assessments will require the agency to expand upon the data collected for the development of the MACT standards. EPA states that it can gather these additional data from several sources, including EPA's National Toxics Inventory, state data bases and permits, compliance reports, and industry. According to EPA, it will use the best available data to conduct residual risk assessment.

Insufficient data have caused data collection efforts in the past to be deemed unsuccessful. As a result, industrial stakeholders believe that problems with residual risk assessments will occur. According to one industrial stakeholder, because of time pressures and the lack of resources, EPA may be forced to make decisions using inadequate data. An environmental group stakeholder also commented that EPA would find it difficult to amass the information that will be necessary to develop the residual risk assessments. According to EPA officials, as with any risk assessment, there will be gaps in some data bases used and uncertainties in the results of the residual risk assessments. EPA stated that it would make every effort to collect the necessary data for these assessments and will clearly articulate the uncertainties that exist in the data as well as the assumptions used.

APPENDIX IV

TITLE IV—ACID DEPOSITION CONTROL

Title IV of the Clean Air Act Amendments of 1990 establishes the acid deposition control program to reduce the adverse effects of acid rain deposition through reductions in the annual emissions of pollutants—mainly sulfur dioxide. It provides an alternative to traditional "command and control" regulatory approaches by using a market-based approach to allow electric utilities to trade SO_2 allowances with other utilities to achieve cost-effective reductions. After setting the overall reductions in SO_2 emissions to be achieved, the Act defined each source's specific emissions limits and directed the allocation of allowances to sources in amounts equal to the emissions limits. These emissions limits for all sources are combined to meet a total emissions cap. The sources that emit SO_2 must install continuous emissions monitors and keep records in accordance with regulations issued by EPA. The utilities that reduce their emissions below the required levels can sell their extra allowances to other utilities to help them meet their requirements. The utilities that exceed their emissions allowances forfeit allowances to cover the excess emissions and must pay fines that are set at several times the estimated average cost of complying with SO_2 emissions limits.

In July 1997, we reported that the acid rain program, including the use of emissions trading, has been successful in achieving greater-than-planned reductions in the emissions of SO_2 from facilities and projected significant cost savings compared with a traditional command-and-control regulatory approach.[21] More recently, we reported on trends in emissions and their effects.[22]

STATUS OF REQUIREMENTS

To accomplish the objectives of title IV of the 1990 Clean Air Act Amendments, EPA identified 44 requirements. These requirements included promulgating new regulations for an allowance-trading system, continuous emissions monitoring, and an acid rain permit program and issuing a report to the Congress on an acid deposition standard feasibility study. The status of these requirements is shown in table 5.

Table 5

Status of Requirements Designed for Acid Rain Deposition

Requirements with statutory deadlines	Number
Met on time	9
Met late	15
Unmet—deadlines prior to February 2000	2
Deadlines after February 2000	0
Subtotal	26
Requirements without statutory deadlines[1]	18
Total	44

[1]EPA has met all of the 18 requirements.

EPA's most recent data show that it has met 24 of 26 of the title IV requirements established by legislation, although it was late in 15 instances. According to EPA officials, the agency was late with some of the requirements because interagency review and consultation with the Acid Rain Advisory Committee added time to the process. Officials consider that the time spent was worthwhile because it allowed for more stakeholders' input in the rules process, thereby making them less controversial.

According to officials of EPA's Office of Atmospheric Programs, Acid Rain Division, the program has been much more successful than initially envisioned—both in terms of emissions reductions and in terms of the cost to implement the program. Furthermore, they said the use of continuous emissions monitoring and the cap and trade program, which limits the amount of pollutants while allowing industry the flexibility to determine how best to reach those limits, can be considered as contributors to the overall success of the program. Also, EPA officials stated that both ap-

[21] See Air Pollution: Overview and Issues on Emissions Allowance Trading Programs (GAO/T-RCED–97–183 , July 9, 1997).

[22] See Acid Rain: Emission Trends and Effects in the Eastern United States (GAO/RCED–00–47 , Mar. 9, 2000).

proaches might have applications to other pollutants and problems in addition to SO_2 for acid rain.

VIEWS OF KEY STAKEHOLDERS ON MAJOR ISSUES AFFECTING IMPLEMENTATION OF TITLE IV OF THE CLEAN AIR ACT AMENDMENTS OF 1990

Stakeholders from both the industrial sector and from state governments whom we spoke with agree that, overall, title IV is one of the most effective titles of the Clean Air Act. Title IV serves as an example of a title that provides sources with the flexibility to reduce emissions cost-effectively—through the allowance-trading program—while establishing clearly defined objectives, firm deadlines, mandatory monitoring, and significant penalties for noncompliance. For example, one environmental stakeholder commented that the SO_2 emissions reduction-trading program has been implemented in a timely and efficient way and that emissions reductions are well documented as a result of acid rain reporting through the emission/allowance tracking system.

Currently, the control of nitrogen oxide under title IV does not include a cap on emissions nor provisions for nitrogen oxide trading. Stakeholders from an industrial group and a state would like to see the trading program's focus expanded, believing it could have beneficial applications to other pollutants associated with acid rain, such as nitrogen oxides, and also those not associated with acid rain. One of the stakeholders commented that if the trading program is employed for these pollutants, the program should provide the ability to trade emissions between sectors. For example, the mobile source component would be allowed to trade with the stationary source components. EPA agrees that a cap and trade approach could be applied to more air pollution problems and sectors, but emissions monitoring and accounting as well as administrative feasibility are important considerations in such expansion. EPA suggests that the approach should be extended to other stationary sources before considering its application to mobile sources.

APPENDIX V

TITLE V—PERMIT PROGRAM

The principal purpose of title V of the Clean Air Act Amendments of 1990 is to establish a national permit program to ensure compliance with all applicable regulations of the Clean Air Act. According to EPA, the program will enhance the agency's and the public's ability to enforce the Act by making it easier to detect noncompliance and by requiring sources to take certain actions to demonstrate compliance. The program requires major stationary sources to obtain operating permits that contain all existing Federal clean air requirements applicable to the source in one document. Title V was not intended to impose new substantive requirements. It requires industry to pay permit fees to cover the costs incurred by state air pollution control agencies in approving and administering these permits. According to EPA officials, over 18,000 sources have submitted permit applications. Of this number, approximately 7,000 permits have been issued.

EPA is responsible for promulgating regulations establishing the minimum elements of a title V permit program; reviewing, approving, and overseeing state programs; and reviewing permits issued by the states. EPA is also responsible for implementing permit programs for any states or tribal governments that do not implement their own programs. States are responsible for establishing and implementing their permit programs, issuing permits to pollution sources, collecting fees to cover the cost of the programs, and ensuring that sources comply with permit requirements.

STATUS OF REQUIREMENTS

To accomplish the objectives of title V of the 1990 Clean Air Act Amendments, EPA identified 14 requirements. These requirements included promulgating new regulations such as state permit program requirements, as well as publishing guidance on state programs to assist small businesses. The status of these requirements is shown in table 6.

Table 6

Status of Requirements Designed for the Permit Program

Requirements with statutory deadlines	Number
Met on time	1
Met late	2
Unmet—deadlines prior to February 2000	0
Deadlines after February 2000	0
Subtotal	3
Requirements without statutory deadlines[1]	11
Total	14

[1]EPA has met 8 of the 11 requirements.

EPA's most recent data show that it has taken the required action to meet the title V requirements established with specific statutory deadlines in the legislation, although EPA was late in meeting two requirements. For example, title V charged EPA, by November 1991, with issuing a permit rule that would identify the minimum elements of state permit programs and govern their implementation. According to EPA, disagreement between the Office of Management and Budget and the then Council on Competitiveness over certain requirements in the final rule delayed its issuance 8 months until July 1992. While waiting to learn what the final rule would require, EPA and the states postponed some efforts to implement title V.[23] In addition, after promulgation, states, industry, and environmental groups sued EPA over this rule, and EPA agreed to propose changes to portions of the rule to address litigants' concerns. According to EPA officials, the agency has moved the completion date for the rulemaking promulgating revisions to the operating permits program from April to November 2000 because of the need to repropose part of the package as a result of stakeholders' extensive comments. Until then, the original rule remains in effect, and states continue to issue title V permits.

According to EPA's Office of Air Quality Planning and Standards, about 19,000 sources are subjected to the permit program. Between 18,000 and 18,400 sources had submitted permit applications. Of this number, 7,000 permits have been issued. As a result of the slow progress in approving permits, EPA has sought to identify and, where possible, correct the obstacles to faster permit issuance. The statute requires that permits be issued or denied within 3 years of the date that a state program is approved.[24] EPA officials predict an incremental climb in the number of permits being issued as a result of this effort. The effort has identified several reasons why the states have problems with meeting their established milestones. According to EPA, where possible, it has attempted to respond to these problems through guidance or other assistance. However, states also identified some internal issues. For example, one of the main reasons presented by the states is the turnover of permitting staff, compounded in some cases by hiring freezes and the lack of expertise that results when state staff leave and are not replaced.

VIEWS OF KEY STAKEHOLDERS ON MAJOR ISSUES AFFECTING IMPLEMENTATION OF TITLE V OF THE CLEAN AIR ACT AMENDMENTS OF 1990

Some stakeholders from the industrial sector and from state governments questioned the cost-effectiveness of the permit program, observing that it does not directly lead to emission reductions, is more administrative in nature, and takes a lot of time and manpower. Industrial stakeholders also cited as an implementation issue the perceived inconsistency of EPA's interpretation of "modifications" to permits.

Cost-Effectiveness of Permit Program

According to EPA officials, Title V was added to address existing shortfalls in compliance. However, state agencies and an industrial stakeholder whom we interviewed agreed that the permit program consists primarily of accounting and reporting processes rather than inspection processes. One state stakeholder commented that the permit program attempts to enforce environmental rules through a paper trail rather than by inspections of specific sources. According to EPA, however, a permit that clearly contains all Clean Air Act requirements for a facility can serve as a valuable inspection tool.

[23] See Air Pollution: Difficulties in Implementing a National Air Permit Program (GAO/RCED–93–59 , Feb. 23, 1993).

[24] Program approval dates range from December 1, 1994, to June 10, 1997.

A state stakeholder told us that title V is more administrative in nature than other provisions of the Act, yet it takes more time and more manpower than anything the state must do under the Clean Air Act Amendments of 1990. From the state's perspective, the program has become an administrative grind: when the permits are finished, what remains is a voluminous document that few will read. According to EPA, the initial steps of getting the program up and running and issuing the initial round of permits certainly could require significant resources, but the Act funds this effort with permit fees that sources pay to the states. EPA believes that since the permit is a single document containing all applicable requirements, it should be of interest and use to the industrial sources, air pollution control agencies, and the public.

When the permit program was implemented, several states already had permit programs in place. For example, according to a state official, California has had a permit program for 30 years and would rather enforce its regulations through inspections. According to a state stakeholder, the Clean Air Act Amendments allow for state permit programs that provide equivalent results, but EPA wants the permit programs in each state to be identical. According to EPA officials, the title V regulations allow significant flexibility in tailoring state programs, but each program must meet the minimum criteria established by the Act.

Costs are associated with both approaches—paper trail or inspection—and several state stakeholders believe that the actual inspection of emissions is more effective than wading through volumes of permit paperwork. For example, according to an industrial stakeholder, one permit application for a source is 15,000-pages long and contains several thousand requirements. State officials commented that they would rather inspect the source than go through the voluminous permit package page-by-page.

However, according to EPA, preliminary data indicate that as sources undertake the compliance review required by title V, as many as 70 percent of them in some states are finding Clean Air Act requirements that they had been unaware of or had been complying with improperly. Actual inspections always have a place in an air program, according to EPA, and should continue. However, the process of compiling all requirements in a single place and the requirement that sources review and certify compliance with these requirements are clearly leading to the correction of instances of noncompliance that were not caught by inspection programs, according to EPA. This leads to actual emissions reductions and a more level playing field for sources, the agency said. According to EPA, it also complements the inspection approach by providing inspectors with a permit that clearly describes what requirements apply to the industrial source, thus enabling more efficient inspections.

From the industrial perspective, significant costs have resulted from the permit program with minimal, if any, air quality improvements. According to an industrial stakeholder, at the time of the permit program's enactment, EPA estimated that the program would have no costs. In 1992, when the first regulations were issued, EPA estimated that the permit program would cost $360 million. Industrial stakeholders said that the actual costs are substantial. According to the First Annual Title V Report of the Clean Air Implementation Project,[25] the cost of the permit program has averaged $100,000 per facility for the 20,000 facilities subject to title V, resulting in total costs of at least $2 billion just for the preparation of title V permit applications. For example, according to one industrial stakeholder, the automobile industry has spent millions of dollars in preparing voluminous permit applications, yet only two assembly facilities have received approved permits. According to EPA officials, early estimates of the costs of the program are uncertain and vary widely because of differing early interpretations of various requirements. For example, according to EPA, many industrial sources and states took a very strict view of the permit application requirements of EPA's rules, leading to early concerns about voluminous permit applications. According to EPA, when it learned of these concerns, it issued two guidance documents to clarify that applications need not contain such exhaustive detail.

EPA has since issued several guidance documents that clarify and streamline permit application requirements. For example, according to EPA, it worked extensively with stakeholders in the automobile manufacturing industry to develop streamlined monitoring reference materials for use in their operating permit. EPA's latest estimates are that the administrative burden of the permit program is about $10,000 per source per year, but it acknowledged that the total costs could exceed $100,000

[25] See Getting the Title V Program on Track: Will EPA Make the Necessary Changes to It Policies? First Annual Report of the Clean Air Implementation Project (Apr. 1999). The Clean Air Implementation Project is an organization of major industrial corporations, which joined together in 1991 to focus on a broad range of issues under the 1990 Clean Air Act Amendments.

for some of the largest and most complex sources. EPA expects this burden to lessen after the initial round of permit issuance is completed.

By clarifying how Clean Air Act requirements apply to specific sources, and requiring responsible officials at the sources themselves to review their compliance with these requirements, EPA believes title V is achieving several direct and indirect air quality benefits. As the program is being implemented, EPA is compiling a list of benefits that sources, states, citizens, and EPA report finding. Such benefits to date have fallen into several categories: (1) emissions reductions as sources begin to comply with requirements they had previously not been complying with; (2) improving monitoring, which allows sources to ensure their compliance with the Act and to discover and correct deviations from the Act's requirements more promptly; (3) identification of, and subsequent clarifying and streamlining of, permit or rule requirements that were overlapping, unclear, or obsolete; (4) improvements in the development of rules benefiting the regulated community, as rule writers develop rules with an emphasis on how these rules will be implemented through permits; (5) an improved awareness of pollution control requirements, resulting in sources' improved ability to do comprehensive air quality management and for states to conduct regional air quality planning; and (6) improved public involvement in air pollution control decisions.

Permit Modification

A problem with the permit program, according to an industrial stakeholder we spoke to, is EPA's interpretation of section 502(b)(10) of the Clean Air Act. Under that section, permit programs must have provisions to allow changes within a permitted facility without a permit revision as long as (1) the changes are not "modifications" under any provision of title I, (2) the changes do not exceed emissions allowable under the permit, and (3) the permit holder notifies EPA and the permitting authority. The stakeholder stated that EPA has interpreted this section to mean that any change in a facility, regardless of how small, requires the permit's revision and the agency's permission. According to the First Annual Title V Report of the Clean Air Implementation Project, EPA's history of interpreting the term modifications shows how the agency significantly increased the level of review required for minor changes without revising its regulations. Under the current permit rule, whether a change constitutes a modification in large part determines whether an industrial source can change its manufacturing process without the necessity of a permit revision. The industry report found the following:

- Consistent with Congress's clear intention, the preamble to EPA's 1992 title V rule made it clear that minor changes do not constitute modifications.
- EPA subsequently announced, in numerous Federal Register notices, that states must treat minor changes as modifications.
- In an August 1994 proposal, EPA confirmed this revision of the original title V rule.
- In August 1995, EPA rescinded this interpretation and, consistent with its original title V preamble, announced that it would define "modifications" to exclude minor changes.

According to the industry report, EPA's history of changing its interpretation of modifications is an example of how title V should not be implemented, if the program is to meet the essential policy objectives.

According to EPA officials, the definition of "modification" has been difficult to interpret and remains the subject of litigation. However, according to EPA, this term relates to the system for revising permits and should not affect the initial issuance of permits. EPA expects to resolve the litigation before a significant number of permit revisions occurs.

A related issue concerns the timing of permit modifications. According to an industry stakeholder, under the Clean Air Act, sources are allowed to wait to make any changes in their permits until the permits are renewed, as long as the time remaining on the permits is 3 years or less. According to EPA officials, the 3-year timeframe applies to newly promulgated requirements, but nothing in the Act allows sources to wait for up to 3 years to incorporate requirements that they themselves trigger by making a change at a source.

APPENDIX VI

TITLE VI—STRATOSPHERIC OZONE PROTECTION

Title VI of the Clean Air Act Amendments of 1990 pertains to the protection of the stratospheric ozone layer. Such protection is to be accomplished by limiting the production and consumption of substances with ozone-depletion potential.

Title VI categorizes substances that deplete the stratospheric ozone layer as either class I (i.e., chloroflurocarbons, methylchloroform, carbon tetrachloride, and halons) or class II (i.e., hydochlroflourocarbons) substances. Title VI required the phasing out of the production of class I substances by January 1, 2000, except in the case of methyl chloroform, which is to be accomplished by January 1, 2002. Title VI also allows for an acceleration of the phaseout if Parties to the Montreal Protocol determine that the stratospheric ozone layer is depleting more rapidly then estimated earlier.26 According to EPA officials, under the accelerated phaseout approved by the Parties, class I production and import were phased out.

As for class II substances, the title provides, effective January 1, 2015, that it shall be unlawful to introduce them into interstate commerce or use except under certain circumstances. Such circumstances pertain to (1) substances that have been used, recovered, and recycled; (2) substances consumed in the production of other chemicals; and (3) substances used as a refrigerant in appliances manufactured prior to January 1, 2020. The production of class II substances shall be unlawful after 2030. According to EPA officials, the Montreal Protocol Parties accelerated the phaseout of class II substances as well, beginning in 2004.

Other sections of title VI concern the use, disposal, recovering, and recycling of class I substances during the service, repair, or disposal of appliances; industrial process refrigeration; and the servicing of motor vehicle air conditioners. For the class I and class II substances being phased out, title VI provides for approving the replacement of chemicals, product substitutes, or alternative manufacturing processes that will reduce the overall risks to human health and the environment.

STATUS OF REQUIREMENTS

To accomplish the objectives of title VI of the 1990 Clean Air Act Amendments, EPA identified 29 requirements. These requirements included promulgating class I phaseout regulations, new class I labeling regulations, bans on nonessential products using ozone-depleting substances, and determinations of acceptability for alternatives to class I and class II substances and issuing reports to the Congress on the production/consumption of ozone-depleting chemicals. The status of the implementation of these requirements is shown in table 7.

Table 7

Status of Requirements Designed for Stratospheric Ozone Protection

Requirements with statutory deadlines	Number
Met on time	2
Met late	10
Unmet—deadlines prior to February 2000	0
Deadlines after February 2000	0
Subtotal	12
Requirements without statutory deadlines[1]	17
Total	29

[1]EPA has met 16 of the 17 requirements.

EPA's most recent data show that it has taken the required action to meet all 12 deadlines of the title VI requirements established by the legislation. EPA met all the deadlines, although, as indicated in table 7, it was late in meeting 10 of its requirements. For example, the Clean Air Act Amendments of 1990 required EPA to promulgate the mobile air-conditioning recycling regulations by November 1991; however, EPA did not meet this date. The regulation was promulgated in July 1992. According to EPA officials, the basic reason for being late with the requirements was the need to prioritize the large workload under the Act.

VIEWS OF KEY SHAREHOLDERS ON MAJOR ISSUES AFFECTING IMPLEMENTATION OF TITLE VI OF THE CLEAN AIR ACT AMENDMENTS OF 1990

The stakeholders we interviewed from both the industrial sector and the environmental sector agreed that title VI has been effective in reducing ozone-depleting chemicals from the environment. According to two industrial stakeholders, the most effective requirements under title VI are (1) the recycling and emissions reduction program for class I and II substances and (2) the servicing of the motor vehicle air conditioners rule.

According to one stakeholder, EPA faces a challenge to implement the regulations judiciously so that ozone-depleting pollutants can be removed from the ambient air in a timely manner. According to EPA, the basic reason why regulations are issued

late is the lack of sufficient EPA staff to handle the large work load. Delays in issuing regulations may result in the emission of ozone-depleting substances or their substitutes into the ambient air. For example, absent a final rule addressing the recovery of refrigerant substitutes, some industrial refrigeration owners or operators may be venting refrigerant, while others may be complying with the statutory requirements of the Clean Air Act. The latter are likely following the detailed requirements set out in an EPA proposal that regulates the recovery of substitute refrigerants.

APPENDIX VII

SELECTED ORGANIZATIONS INCLUDED IN GAO'S REVIEW

Organization	Purpose
Air Conditioning Refrigeration Institute	The national trade association representing manufacturers of more than 90 percent of U.S.-produced central air-conditioning and commercial refrigeration equipment.
Alliance of Automobile Manufacturers	A coalition of nine global automakers that provides member companies a forum to work together on public policy matters of common interest and to work with government and other stakeholders to find sensible and effective solutions to improve the environment and motor vehicle safety.
Alliance for Responsible Atmospheric Policy	A coalition of companies that produce and use chlorofluorocarbons, hydrochlorofluorocarbons, and hydroflourocarbons. Coordinates industry's participation in the development of international and U.S. Government policies regarding ozone protection and global climate change.
American Lung Association	A health organization formed to fight lung disease and promote lung health through education, research, and advocacy.
American Petroleum Institute	The primary trade association for the U.S. petroleum and allied industries engaged in oil and natural gas exploration, production, transportation, refining, and marketing.
Association of International Auto Manufacturers	The trade association for U.S. subsidiaries of international automobile companies. The association acts as the voice of the International Automakers in America, speaking to the public, the press, and the government.
Chemical Manufacturing Association	Represents the chemical industry on public policy issues, coordinates the industry's research and testing programs, and administers the industry's environmental, health, and safety performance improvement initiative.
Clean Air Network	An alliance of nearly 1,000 national, regional, state, and local citizens groups that work to protect human health and environmental quality.
Edison Electric Institute	The trade association of shareholder-owned electric utilities, whose members generate and distribute more than three-quarters of the nation's electricity. The institute provides information on energy and environmental issues of national importance.
Natural Resources Defense Council	Actively involved in major national environmental issues and many regional and international issues as well. Its primary strategies include scientific research, public education, lobbying, and litigation.
Resources for the Future	Nonprofit and nonpartisan think tank that conducts independent research—rooted primarily in economics and other social sciences—on environmental and natural resource issues.

Organization	Purpose
State and Territorial Air Pollution Program Administrators/ Association of Local Air Pollution Control Officials.	Association representing air pollution control agencies in 54 states and territories and over 150 major metropolitan areas. The association serves to encourage the exchange of information among air pollution control officials; enhance communication and cooperation among Federal, state, and local regulatory agencies; and promote good management of our air resources.

We also interviewed representatives from four states—California, Georgia, Illinois, and New York—and the nation's largest local program—California's South Coast Air Quality Management District. The state and local programs were chosen in coordination with EPA and the State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials to select a nationwide representation of the organizations responsible for implementing the requirements of the Clean Air Act Amendments of 1990.

APPENDIX VII

COMMENTS FROM THE ENVIRONMENTAL PROTECTION AGENCY

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 29 2000

OFFICE OF
AIR AND RADIATION

Mr. Peter F. Guerrero
Director, Environmental Protection Issues
United States General Accounting Office
Washington, DC 20548

Dear Mr. Guerrero:

Thank you for the opportunity to review your draft report entitled "Environmental Protection Agency: Clean Air Act's Implementation Status and Issues." We appreciate the difficulty of providing a broad account of the status of Clean Air Act (CAA) implementation in a single report. As the report acknowledges, the agenda set out in the CAA is virtually unprecedented in its scope and has diverse elements that involve multiple levels of government and reflect strategies tailored to different types of air pollution problems. An assessment of the effectiveness of the CAA should focus on results -- emissions reductions, air quality improvements, and protection afforded to public health and the environment. An accounting of regulations issued and deadlines met is an additional element, but should not be the primary consideration. A review of the results achieved shows that the CAA's implementation has been highly successful. By working cooperatively with our state and local partners, citizen groups and the regulated community, we, together, have significantly improved air quality in the United States through cost-effective methods. Our experience shows that cleaner air and economic growth can go hand in hand.

Progress in Cleaning the Air

To appreciate how far we have come in reducing air pollution, it is instructive to remember where we were before the 1990 amendments. There was growing concern about the increasing damage to the stratospheric ozone layer, which, among other things, protects us from skin cancer and cataracts. Acid rain essentially was unchecked, causing damage to aquatic life, forests, buildings and monuments, as well as visibility degradation and health risks from sulfate and nitrate particles. Photochemical smog, which can impair lung function, cause chest pain and cough, and worsen respiratory diseases and asthma, exceeded healthy levels in 98 metropolitan areas in 1990. Many cities did not meet the national air quality standards for the pollutant carbon monoxide, which can aggravate angina (heart pain), and also for particulate matter, which is linked to premature death, aggravation of pre-existing respiratory ailments, and reductions in lung capacity. The millions of tons of hazardous air

pollutants emitted annually in the United States were largely unregulated at the federal level. Many of these pollutants have the potential to cause cancer or other serious health effects such as nervous system damage, miscarriages or birth defects.

The CAA Amendments of 1990 passed Congress with overwhelming and bipartisan support. Since then, the CAA has enabled this nation to substantially reduce each of the major air pollution problems that faced the United States:

- Sulfur dioxide emissions, a primary precursor of acid rain, have been cut by more than 5 million tons from the 1980 level, and rainfall in the eastern U.S. is as much as 25 percent less acidic.

- The U.S. and other developed countries have ceased production of the most harmful ozone-depleting chemicals and -- provided the U.S. and the world community maintain the commitment to planned protection efforts -- the stratospheric ozone layer is projected to recover by the mid 21st century.

- Ground-level ozone pollution, particulate matter, and carbon monoxide pollution have all been reduced significantly, producing dramatic decreases since 1991 in the number of areas in "nonattainment." Between 1990 and 1997, total annual emissions of "criteria" pollutants (those governed by air quality standards) dropped by 10 million tons.

- Cleaner motor vehicles and fuels are one important reason for these air quality improvements. New cars, trucks, buses are far cleaner than in 1990 as a result of EPA emissions standards. Thirty percent of the gasoline consumed in the U.S. is cleaner-burning reformulated gasoline, which reduces emissions of smog-forming VOCs and toxics. Substantial reductions are being achieved for the first time through standards for non-road engines in locomotives, bulldozers, marine vessels and lawn and garden equipment.

- Rules issued since 1990 are expected to reduce toxic emissions from industry by 1.5 million tons a year -- eight times the reductions in industrial toxics achieved in the previous 20 years.

It is important to note that these improvements have occurred simultaneously with strong economic growth and increased productivity. EPA has sought to implement the CAA efficiently and effectively through a combination of rules, voluntary measures, market mechanisms, state partnerships, and stakeholder negotiations. The progress reflects cost-effective implementation of the CAA, as well as improvements in the efficiency of industrial technologies.

Although EPA and its state and local partners have completed much of the specific work laid out in the 1990 amendments, a great deal must still be done for the nation to achieve clean air. As GAO notes, more than 100 million Americans live in counties where the air does not meet the national air quality standards. Ground-level ozone pollution and fine particle pollution continue to pose health threats in many areas of the country, and we still have major challenges ahead to reduce regional pollution transport. Continued efforts to reduce toxic air emissions, acid rain, and threats to the stratospheric ozone layer are needed if the Clean Air Act's goals are to be achieved. One example of the work ahead is EPA's ongoing effort to propose new, more stringent exhaust standards for large diesel trucks and buses, along with requirements for cleaner diesel fuel. Although EPA has already put in place the specific standards required by the 1990 amendments, many areas of the country need additional emissions reductions from this large source of nitrogen oxides (NOx) and particulate matter.

The Report's Scope and Focus

GAO may wish to note that because its focus is the 1990 amendments, the report does not discuss all CAA implementation activities resulting from requirements established prior to 1990, or from scientific advances during the past decade. Some of these activities have affected implementation of the 1990 amendments. For example, the CAA mandates periodic review and, if appropriate, revision of national ambient air quality standards. The draft report does not discuss EPA activities to build the infrastructure for implementation of the ozone and particulate matter standards revised in 1997, or the impact of ongoing litigation on implementation of those standards. Also, a scientific consensus developed over the past decade regarding the regional nature of the ground-level ozone problem in this country and the need for substantial reductions in nitrogen oxide emissions. This eventually led EPA to issue a rule calling for regional NOx controls in the East (the "NOx SIP call"), one of the most significant CAA regulatory initiatives of the decade.

The report seems to emphasize the counting of met and unmet statutory requirements. This could lead to serious problems if the figures were used as a basis for comparing EPA's success in implementing one title of the Amendments with another. If such comparisons are included in this report, they should recognize the differences in challenges presented by different pollution problems and different programs. For example, certain programs are implemented largely by states and require extensive, continuing interaction between EPA and the nation's governors, State legislators, mayors, county officials, State and local regulators, and others on numerous complex requirements. Some programs involve especially difficult technical, policy or legal issues. Such differences must be considered in any evaluation of EPA's success in implementing the CAA.

EPA suggests that the draft report's discussion of views on the Title V operating permits program, to achieve better balance, should more fully describe benefits of that program. We will provide you with additional information on this point.

Statutory Deadlines

GAO correctly notes that EPA has completed most of the rules and other activities required by the CAA through the present. GAO also observes that many requirements were completed after the statutory deadline.

In assessing this record, EPA believes it is important to consider the environmental results mentioned above. We would also elaborate on the reasons that deadlines were missed:

- The 1990 amendments set tight deadlines for an unprecedented number of new actions by EPA, including development of major new programs (e.g., air toxics, acid rain, operating permits) and emissions standards that involved controversial, precedent-setting and complex issues important from environmental and economic standpoints. At the outset, EPA recognized that extensive involvement of state and local leaders, industry and environmental groups would be necessary if the CAA was to be successfully implemented. This collaborative approach added to the time needed to complete many rulemakings. In a number of cases, EPA conducted formal or informal regulatory negotiations with all the stakeholders prior to proposing regulations. These historic negotiations were successful in reaching agreement on several very complex programs, such as the reformulated gasoline program. The time spent in these up-front discussions, although often lengthy, paid off by getting stakeholder agreement early in the rulemaking process.

- The array of deadlines in the 1990 amendments required EPA to move forward simultaneously with states and stakeholders on multiple major rulemakings, placing multiple demands upon EPA managers and key non-EPA participants. Some programs (e.g., air toxics) involved multiple, interrelated rulemakings that were moving ahead simultaneously, and changes in one ongoing rulemaking could affect another, causing delays.

- Some deadlines were missed because the programs required by the 1990 amendments involved very complex, technical, policy and legal issues that were likely not fully understood by Congress when it established the deadlines in 1990. These issues took significant time to solve. Examples are the requirements in Title 2 that EPA establish emission standards for numerous categories of non-road engines. None of these categories (which include locomotives, construction and farm equipment, boats and lawn and garden equipment) had ever been regulated by EPA for air emissions. Thus, EPA had to identify and meet many times with industrial companies that had no prior experience in designing or manufacturing their products to meet low emission levels. Often, new technologies or variations on existing technologies had to be developed to be compatible with the specific operating characteristics

of these non-road engines. All of this took time and, for good reason, often meant that EPA missed the established deadlines.

Major competing demands were placed on EPA, states and stakeholders by CAA issues not arising from the 1990 amendments, including scientific and other issues. One example was the development of the new air quality standards for ozone and particulate matter, including an extensive scientific consultation process. In addition, EPA undertook an extensive stakeholder consultation process on implementation issues. Another was the emergence of new scientific information documenting the importance of regional ozone transport. This led EPA to extend deadlines for state submittal of ozone plans for many areas, and engaged states and EPA in a two-year process to conduct modeling studies and to study potential solutions. That process led to EPA's NOx SIP call rule, another major effort. The workload entailed with response to litigation on some rules also caused competing demands.

Some implementation activities are more important than others because they have greater impact (e.g., the NOx SIP call). The ambitious agenda in the CAA, given the reality of finite resources, inevitably required EPA to stage the timing of implementation activities to ensure that the most important activities were given priority, which resulted in missed deadlines for other activities. EPA would suggest that the draft report places disproportionate emphasis on resources relative to other reasons for missed deadlines.

CAA Implementation Statistics

At GAO's request, EPA has reviewed the counts of CAA amendment requirements developed by GAO. GAO with EPA assistance has endeavored to make these requirement counts as exact as possible given time constraints.

GAO's "Observation" Regarding Trading

EPA agrees that the acid rain program has been highly effective as well as less costly than predicted, and that its market-based cap-and-trade SO2 allowance system is a model that should be used to address additional problems when appropriate. EPA already has been working with states to apply this model to another regional air pollution problem -- NOx emissions which contribute to interstate transport of ozone pollution. The Ozone Transport Commission with EPA assistance developed a NOx budget and trading program for states in the Northeast, and the OTC and EPA are jointly implementing the trading system through an innovative partnership. Building on this effort, EPA issued a model cap-and-trade rule as guidance to assist states in implementing the NOx SIP call, which sets state NOx budgets over a broader area of the East. The experience of the acid rain program shows that this approach has potential to achieve regional reductions in an efficient and highly cost-effective manner.

We would add that trading is not the best tool for every environmental problem. In weighing the application of trading, among factors to consider are the technical and economic feasibility of monitoring or estimating emissions with sufficient accuracy to provide accountability, the significance of localized health or environmental impacts of emissions, the feasibility of obtaining agreement on emissions baselines for establishing a trading program, the viability of the emissions market for the universe of sources in question, and the administrative feasibility of allocating and tracking emission allowances or credits. States and EPA have a broad menu of regulatory and non-regulatory tools, each with strengths and weaknesses. For each environmental problem, a choice among these strategies should be made based on the particular circumstances of that problem.

Implementation Flexibility

EPA has endeavored to implement the 1990 amendments in a manner that provides flexibility on ways to achieve the necessary air pollution reductions, with accountability for the results. An excellent example (though by no means the only way we have promoted flexibility) is our expanded use of emissions averaging and trading. Tested in the 1980s, emissions averaging and trading today are standard tools of the air program. Beyond the NOx and acid rain programs mentioned above, EPA has used trading to provide flexibility in the phase-out of CFCs and in many national rules to reduce emissions from vehicles, engines and fuels. One recent example is the recently finalized Tier II/gasoline sulfur rule to reduce emissions from cars and light-duty trucks, which allows averaging, banking, and trading to provide additional flexibility to both vehicle manufacturers and gasoline refiners. We also have provided compliance flexibility through averaging and/or other means in numerous air toxics emissions standards.

Because states have primary responsibility for implementation plans to achieve national air quality standards, EPA has assisted states in establishing trading and other economic incentive programs, such as California's RECLAIM program for reducing sulfur dioxide and nitrogen oxide emissions and the OTC NOx program mentioned above. EPA also has issued guidance to allow states to count voluntary measures to reduce emissions from transportation sources -- such as ridesharing programs and ozone action days -- toward their state planning requirements under the Act.

Detailed comments on the draft report are included in an enclosure. Thank you again for the opportunity to comment.

Sincerely,

Robert D. Brenner (for)

Robert Perciasepe
Assistant Administrator

Enclosure

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LETTER SUBMITTED FOR THE RECORD FROM SENATOR BAUCUS

ENVIRONMENTAL PROTECTION AGENCY,
OFFICE OF AIR AND RADIATION,
Washington, DC, May 16, 2000.

Mr. PETER F. GUERRERO, *Director,*
Environmental Protection Issues,
U.S. General Accounting Office
Washington, DC 20548

DEAR MR. GUERRERO: Thank you for the opportunity to comment on the draft General Accounting Office (GAO) report entitled, "Air Pollution: Emission Sources Regulated by Multiple Clean Air Act Requirements."

In developing the Clean Air Act (CAA), Congress created several programs targeted at a variety of air pollution problems, recognizing that effective strategies would need to be tailored to each problem. The multiple provisions of the law reflect real-world complexities such as different types of pollutants (e.g., criteria versus toxic pollutants; local versus regional threats), differences in economic and technical feasibility of pollution controls for new and existing sources, the potential for pollution increases when existing plants are modified, and the multiple health and environmental effects from the same pollutant. For example, Congress found that the Act's program for protecting public health against local health threats from sulfur dioxide was not an adequate response to the regional acid rain problem caused by the same pollutant.

GAO correctly points out that industries such as utilities and petroleum refiners must comply with emission reduction requirements under more than one CAA program. This is because these facilities release a variety of pollutants, often in large amounts, that can contribute to a variety of different health and environmental problems. Even individual units within a facility often emit a variety of pollutants. In addition, the complexity of large industrial facilities such as petroleum refineries and chemical plants—which can have multiple types of processes with literally hundreds, or even thousands, of emission points—can lead to different requirements for different types of processes or emission points at the same site.

In carrying out Act, the Environmental Protection Agency (EPA) has helped industries subject to multiple requirements in a Amber of ways—by providing increased flexibility in regulatory requirements, by involving stakeholders in developing integrated strategies and new rules, and by conducting several industry-specific initiatives Also, the operating permits program, which brings a facility's CAA requirements together in one place, is designed to make it easier for facilities to understand and comply with multiple requirements.

The draft GAO report focuses on two of EPA's industry-specific initiatives. But, it does not give a full picture of the ways in which EPA, working closely with affected industries, reduces potential inefficiencies in cases where multiple CAA requirements may apply. An overview is presented below.

Increased Flexibility for Industry

EPA has used a variety of regulatory approaches that provide industry with flexibility on ways to achieve air pollution reductions, while still providing accountability for the results. Among these are numerical emission limits, multiple compliance options, and averaging and trading programs. By not mandating use of a particular control technology, flexible rules allow a facility to devise compliance strategies that satisfy the purposes and emissions reduction requirements of different air programs, including multiple requirements where they may exist.

A prime example of this flexibility is the expanded use of emissions averaging and trading programs. EPA'S acid rain program, which is a market-based, cap-and-trade allowance system, has been highly effective and far less costly than originally predicted. Building on this experience and efforts by the Northeast Ozone Transport Commission to reduce nitrogen oxides (NOx) through a trading program, EPA recently issued a model trading program for states to achieve regional NOx reductions over much of the Eastern United States. EPA has issued broader guidance for states on how facilities can use averaging and trading to achieve criteria pollutant reductions needed to meet air quality standards. In some cases, EPA has worked with states to set plant-wide limits that work as a cap on total amounts of emissions from an individual plant site, but allow the plant flexibility in meeting that overall limit In numerous air toxics emissions standards, the Agency has provided compliance flexibility through averaging and other means.

Stakeholder Involvement to Promote Program Integration

Since 1990, EPA has increased its efforts to involve stakeholders. including affected industries, throughout the process of developing regulatory requirements and establishing implementation strategies. This involvement results in better coordinated programs and requirements.

An example was EPA's efforts to develop an integrated strategy for implementing the 1997 national air quality standards for ozone and particulate matter along with regional haze program EPA spent over 2 years working with over 115 representatives from states, tribes, industry, environmental groups, and other Federal agencies seeking advice on innovative, flexible, and cost-effective implementation strategies to integrate ozone, particulate matter and regional haze issues. Based on these interactions and expert advice, EPA has developed strategies that incorporate market-based systems, positive incentive systems, and a mixture of national, regional, and local emission reduction measures.

EPA also has worked with affected industries to coordinate requirements of new rules with other CAA programs As GAO notes, EPA has coordinated development of several toxics rules with requirements for control of smog-forming volatile organic compounds (VOCs), reducing complexity and avoiding potential duplication. In the case of aerospace and shipbuilding and coating operations, EPA set equivalent limits for VOCs and toxic air pollutants. In the case of pharmaceutical production, EPA's air toxics rule gives the industry flexibility to comply either with new source performance standards for storage tanks, or storage tank requirements in the toxics rule. EPA a15Q worked with the wood furniture manufacturing industry to avoid conflict or duplication between toxics and VOC requirements.

In evaluating the need for future regulatory requirements, the Agency considers current requirements placed on a particular industry by state, local or other Federal measures. For example, EPA's regional NOx program builds off current and projected NOx reductions from EPIL's acid rain program.

Operating Permit Program

The operating permit pro gram is designed to make it easier for sources to understand and comply with control requirements under the CAA. For each major facility, the Title V permit will consolidate all of its CAA air pollution control requirements into a single document.

In addition, the permitting process can serve as a forum for consolidating multiple applicable requirements into a single set of streamlined permit conditions for a facility, which can reduce compliance costs associated with monitoring, record keeping and reporting. EPA has issued guidance to states (known as "White Paper #2") that outlines ways to do this. EPA has helped facilitate the issuance of permits in California and Oklahoma where national air toxics emissions standards, new source performance standards, and state implementation plan rules were consolidated into one set of permit conditions using this approach. Other states also are using Title V permits in similar ways, and EPA expects that the use of this approach will become more widespread as more permits are issued with successful permit streamlining examples.

Industry Sector Initiatives

As GAO notes, EPA also has pursued and is continuing to pursue initiatives that involve exploring ways to consolidate or coordinate multiple requirements with a variety of industry sectors.

Detailed comments on the drain report, including clarifications and corrections, are included in an enclosure to this letter. Thank you again for the opportunity to comment.

Sincerely,

ROBERT PERCIASEPE, *Assistant Administrator.*

STATEMENT OF JAMES E. ROGERS, VICE CHAIRMAN, PRESIDENT, AND CHIEF EXECUTIVE OFFICER, CINERGY CORP.

Good morning. My name is Jim Rogers, and I am the Vice Chairman, President, and CEO of Cinergy Corp. I am pleased to be here today to testify on the importance of developing an integrated air emission strategy for electric generating power plants.

Background on Cinergy

As background for my testimony, let me tell you about Cinergy. We are one of the nation's leading diversified energy companies, with a total capitalization of $7.2 billion and assets of $10 billion. Cinergy's operating companies, The Cincinnati Gas & Electric Company and PSI Energy, Inc., serve more than 1.4 million electricity customers and 478,000 gas customers in Indiana, Ohio, and Kentucky. Cinergy owns or operates more than 16,500 megawatts of electrical and combined heat plant generation that is either operational or under development. Approximately 11,000 of those megawatts comprise our core system of 14 baseload stations and seven peaking stations located in the three States where we currently have retail customers. Cinergy is active in U.S. power and natural gas markets and maintains a 24-hour-a-day, 7-day-a-week trading operation. The company's international business unit, Cinergy Global Resources, has assets in power generation, transmission, and distribution projects in the Czech Republic, Spain, the United Kingdom, Zambia, Estonia, and the United States.

While recently Cinergy has made substantial investments in renewables, combined heat and power units, micro turbines and fuel cells, most of the electricity sold by Cinergy's U.S. operations is produced at coal-fired units. Coal is a reliable, widely

available and low cost energy source, particularly in the Midwest. Coal-fired generation now accounts for over 55 percent of the nation's electricity supply over 80 percent throughout the Midwestern States located in the East Central Area Reliability region (ECAR) and Cinergy believes it will and must continue to play an important role well into the future.

I want to personally compliment both Senators Smith and Inhofe for their interest in an integrated emissions reduction strategy for the electric power sector. Senator Smith led the way earlier this year by initiating stakeholder discussions. Today's hearing also represents another important step by Senator Inhofe to review key Clean Air Act implementation issues.

We at Cinergy have been pursuing the concept of a comprehensive environmental strategy for coal-fired power plants for well over a year. We firmly believe that a comprehensive strategy will yield the greatest environmental benefits for the lowest costs to consumers. And we are not alone in our thinking. The Edison Electric Institute (EEI), whose Environmental Policy Committee I currently chair, has begun both internal and preliminary external discussions with various stakeholders. We are pleased that the Vice President recognized the benefits of this approach in his Earth Day remarks. Further, several specific companies and organizations are following this issue closely as it underscores the current policy constraints on energy system modernization and efficiency gains. Cinergy views all these interests as evidence of support for this subcommittee's as well as the full committee's attention to this matter and of the need for congressional action.

The Importance of An Integrated Emission Reduction Strategy for the Generation Sector

According to data provided to FERC, our industry spent over $32 billion for air pollution controls between 1976 and 1996. During this period, power plant emissions declined substantially even though electricity generation and use increased as a result of economic growth. Despite this progress, we recognize that the public expects additional air quality improvements and that power generators will need to do their share. We also recognize that the costs of further emission reductions to our industry will be significant, but that we have an ongoing responsibility to make the investments necessary to achieve cleaner air.

The real question, I submit, is whether our nation has the right strategy for meeting environmental goals while maintaining a competitive and efficient energy sector. Today's answer to this question is not reassuring. In the current regulatory landscape, U.S. power plants face an array of existing and proposed emission controls for four key substances: sulfur dioxide ("SO_2"), nitrogen oxides ("NOx"), mercury, and carbon dioxide ("CO_2"). Please see Charts "A" and "B" appended at the end of this statement for further details (courtesy of the Edison Electric Institute, March 2000). Federal and State agencies, and even neighboring countries, are seeking to regulate these substances through many initiatives, each involving different sources, control levels, implementation mechanisms, and compliance dates. These initiatives are not necessarily coordinated and in many cases conflicting. The timing, impact, and cost of any combined emission controls that may be required are nearly impossible to predict with any accuracy. As a result, the electric power industry faces enormous uncertainties as it contemplates long-term investment decisions involving billions of dollars. Inevitably, the lack of coordination and consistency among the many existing and proposed initiatives will mean that energy consumers as well as our shareholders will bear far higher costs than necessary to achieve clean air.

The many unresolved emission issues affecting the power generation sector have also led to protracted conflict in the courts and the political arena. A divisive climate now exists in which region is pitted against region, environmental groups are pitted against industry, and EPA is pitted against individual States and power producers. Continuation of this divisive climate may well mean that our collective energies are focused more on litigation than on emission reductions. This serves absolutely no good public policy purpose.

Is there a better way? Cinergy does not believe that we can fix the existing system through further piecemeal action. However, we do believe that legislation holds great promise which, if properly crafted, can establish a comprehensive air quality framework for the power generation sector which meets both our energy and environmental objectives. In Cinergy's judgment, this legislation should focus on four key objectives:

- Setting appropriate emission reduction goals that address long-term air quality needs and assure protection of human health and the environment.
- Creating a stable and predictable climate for capital investment in emissions controls and in new and upgraded generation facilities to meet current and future requirements for electric power.

- Implementing new reductions in a flexible, cost-effective manner which preserves the benefits of efficient and reliable power production and ensures the greatest environmental return possible on our compliance investment.
- Providing electric utilities with the proper incentives to encourage the smooth transition to cleaner, more efficient generating units.

I recognize that developing legislation which meets these goals will require hard work by Congress and many different stakeholders. However, Chairman Smith has already begun this process by announcing a new legislative initiative for the power plant sector and, with his and this subcommittee's leadership, I am very optimistic we can be successful.

The Current Regulatory Landscape

Congress last amended the Clean Air Act (CAA) in 1990. Although these amendments were extensive, Congress could not have foreseen the problems created over the past decade by the Act's often conflicting requirements, particularly as electric utilities reinvent themselves to face deregulation and the new competitive reality. The 1990 Amendments do not set specific air quality goals for the generation sector or provide a coordinated approach for reducing power plant emissions over time. While EPA has attempted to fill these gaps administratively as new emission reduction challenges have emerged, its efforts have achieved only limited success. Statutory deadlines and other constraints have discouraged coordinated strategies for controlling different pollutants in the most cost-effective manner and limited the use of emissions trading and other mechanisms for reducing emission control costs. Meanwhile, without a comprehensive legislative mandate, EPA has pursued a piecemeal approach to power plant regulation rather than a multi-pollutant strategy that would maximize environmental benefits while reducing costs to producers and consumers.

The current debate over air emission controls for power plants focuses on five main issues:

- Nitrogen oxides. Because NOx emissions can contribute to the formation of ozone, NOx control has been one element of State strategies to attain EPA's 1-hour standard for ozone. Title IV of the CAA also mandates NOx controls to address acid rain concerns, and substantial NOx reductions are now being implemented by large electric generating plants in response to Phase 2 Title IV requirements.

EPA maintains that long-range transport of NOx emitted from power plants in the Eastern U.S. is contributing to ozone non-attainment in downwind States. Consequently, EPA issued a 22-State SIP call in 1998 that seeks to create a regional NOx control program. Under this program, power plants would be required by 2003 to install stringent NOx controls that, by EPA's own estimate, would impose industry-wide capital costs of $14.1 billion. Adding to the uncertainty, EPA has moved ahead to impose parallel NOx control requirements in response to petitions filed by the Northeastern States under Section 126 of the CAA. EPA's Section 126 rule, which is intended to impose federally enforceable controls to "backstop" the SIP call, imposes a separate regime of NOx reductions.

Cinergy continues to be willing to achieve substantial additional NOx reductions beyond Title IV in an orderly manner, but we now find ourselves confronting a monumental compliance challenge under an impossibly tight time-frame with no certainty about our own or our States' legal obligations. Cinergy alone could incur control costs of over $700 million under the SIP call, which could escalate depending on how much of a premium we must pay to secure necessary trade laborers and materials. We are further troubled by the very real threat to system reliability that is anticipated as essential generating units must be shut down for extended periods to install controls at a time when there is a historically small reserve margin in the region.

Furthermore, even deeper NOx reductions are possible in the near future in response to EPA's new 8-hour ozone standard for nonattainment areas, which is currently being reviewed by the courts. Such additional requirements could result in new NOx mandates in conflict with the NOx control strategies currently being pursued by States and industries in response to EPA's SIP Call. Finally, while EPA currently is implementing NOx controls for the ozone season, this does not rule out further action to require annual controls to address visibility and acid deposition issues.

- Sulfur dioxide. Despite considerable progress in reducing SO_2 loadings under the Acid Rain provisions of Title IV of the CAA , including further reductions being made this year under Phase II , additional SO_2 controls are under consideration for a variety of reasons: (1) to support attainment of the new fine particulate standard (assuming it is ultimately upheld by the courts), (2) to implement the emission reduction goals set by EPA's regional haze strategy, and (3) to address continuing con-

cerns about acidification of lakes and streams . However, there is no consensus at this time on the stringency and timing of further SO_2 controls. Moreover, if additional SO_2 controls are required, it is unclear whether EPA could or would build on the proven and cost-effective emissions trading program established under the Title IV acid rain provisions.

- Mercury. Section 112(n) of the CAA requires EPA to study the economic and environmental impacts of power plant emissions of mercury and other pollutants and to regulate these emissions if it determines that regulation is "appropriate and necessary." EPA is expected to make this determination later this year. Depending on what decision EPA makes—and there is considerable evidence that the known health effects of mercury do not warrant regulation at this time—EPA might attempt to impose controls on power plant sources under the Title III air toxics program. Under this program EPA could impose expensive unit-by-unit control requirements as soon as 2007. There are currently no commercially proven technologies for removing mercury during coal combustion, so it is not possible at this time to plan for the capital costs or the deployment of control equipment. If we are going to face new mercury requirements, we should have the lead time to develop new mercury removal technologies, coordinate mercury reductions with emission control programs for other pollutants, and develop emissions-trading systems which achieve overall mercury reductions at the lowest possible cost. The current statutory framework would rule out these options.
- Carbon dioxide. I have long expressed concerns with the Kyoto Protocol and am very concerned that the framework it creates is unworkable and needlessly expensive. Also, I do not believe that this legislative effort is the place to resolve disputes about the agreement. Still, the prospect of future CO_2 emissions controls is a major source of uncertainty for the power generation sector. If CO_2 requirements are imposed that compel massive expenditures by companies to switch coal-fired power plants to natural gas or to purchase expensive allowances, the sizable investments we will make to install pollution control equipment over the next 10 years could be wasted.

For these reasons, Cinergy could support a CO_2 component in this bill, especially if it helped encourage the further commercial development of carbon-friendly technologies such as solar and wind power, micro turbines, fuel cells that are the key to making real progress on this issue. I believe that with your leadership and a little creativity, the stakeholders here can create a program fostering technological innovations and reducing CO_2 emissions, while leaving for another day the question of Kyoto implementation.

- New Source Review. The New Source Review (NSR) and Prevention of Significant Deterioration (PSD) permitting programs were intended to "backstop" Federal and State emission reduction efforts by minimizing large emissions increases from new sources or "modified" existing sources. From an industry point of view, these programs have the unintended consequence of stifling modernization and innovation as companies try to navigate the Byzantine rules that have grown up around the program. Comprehensive legislation will allow Congress to reexamine the role of NSR/PSD in achieving CAA air quality goals for power plants. Simply put, if Congress were to put in place a system of multi-pollutant emission reduction targets for power plants, the need for an NSR/PSD backstop for covered units would be dramatically reduced. I therefore urge you to include a new, simplified new source review program in any bill.

Why The Absence of An Integrated Air Quality Framework Is Harming Industry and Consumers

The fragmented regulatory framework which now applies to electric power plant emissions is blocking progress toward our long-term energy and environmental goals in several different ways:

- Power producers must make costly control decisions for some pollutants without knowing what requirements will apply to other pollutants. Without understanding the full range of emission reductions that will be needed at their plants, generating companies may commit to controls that are effective for some pollutants but not others, resulting in unanticipated and perhaps avoidable costs when later requirements take effect. Alternatively, they may decide to invest in continued operation of plants that might be retired or repowered if the full extent of environmental control costs were known in advance.
- Because the compliance dates for different control requirements are highly uncertain, electric generators cannot develop comprehensive long-term capital investment strategies. The lack of clarity regarding what emission reductions will be required and when they will be implemented has made long-term capital planning dif-

ficult if not impossible a serious problem in an industry which is capital-intensive and needs long lead-times for plant construction and modification.

- The poor alignment of different emission reduction initiatives discourages cost-effective multi-pollutant approaches. Some control technologies are likely to be beneficial in controlling multiple pollutants, but these co-benefits will not be realized unless the compliance dates and control levels for these pollutants are coordinated.
- The potential for multiple emission reduction requirements for the same pollutant adds uncertainty to capital investment decisions and will unnecessarily increase compliance costs. For several pollutants, different levels of control and compliance schedules are being adopted on the State and Federal level and even under different EPA programs. For example, requirements for NOx reductions are in place or under consideration by EPA under CAA Title IV, the 22-State SIP call and §126 rulemaking, the regional haze rule, the NSR enforcement initiative, and implementation strategies for the new 8-hour ozone and $PM_{2.5}$ standards not to mention State programs like the MOU for the Ozone Transport Region (OTR) and treaty negotiations between the U.S. and Canada. Electric power producers faced with these multiple requirements will have no assurance that control strategies they adopt for NOx today will be viable 2 years from now, let alone the 10 or so necessary to recoup the investment. The same uncertainties exist for SO_2 and mercury, both of which could be subject to multiple control regimes at the State and Federal level.
- There is no consistency in the use of trading programs across pollutants, adding complexity to the implementation process and increasing compliance costs. Congress established an allowance trading program for Title IV SO_2 reductions in the 1990 CAA Amendments but did not follow a similar approach for other pollutants. Congress did not give EPA specific authority to implement a national NOx trading program in 1990; thus, EPA has adopted a "model" trading program under the NOx SIP call. The adoption of this program has been left to the States, encouraging a patchwork of trading regimes that will preclude companies from initially being able to rely on a liquid multi-state trading market since various State trading rules won't be sufficiently known in advance of the compliance deadline to provide for planning certainty. The technology-based provisions of Title III appear to rule out allowance trading for mercury (assuming EPA decides to regulate this pollutant) even though the nature of mercury emissions and the range of sources may be ideal for a trading program to moderate the enormous costs of mercury controls. And since no framework now exists for CO_2 emission reductions, the availability of trading and other market-based mechanisms while generally viewed as essential for cost-effective implementation remains highly uncertain.
- Because multiple initiatives are being pursued at the Federal and State level without any overall coordination, no effort has been made to set emission reduction priorities which assure that available resources are used as cost-effectively as possible. The numerous ongoing or proposed programs to control NOx, SO_2, and mercury at the national and State levels are largely intended to achieve unrelated objectives and have been developed in isolation from each other. Accordingly, neither the control levels nor the compliance schedules for these programs reflect an assessment of their relative importance in addressing environmental problems and their potential benefits in relation to the costs incurred. Thus, there is no assurance that the current piecemeal approach to electric power plant regulation will address the most important air quality concerns or provide the largest possible return on the industry's sizable investment in pollution controls.
- Conflicts exist between the goals of different air quality initiatives for electric power plants and between these initiatives and other important energy policy objectives. For example, EPA's expansive interpretation of NSR/PSD requirements emphasizes the installation of maximum achievable control technology, whether or not needed for air quality protection, while other initiatives for the same pollutants, like the NOx SIP call and regional haze rule, are driven solely by air quality concerns. Similarly, the lengthy delays and enormous control costs associated with NSR/PSD permitting are discouraging investments in improved power plant efficiency which can lower energy costs, introduce promising new technologies, and ultimately enhance environmental performance.

Benefits of an Integrated Strategy

Given the need for a coordinated multi-pollutant framework for power plant emissions, a comprehensive legislative approach targeted at the generation sector is the path most likely to achieve the goals of industry, the public, and policymakers. Such legislation would have the following benefits:

- Air Quality Benefits provides emission reductions needed to achieve existing or anticipated air quality goals to protect public health and the environment as opposed to requiring controls based on technological feasibility.

- Comprehensive addresses all the major air quality challenges affecting power plants, including NOx, SO_2, mercury, CO_2, and NSR.
- Planning Certainty creates a stable environment for capital investment by providing long-term certainty (10–15 years) about the industry's emission reduction obligations.
- Cost-effective uses trading and other market-based mechanisms on a comprehensive basis to ensure maximum emission reductions for minimum cost.
- Flexibility provides electric power generators with the ability to make prudent investments in plant efficiency while assuring that air quality needs are met.
- Eliminate Regional Conflicts with a clear emissions control road map to remove ambiguities in current law, interstate disputes and costly litigation can be curbed.
- Adequate Lead Time establishes reasonable timetables for implementation and aligns these timetables across pollutants so that long-term investments in control technology can be made prudently and economically.
- Innovation encourages modernization and technological innovation in the generation industry, reducing the cost of electricity and enhancing environmental performance.
- Reliability enables pollution controls to be implemented in a phased manner which does not jeopardize system reliability.
- Energy Diversity avoids imposing prohibitive costs on any one type of generation, thus maintaining a diverse mix of fuel sources, including coal, natural gas, oil, and non-fossil energy.
- Legally Authorized provides a clear, well-defined legal framework for power plant regulation, reducing uncertainty and minimizing litigation.

Conclusion

Mr. Chairman, let me reiterate our strong support for your continued examination of Clean Air Act issues, and specifically for holding today's hearing on efforts to develop a comprehensive legislative framework for controlling electric power plant air emissions. We believe that, if properly crafted, such legislation would provide substantial benefits to both industry and the environment. We recognize that development of such legislation will require hard work and considerable dialog among stakeholders, and we will work with this subcommittee and the full Environment and Public Works Committee to move this process forward. Thank you for this opportunity to present our views.

TESTIMONY OF CHARLES D. MCCRARY PRESIDENT, SOUTHERN COMPANY GENERATION

Chairman Inhofe, Senator Graham and members of the subcommittee, it is a pleasure for me to present testimony to you on significant issues related to the reauthorization of the Federal Clean Air Act specifically as they relate to the electric power generation industry. There are few industries as heavily regulated under Federal, State and local environmental laws as electric power generation. The industry has made remarkable strides in providing reliable economic electric power to a growing economy while steadily improving its environmental performance and reducing emissions. There is growing pressure at many levels for the industry to reduce its environmental impact even further. ? If; is certainly appropriate for this subcommittee to explore ways to improve thus environmental performance of our electric generation infrastructure while at the same time making sure that we do not disrupt the supply of economic energy that is so necessary for our continued economic growth.

I am President of Southern Company Generation, which provides services to the fossil and hydro generation assets owned and operated by the operating companies of Southern Company in our traditional Southeastern U.S. service area. Southern Company is the largest generator of electricity in the United States including operating about 30,000 Megawatts of fossil-fueled generation in the Southeast. In this area, encompassing more than 120,000 square miles, Southern Company also operates 5800 Megawatts of nuclear capacity and 2700 Megawatts of hydroelectric capacity. We serve 3.8 million retail customers in this area through our operating affiliates: Alabama Power, Georgia Power, Gulf Power, Mississippi Power, and Savannah Electric.

About 70 percent of Southern Company's generating capacity is fueled by coal, which is the most abundant domestic supply of energy for electricity generation. In Act coal is used to generate 55 percent of the electric energy in the United States and its ready availability and low cost have been key factors in providing an eco-

nomic supply of electric energy to fuel America's growing economy over the last decade.

Background There are presently over 25 Federal programs that regulate air emissions from electric generating plants and some of these programs are over 30 years old. (See Figure 1) The 1977 and 1990 amendments to the Federal Clean Air Act set up a structure for requiring reductions of air emissions along with technology requirements, and very stringent permitting and monitoring requirements. Title IV of the 1990 amendments required a 50 percent reduction in sulfur dioxide emissions and a 2 million-ton reduction of nitrogen oxide emissions from electric generating plants. Further reductions of nitrogen oxide emissions are occurring under the ozone non-attainment provisions of Title I of the 1990 amendments.

The electric generating industry, and specifically Southern Company, has stepped up to the plate and met the challenge of reducing emissions as required by legislation and the follow-on regulatory programs. We have accomplished this by taking advantage of lower than projected costs for low-sulfur coal and by increased competition in coal transportation. Southern Company has also harnessed the power of the marketplace by playing a leading role in developing an emission trading market in sulfur dioxide and been an industry leader in the development and use of advanced emissions controls.

These reductions in emissions have occurred while the generation of electricity and the use of coal has increased to fuel a growing economy. Figure 2 shows that over the last 30 years America's growth in Gross Domestic Product (GDP) has been almost exactly matched by the growth in sales of electricity. While this has occurred, however, industry wide emissions of sulfur dioxide and nitrogen oxides have gone down. (See Figure 3)

In the case of Southern Company, while our generation is projected to increase by 49 percent between 1990 and 2010, our emissions of nitrogen oxides and sulfur dioxide are both projected to decline by about 42 percent. Our emission rate or emissions per unit of product are projected to decline even further.

These reductions include our commitment in Alabama and Georgia to assist in those State's efforts to demonstrate compliance with the 1-hour ambient ozone standard. We will spend over $1 billion in those States on control technology for further reductions of nitrogen oxides. This involves the installation of selective catalytic reduction technology at seven units in Georgia and one unit in Alabama as well as burner modifications at numerous other plants. This cost means that in the case of Georgia, 85 percent of the State's reductions of nitrogen oxides under its recently revised State Implementation Plan will come from power plants while those plants only represent some 40 percent of the total emissions.

There will also be a steep increase in the use of lower emitting natural gas in Southern Company's future generating fleet. By the year 2010 natural gas will make up 26 percent of our total fuel mix as compared to 2 percent in 1998. Coal is expected to fall from 77 percent of our fuel mix in 1998 to 58 percent in 2010. This does not represent a decrease in our use of coal but reflects the fact that almost all of the growth in demand over the next decade is expected to be met with natural gas fired technology.

Regulatory Agenda

Even with this record of performance, pressure has built for even more reductions in emissions from coal fired generation. An aggressive regulatory agenda has been advanced by the EPA that appears to be targeted specifically at coal fired generation. There are over a dozen proposed or pending regulatory actions that could drive up the cost of coal fired generation or make it impractical. These include the Regional NOx SIP Call, the adopted (though remanded) new 8-hour ozone and fine particle standards, and a proposal to adopt a radically different approach to applying new source review at existing facilities. (See Figure 4) The possible adoption of the Kyoto Protocol or other mandatory program for the reduction of carbon emissions would also demand a large replacement of coal-fired generation with natural gas or some other less carbon intensive fuel.

An issue that greatly concerns us is EPA's recent actions on New Source Review. For several years EPA has been considering modifications to the existing new source review program in ways that would limit the ability of utilities to perform routine maintenance on power plants to ensure their safety and reliability without triggering extremely costly NSR requirements. To meet EPA's goals in a more cost effective manna,-' Southern Company and other utilities in the Utility Air Regulatory Group (UARG) in the spring of 1999 developed an alternative proposal that would ensure the reduction of generating plant emissions beyond current requirements over time.

EPA never engaged in serious negotiations over the UARG proposal but in November 1999 filed lawsuits against Southern Company and seven other utilities al-

leging numerous past violations of new source review requirements. Under EPA's interpretations, new source review would be triggered by many common routine maintenance operations including operations that improve plant efficiency. Trying to retroactively apply a new interpretation to actions clearly considered acceptable in the past has resulted in litigation that is diverting major amounts of time and other resources that could be used more productively in working together to solve problems. In addition, future efficiency and reliability improvements are now being discouraged.

These issues can all be addressed but it is extremely important that it be done in an orderly manner that avoids threatening the continued economic supply of electric energy. The potential requirements, as currently being applied, are often duplicative, piecemeal and do not allow time for the design and installation of multiple additional pollution control systems. In many cases decisions to install pollution control equipment can be rendered uneconomic in just a few years due to future regulations. For example, the decision to install flue gas desulfurization to remove sulfur dioxide may be ultimately be uneconomic with the prospect of some future program to reduce carbon emissions, which could require the retirement of coal units to be replaced with natural gas.

Clean Air Act Reauthorization

You have asked me here today to testify about "incentives" for utility emission reductions in regard to the reauthorization of the Clean Air Act. There certainly are many challenges ahead for the electric generation sector as I have discussed. I am not here today however to tell you that these challenges are due to the Clean Air Act being broken. In fact Southern Company thinks that the foundation for the Act is sound. The goals and objectives are clear and the processes that are set forth for the EPA to follow in adopting standards and regulations are comprehensive and allow for the best decisions to be made to protect the public health and welfare. Deliberations on reauthorization of the Clean Air Act should examine both the strengths and weaknesses of the Act and not focus only on what to "fix".

We believe that most of the problems related to the future regulatory agenda for electricity generation stem from the EPA's failure to follow the proper procedures and appropriately apply available scientific information in implementing the Clean Air Act. They also have improperly revised the historic application of rules to create wholly new interpretations of existing law. Recent court actions have supported this view with several rulemakingsbeing remanded due to EPA's failure to follow proper procedure. Other potential regulatory conflicts we ark facing could have been avoided if EPA had more closely followed the recommendations from the Agency's own scientific advisory committees.

Alternative Approaches

Some parties have espoused changes in the Clean Air Act and other Federal laws that would constitute alternatives to the way that emissions from electric generating plants are now regulated. These alternatives deserve inquiry and we agree that the subcommittee should include them in its deliberations on reauthorization of the Act. The examination of these approaches must include looking at ways to meet clean air goals in the most cost effective and efficient manner possible. The benefits of alternative legislative approaches should be compared against the provisions of the existing Act as intended by Congress.

Some examples of alternative approaches that have been discussed include:

Comprehensive Approach

A proposal to develop a comprehensive package of emission reduction requirements that would combine many of the pending and proposed regulatory programs has been suggested by some in the industry. It is argued that this could provide some efficiency as compared to an unorderly pollutant by pollutant approach. It is also believed that this approach could provide some regulatory "certainty" for a period of time during which capital investment decisions could be made. This general concept has been discussed in several forums and we feel that there are potential positives but also potential hurdles to this approach. Positives include possible cost savings from a multi-pollutant approach compared to command and control for individual pollutants on single generating units at different timelines. Issues to overcome include ensuring that such an approach does not codify requirements that could not otherwise be justified on scientific or economic grounds, that deadlines make sense from a reliability and economic standpoint, ensuring that "regulatory certainty" could in reality be achieved, and reaching agreement on a large number of other details that are likely to be controversial.

Financial Incentives

The adoption of financial incentives to encourage cleaner generation and the installation of emission controls has been urged by some. Examples include:

1. Investment Tax Credits
2. Production Tax Credits
3. Accelerated Depreciation
4. Grants, Low interest loans and tax exempt bonds Individually or in combination such proposals could provide an incentive to early reductions by generating companies or help to mitigate the impacts of regulatory requirements.

Advancement of New Technology: Proposals have been made to facilitate the development and installation of new technologies. At Southern Company we believe that the development and commercialization of advanced technologies holds the key to improving the environmental performance of electricity generation. We have been leaders in the Department of Energy's Clean Coal Technology demonstration program and currently operate DOE's Power Systems Development Facility in Wilsonville, Alabama. The PSDF is the nation's premier testing and development site for the demonstration of technologies that increase the efficiency and environmental performance of coal in the generation of electric energy. Our goal is to demonstrate technologies that ultimately will mean coal fueled generating facilities that are as clean as natural gas fired plants.

Southern Company is also a leader in the development of distributed generation options including fuel cells and micro-turbines. We have developed partnerships with some of our key commercial customers to demonstrate these technologies including the installation of a 250-kilowatt molten carbonate fuel cell at a Daimle? Chrysler plant near Tuscaloosa, Alabama.

Principles for Clean Air Programs

We believe that the development and implementation of any clean air program that applies to the electricity generation sector should include certain common principles. These principles will help to ensure that improvements in environmental performance will result in real enhancements of environmental quality in the most cost-effective manner possible. Most of these could be incorporated under the provisions of the existing Clean Air Act. They are:

Any new program for controls must be based on sound peer-reviewed science and an accurate assessment of the environmental improvements expected from existing regulatory programs.

Targets and timetables for emission controls should reflect environmental needs and priorities and not controls for controls sake or a "one size fits all" approach.

- Air quality control programs should consistently utilize unencumbered market based trading systems. The SO_2 control program under Title IV of the 1990 Amendments has been very successful in accelerating emission reductions and minimizing costs and we should build on the success of those provisions.
- Any control program should allow a source to meet reduction requirements in the most cost-effective and flexible manner possible and avoid unit-by-unit technological controls.
- Compliance with new emission reduction requirements should be timed to recognize the size of the generating fleet and phase in compliance requirements over a long enough period to allow the orderly installation of controls and the avoidance of a supply disruption.

Summary

Southern Company and the electric utility industry have made tremendous strides in improving the environmental performance of electricity generation. Emissions have been reduced and the quality of our air and water have substantially improved. This has occurred even while electricity generation and the use of coal has increased. Southern Company is committed to continuing to improve environmental quality in the areas that we serve. The future regulatory agenda put forth by the EPA however will present great challenges in ensuring that we can continue to utilize coal, the most abundant domestic energy supply in the generation of economic electric energy. This is not due to the failure of the Clean Air Act but the failure of EPA to follow the proper procedures and effectively utilize its discretion under the Act in making regulatory decisions. There are numerous proposals to amend the Clean Air Act to implement alternative approaches to regulating the electric generating industry. All of these concepts should be examined against the benefits of the implementing the existing Act in a proper manner.

Southern Company is committed to playing a constructive role during the process of reauthorizing the Clean Air Act. We will continue to work with Congress, EPA,

States, courts and other interest groups to meet the challenges of maintaining a clean and safe environment and an adequate and affordable supply of energy.

STATEMENT OF FRANK CASSIDY, PRESIDENT, PSEG POWER LLC

Mr. Chairman and members of the subcommittee, I am pleased and honored to appear before you this morning to represent my company, PSEG, and our coalition, the Clean Energy Group.

The Clean Energy Group members are Consolidated Edison Company, KeySpan Energy, Niagara Mohawk Power Corporation, Northeast Utilities, PECO Energy, PG&E Generating Company, Sempra Energy, and my company PSEG. We share a commitment to providing clean energy and adopting progressive environmental policies that are sustainable from both environmental and economic perspectives. We believe the best way to accomplish this goal is by working cooperatively with government, industry, and the environmental community.

I thank you for taking the time from what I know is a very busy legislative schedule to engage in discussions which we believe can lead to meaningful consensus on a question of vital importance to our nation—how best to foster the economic reform of the electric power industry while protecting and improving air quality and the environment.

The companies of the Clean Energy Group believe very strongly that we can and should do both.

Our industry is in the process of fundamental change. The Clean Energy Group supports and embraces the transformation of the electric power industry into a competitive marketplace. We also recognize that the generation of electricity has a significant impact on the environment. We agree with the U.S. Environmental Protection Agency and other stakeholders that this impact must be reduced if the Nation is to achieve its air quality goals. And we share a common concern that the economic benefits of a fair and robust competitive energy marketplace and the social and public health benefits of improved air quality will not be achieved unless the relationship between national energy policy and environmental policy is recognized and rationalized.

While the Clean Energy Group has supported EPA's regulatory initiatives to reduce emissions of pollutants traditionally associated with the industry—nitrogen oxide and sulfur dioxide—we also share concerns that compliance delays and litigation spurred by these initiatives during a period of such unprecedented structural change in the electric power industry has contributed to a climate of business uncertainty that is becoming increasingly more difficult to manage. The strong probability that environmental policymakers will, in the near future, begin to regulate mercury emissions and that requirements to reduce carbon dioxide emissions also are on the horizon, increases concerns that a pollutant-by-pollutant regulatory strategy will result in a continued cycle of political agitation, litigation, and delay. This is a scenario in which progress toward meeting clean air goals is frustrated and uncertainty about making business decisions involving assets worth billions of dollars and the lives and livelihoods of millions of investors and employees is exacerbated.

The Clean Energy Group believes there is a common sense policy solution—an integrated air quality strategy—to control and reduce emissions of nitrogen oxide, sulfur dioxide, mercury and carbon dioxide. We believe a coordinated, multi-pollutant approach will deliver significant and timely emissions reductions necessary to meet health-based air quality standards and provide members of our industry regulatory certainty about the amount and timetable for emissions reductions that can be factored into investment decisions and emissions control strategies.

Our proposal calls for mandatory, nationwide emissions caps for nitrogen oxide, sulfur dioxide, mercury, and carbon dioxide; established dates certain for producing the necessary emissions reductions; implementation through emissions banking and trading; credit for early reductions; and streamlining of EPA's New Source Review process to provide industry with clear and unambiguous compliance guidelines.

We are aware of recommendations to address these issues with voluntary or regional programs. We believe, however, that only a national, mandatory program implemented under authority of legislation enacted by Congress will provide the scope and compliance certainty necessary to facilitate a fair competitive market, achieve necessary emissions reductions and provide our industry with the regulatory certainty essential for sound business planning and rational investment decisionmaking.

The inclusion of market-based compliance methods, similar to the existing national Acid Rain program, reflects the realities of the emerging competitive energy

marketplace and will provide companies the flexibility to decide how to achieve reductions at the lowest possible cost.

This approach will:

Allow and encourage companies to plan and coordinate emissions control strategies on a comprehensive, multi-pollutant basis and reduce the potential for stranded investment in pollution control technologies.

Provide a higher degree of certainty for compliance with EPA's New Source Review requirements.

Deliver timely and necessary emissions reductions that will help attain national clean air objectives.

Foster a fair competitive energy market.

And, encourage investment in new electric generation capacity that will reduce emissions and enhance electric system reliability.

I'd like to summarize the emissions caps and compliance schedules included in the Clean Energy Group proposal.

We believe the following recommendations are consistent with sound environmental policy and are achievable at reasonable and acceptable cost:

For nitrogen oxide, we are calling for a two-phase program that would cap emissions at 4.2 million tons by 2003—a target consistent with EPA's call for State NOx reduction implementation plans (NOx "SIP Call") for 19 eastern States—and a further 50 percent reduction to 2.1 million tons by 2008. This target is based on applying the SIP Call reductions on an annual basis nationwide.

We would impose a 4.5 million ton cap on sulfur dioxide emissions by 2008, which represents a 50 percent reduction below Phase II requirements of the Acid Rain program. This goal is consistent with meeting proposed new National Ambient Air Quality Standards for fine particulates.

We anticipate EPA is expected to call for mercury regulation later this year. We are recommending a two-phase program that would require a 50 percent reduction and a 26-ton emissions cap by 2008 and, if deemed necessary, a further reduction to 70 percent to 90 percent below current levels by 2012.

For carbon dioxide, we're proposing an initial control strategy that would stabilize emissions at 1990 levels, resulting in a 1.9 billion ton emissions cap also by 2008. Further reductions in the 2012 timeframe would be implemented in accord with national Climate Change policy as it evolves.

Mr. Chairman, and members of the subcommittee, the companies of the Clean Energy Group believe our industry is at an important juncture in its transition to competition. We know that we must improve our environmental performance as we make this journey. An integrated and coordinated approach will provide the direction and regulatory certainty that will facilitate business planning, make investment decisions more rational, and ultimately, deliver to our nation improvements in air quality at costs that are reasonable and fairly allocated.

Again, I an honored by the opportunity to make this statement and would be happy to respond to your questions.

Thank you.

STATEMENT OF ARMOND COHEN, EXECUTIVE DIRECTOR, CLEAN AIR TASK FORCE

Mr. Chairman and members of the subcommittee, I appreciate the opportunity to testify before you on an issue of intense concern to hundreds of environmental organizations and the public throughout the nation: power plant air pollution.

Electric power plants are by most measures the nation's largest industrial air polluter. Power plant air emissions cut a broad swath of damage across human health, and the local, regional and global environment. Unhealthy levels of ozone smog; premature death and respiratory distress from fine particles; damage to forests, lakes, bays and crops; mercury contamination of fish and wildlife; dark curtains of haze in our national parks; and contributions to greenhouse gasses—these are some of the major problems associated with the nation's electric generating fleet.

Nor are these impacts confined to the Northeastern U.S., as is sometimes thought. Power plant emissions dramatically affect health and environmental conditions throughout the West, South, and Midwest as well. Indeed, the damages are often larger in regions such as the Tennessee and Ohio River Valleys where power plants are most densely concentrated. Power plant air pollution is at the same time intensely local, regional and inter-regional. Significant power plant emissions reductions across the Nation will be necessary to curtail the damage.

The time has come for significant changes in Federal policy to address these emissions problems. The current Clean Air Act, while well intended, has in practice unreasonably delayed environmental improvements in the power-generating sector.

The Act's pollutant-by-pollutant, State-by-State structure has also resulted in uncertainty and fragmented decisionmaking by generation operators that has in turn prevented them from making rational long-term choices with regard to pollution control options. The problem is further exacerbated by the Act's exemption of generating plants older than roughly 30 years from meeting emissions standards applicable to newer plants an exemption that artificially perpetuates this sector's pollution legacy.

We urge you to consider Federal policy changes with the following elements:

- Reductions in power plant emissions of sulfur dioxide and nitrogen oxides on the order of 75 percent below levels set under current law.
- Mercury emission reductions of 90 percent from current levels.
- Power plant carbon dioxide caps set at 1990 levels.
- Meeting each of the above pollution reduction targets in an expeditious manner—within 5 years, or 2005.
- Trading of sulfur dioxide and nitrogen oxide where it will not harm local and regional health and the environment, but no trading of toxic pollutants such as mercury.
- Provisions to spur ongoing environmental performance improvements.

Mr. Chairman and members of the subcommittee, My name is Armond Cohen. I am Executive Director of the Clean Air Task Force, an organization that advocates Federal, State and private sector action to reduce power plant air emissions. I appreciate the opportunity to speak before you today.

Today I am also testifying on behalf of Clear the Air: The National Campaign Against Dirty Power, a joint effort of the Task Force, the National Environmental Trust, and the United States Public Interest Research Group Education Fund; the Natural Resources Defense Council; the Izaak Walton League of America; and nine State and regional environmental organizations. Together, these organizations represent hundreds of thousands of Americans. As this grouping indicates, environmental organizations in every part of the Nation are intensely focussed on the need to clean up power sector air pollution.

I am also heartened to see recent indications from many companies in the electric power industry that they may be open to comprehensive solutions that address the problem, and hope that today you will see many more areas of agreement than disagreement among the panelists on the general direction to take.

Power Sector Air Pollution and the Need for Clean-Up

The reason for this broad public concern is plain. Electric power plants are by most measures the nation's largest industrial air polluter. Power plant air emissions cut a broad swath of damage across human health, and the local, regional and global environment. Unhealthy levels of ozone smog; premature death and respiratory distress from fine particles; damage to forests, lakes, bays and crops; mercury contamination of fish and wildlife; dark curtains of haze in our national parks; and contributions to greenhouse gasses these are just some of the major problems associated with the nation's electric generating fleet.

Nor are these impacts confined to the Northeastern U.S., as is sometimes thought. Power plant emissions dramatically affect health and environmental conditions throughout the West, South, and Midwest as well. Indeed, the damages are often larger in regions such as the Tennessee and Ohio River Valleys where the plants are more densely concentrated. Power plant air pollution is at the same time intensely local, regional and inter-regional. Significant power plant emissions reductions across the Nation will be necessary to curtail the damage.

Some highlights of these damages are briefly reviewed below:

Ozone Smog

Ground level ozone is a colorless, odorless pollutant that causes respiratory damage ranging from temporary discomfort to long-term lung damage. According to a recent study, in the Eastern half of the United States, ground level ozone sends an estimated 159,000 people to emergency rooms each summer; triggers 6.2 million asthma attacks, and results in 69,000 hospital admissions. Many more millions of Americans experience other respiratory discomfort. 1999 was one of the worst ozone summers in recent history, with more than 7,500 violations of the Federal ozone health standard.

Although much of the controversy around ground level ozone in recent years has centered on ozone levels in the Northeast, and the impact of Midwest and Southern emissions on the Northeast, this misses an important part of the story. In fact, many Midwestern and Southeastern States suffer greater volumes of ozone exposure and health impacts than many Northeast States. According to a recent study by the Ohio Environmental Council, in collaboration with the University of Michigan and

Harvard University, people in Ohio River Valley communities such as Cincinnati and Marietta, Ohio are often exposed to dangerous levels of ground level ozone as much as 75 percent more often than people in Boston and New York. Ohio River Valley ozone hospital admission rates also track this pattern with admission rates higher in the Ohio Valley than in the East. Similarly, some of the nation's highest and most persistent ozone smog violations are outside of the cities, in places considered pristine places like the Great Smokies (there were an astonishing 52 exceedances days of the 8 hour ozone standard in the Great Smoky Mountains National Park in 1999 where it is now unhealthy to breathe on about half of the days of summer), Door County, Wisconsin, and the nation's seashore points.

The reason is not hard to discern. There is a high correlation between elevated ground level ozone and proximity to power plants especially in the Midwest and Southeast where roughly 60 percent of the nation's coal-fired generating capacity is located. In the Ohio Valley area studied, for example, emissions from coal- and oil-fired power plants contribute nearly 50 percent of elevated ozone levels in the Valley, enough by themselves to cause violations of the Federal health standard.

Human health is not the only victim. There is strong scientific evidence showing that current levels of ground level ozone are reducing yields, particularly in sensitive species soybean, cotton, and peanuts. Annual crop loss from ozone for soybeans alone in Illinois, Indiana and Ohio has been calculated to fall between $200 350 Million. Ozone-induced growth and yield losses for the seven major commodity crops in the Southeast (sorghum, cotton, wheat barley, corn, peanuts and soybeans) are costing southeast farmers from $213–350 Million annually.

Fine particles

It is becoming increasingly clear that particulate matter is one of the most pervasive and dangerous air pollutants. Tens of thousands of deaths per year as many as 70,000—are attributable to fine particulate matter as well as hundreds of thousands of cases of heart and pulmonary disease. And a recent reanalysis by the Health Effects Institute of the landmark Harvard Six Cities and American Cancer Society studies—that led to the setting of the $PM_{2.5}$ NAAQS and which were harshly criticized by industry -independently confirmed the robust link between $PM_{2.5}$ and premature death.

Emissions from the electric power industry currently account for half or more of the fine particulate matter ($PM_{2.5}$) in the U.S. east of the Mississippi, largely as a result of sulfur dioxide emissions. A recent study by researchers at the Harvard University School of Public Health of two coal-fired plants in Massachusetts, Brayton Point and Salem Harbor, estimated that particulate emissions from those two plants alone accounted for 159 premature deaths per year. Moreover, combining their fine particle and ozone precursor emissions, these power plants alone annually spawned 1,700 emergency room visits and more than 350,000 asthma attacks and other respiratory symptoms. Importantly, the highest mortality risks fall within 30 miles of the plants.

Acid Deposition

Acid deposition a problem still driven principally by sulfur and nitrogen emissions from the nation's power plants is a persistent problem that is unlikely to be solved by the existing Clean Air Act.

Lakes and streams and aquatic life that live in them are experiencing the most widespread impact from high concentrations of acidity. The majority of sensitive water bodies are those that are located atop soils with a limited ability to neutralize (or buffer) acidic compounds. Sensitive areas in the US include the Adirondack Mountains, Mid-Appalachians, southern Blue Ridge and high-elevation western lakes. Water bodies are affected not just by the chronic acidification that occurs from cumulative deposition but also by episodic acidification that occurs when pulses of highly acidic waters rush into lakes and streams during periods of snowmelt (acids have collected in the snow over the winter) and heavy downpours.

In some places, chronic and episodic acidification together has completely eradicated fish species. For example, acid-sensitive fish have disappeared and/or populations have been reduced in Pennsylvania streams where they formerly occurred in large numbers. Acidification, together with high levels of aluminum leaching, is blamed for the reduction in fish diversity that many Pennsylvania streams have experienced over the past 25–34 years.

Acid rain also saps calcium from the needles of trees, weakening the cell membranes and making the trees susceptible to damage from freezing in the winter and more vulnerable to diseases and/or insect outbreaks. Acid rain also depletes soil nutrients largely calcium and magnesium needed for healthy forest growth. The U.S. Geological Survey has shown that calcium in forest soils has decreased at locations

in the northeastern and southeastern U.S. forest soils, with acid rain being one of the major factors contributing to this depletion.

Although most evidence shows that conifers tend to be more impacted than hardwood trees, acid rain is also hurting deciduous trees. Detection of patches of dead trees in northern hardwood forests of the Southern Appalachian National Forests has been attributed to the interactions of many stressors, including air quality.

Despite declines in power plant sulfur emissions due to 1990 Clean Air Act amendments, the acidity of many water bodies has not improved. Scientists believe that cuts called for in the 1990 amendments to the Clean Air Act will not be adequate to protect surface water and forest soils of the northeastern US. To restore the very sensitive sites of southeastern Canada, the Canadian National Air Issues Coordinating Committee has called for a 75 percent cut of US SO_2 beyond the current requirements of the Clean Air Act Amendments of 1990.

Haze and Visibility

In the last several decades, visibility how far you can see on an average day has declined dramatically, especially in the Eastern half of the United States. In the East, annual mean visibility is commonly one quarter of natural conditions and as little as one eighth in the summer. One of the greatest casualties of this upsurge in regional haze has been the national parks. An example of the magnitude of visibility decline due to high air pollution levels is shown in the Shenandoah Park slide attached to this testimony.

There is no question that power plants are a major driver of this problem: visibility impairment has tracked closely in parallel with sulfate and electric power production for nearly half a century. Taken together, sulfur, carbon and nitrogen oxide emissions are responsible for well over 80 percent percent of this visibility impairment. When these components are assessed for their contribution to the problem, electric power is accountable for about two-thirds of the emissions that lead to regional haze-related visibility impairment in the East, most of which is caused by sulfate.

Nitrogen deposition

Power plant nitrogen emissions deposited on land and water sometimes at great distances from their original sources is another important contributor to declining water quality. Estuarine and coastal systems are especially vulnerable. Too much nitrogen serves as a fertilizer, causing excessive growth of seaweed. The result is visual impairment and loss of oxygen. With the loss of oxygen, many estuarine and marine species including fish cannot survive.

The contribution of nitrogen from atmospheric deposition varies by watershed. In the Chesapeake Bay, atmospheric nitrogen accounts for 27 percent of nitrogen entering the system. Of that amount, power plants account for about a third.

Nitrogen is also being deposited on ocean surfaces many, many miles away from land. Atmospheric nitrogen accounts for 46 to 57 percent of the total externally supplied (or new nitrogen) deposited in the North Atlantic Ocean Basin.

Mercury

Mercury is another power plant pollutant that poses a threat to human health and the environment. Exposure to mercury in the U.S. primarily comes from the consumption of freshwater, estuarine, marine fish and shellfish. Across the U.S., mercury contaminates freshwater and saltwater fish populations, poses health risks to the people and wildlife consuming these fish and threatens the multibillion-dollar recreational and commercial fishing industries. State health departments in 40 States have issued advisories warning the public about consuming certain species of fish in certain water bodies, 10 States have advisories for every water body and 13 now issue consumption advice for certain marine species. Methylmercury (the form of mercury in fish) is a developmental toxin and poses the greatest hazard during prenatal development. EPA has estimated that 3 million children and 4 million women of childbearing age are exposed to methylmercury at levels above what EPA considers safe.

Mercury pollution has been linked to a number of industrial sources. EPA estimates, however, that about a third of the nation's airborne mercury emissions come from power plant smokestacks; this assessment ignores the likely additional mercury flows coming from power plant solid waste streams. In addition, power plants are the only industrial source currently exempt from Federal rules controlling mercury emissions.

Carbon Dioxide Emissions

The earth's temperature is on the rise, threatening wide-ranging climate change, and a likely driver of these changes, according to the United Nations' Intergovern-

mental Panel on Climate Change (IPCC) in its fall 1995 Report, is man-made greenhouse gas emissions. Increasingly, climate scientists have warned that if countries and industries do not stabilize and substantially reduce greenhouse gases we will see warmer temperatures, loss of coastal regions, the spread of infectious disease and increases in extreme weather events like heat waves, flooding, and tornadoes.

The trends are alarming: All 10 of the warmest years on record have occurred since 1980, and this century has been the warmest of the past 600 years.

According to the Goddard Institute of Space Studies, the 1990's were warmer than the 1980's, previously the warmest decade on record. A Midwestern heat wave in 1995 caused more than 500 deaths in Chicago. In the summer of 1998, temperatures over 100 degrees for 15 straight days claimed more than 100 lives in the Dallas, TX region. 1998 was not only the hottest year on record it was also a record year for extreme weather damage. In 1998, the Federal Emergency Management Agency declared sixty-three weather-related major disasters in 34 States. By comparison, the average number of weather-related major disaster declarations per year in the 1980's was 22.

The nation's electric power plants account for about a third of U.S. carbon dioxide emissions, the leading greenhouse gas.

Reductions appropriate in Federal policy

In each of the above areas, the best scientific evidence calls for large reductions in emissions:

- In the case of sulfur, cuts of at least 75 percent are required to achieve ecosystem recovery and to protect human health from fine particle pollution. In addition, cuts at this level will improve visibility in our national parks.
- In the case of nitrogen oxides, cuts of at least 75 percent year round are required to help reduce summer ozone smog to levels protective of human health. Cuts at this level will also significantly lessen the nitrogen and acid rain impacts on our forests and water bodies, and further reduce haze.
- Mercury is highly toxic in small amounts, and, as for other industries, maximum available control thresholds should be pursued. A 90 percent cut in mercury emissions is achievable and necessary to protect human health.
- The world's climate change problem will not be solved without U.S. leadership including significant reductions from the power sector. An important start, consistent with the ratified Rio treaty and current Kyoto Protocol commitments, would be a return by the power sector to 1990 carbon dioxide emission levels by 2005.

Fortunately, the technology is at hand to dramatically reduce these power plant emissions and their resultant impacts throughout the nation, at reasonable costs. For example:

- Power sector reductions of sulfur dioxide of 75 percent beyond current law are readily achievable through a combination of flue gas desulfurization (scrubbing) and adoption of cleaner fuels.
- Year round nitrogen reductions of 75 percent or more are achievable through a range of controls including selective catalytic and non-catalytic reduction technology, low NOx burners, overfire air, and adoption of cleaner fuels.
- Power sector reductions of mercury of 90 percent are feasible using a combination of commercial control technologies, and increased reliance on cleaner fuels and efficiency.
- Capping power sector emissions of carbon dioxide at 1990 levels is technically feasible. In the short run, this will require an expansion of the nation's use of gas-fired and low-carbon renewable energy sources; in the long run, solutions may also include expanded use of low-carbon renewable and advanced coal technologies.

Fixing the current system

Unfortunately, in the absence of a change in current Federal policy, the Nation is unlikely to achieve these necessary targets in a timely way and certainly not in a cost-efficient way. The reasons lie less in bad intentions than in the institutional and economic realities that flow from the current Clean Air Act:

- The Act is designed to address air pollution from the power sector, and other economic sector, on a pollutant-by-pollutant basis. The result is that there are numerous EPA regulatory initiatives all underway at present affecting different pieces of the power plant pollution problem on different time scales, and with different geographic targets and often different criteria. (See schematic chart attached to this testimony). Each of these regulatory proceedings are subject to delay and court review: for example, it took nearly 20 years for EPA to promulgate final region-wide power plant NOx controls and regional haze targets. In addition, the regulated companies tend to respond to each new requirement with a short term focus that often precludes long term solutions with multiple benefits. For example, a failure to put

in place sulfur and carbon targets at the same time as NOx controls will likely be received as a market signal to continue to ignore those pollutants, and attendant solutions, as NOx compliance plans are made.

- The Act's requirements related to power plants are still largely driven by State-specific attainment of ambient pollution concentration limits rather than by the physical realities of power plant emissions which have simultaneous and far-ranging local, regional, and inter-regional impacts. A more common sense approach is to establish uniform, minimum environmental performance standards that reflect our best current understanding of emissions impacts at all geographic ranges, informed by the best available science, current technical feasibility, and reasonable technology-forcing requirements.
- Finally, to date, enforcement of the Act has not addressed the significant problem of power plant longevity. Unlike autos, the bulk of the nation's power plants are more than 30 years old. While the 1970 Act requires modified and expanded older sources to meet modern emission performance standards, many such modified plants continue to operate in compliance with older standards resulting in emissions levels three to four times looser than modern emission requirements. By establishing emission caps for the power sector that reflect modern performance capabilities, we can end this pollution haven for "grandfathered" plants.

Elements of the solution

The time has come to improve on the Act's current regulatory scheme for power plants. Key elements of a better system include:

- Mandatory and certain emissions targets for all four pollutants as described above.

While some have spoken of their interest in voluntary compliance approaches, we believe logic, equity and history counsel against this approach. First, breathing is not a voluntary choice, and polluters should not be permitted the choice to avoid requirements that permit safe breathing. Second, voluntary approaches potentially penalize companies that step forward, by giving their dirtier competitors a market edge. Third, perhaps because of this penalty, the history of voluntary emissions reductions in the power sector is not encouraging: experiments such as the Southern Appalachian Mountain Initiative, the Federal greenhouse gas commitment program, the EPA's 1995–96 "Clean Air Power Initiative," and the Texas voluntary emissions reductions initiatives have yielded small participation and often poor followup.

- Timely compliance.

Each of the pollutants under discussion are associated with different time scales for impacts, but the levels of reduction we have proposed should be achievable in a prompt manner. The burden of proof should be on those who believe that achieving these targets by the 2005 date specified in S. 1369, authored by Senator Jeffords, is not feasible.

- Flexibility.

While flexibility measures such as emissions trading should be considered for some pollutants, they should be balanced by the imperatives of local health and ecosystem protection.

- Incentives for continuous environmental improvement.

We must be careful, as we establish new emissions targets for the power sector, not to simply create a new class of "grandfathered" plants. Sensible measures for ensuring continuous environmental improvement in plant performance, as well as technology, should be considered.

The Senate bill that currently captures these desirable features most closely is the one sponsored by Senator Jeffords, S. 1369.

The time for action is here

The discussion we are having today is hardly new. It goes back at least to 1995, when EPA initiated its "Clean Air Power Initiative" designed to bring stakeholders together around a comprehensive set of pollution reductions. For a variety of reasons, that initiative never came to a consensus conclusion.

However, much has changed in the last 5 years to alter the landscape:

- The science underlying reduction targets for ozone smog, acid rain, fine particles, haze, mercury and global warming has become more compelling.
- Many States have moved ahead of the Federal Clean Air Act signaling discontent with the status quo. Recently, for example, Massachusetts and New York announced initiatives to chop air pollution from "grandfathered" power plants by up to 75 percent. In Texas, some limited plant "degrandfathering" was enacted last year. And Connecticut and Illinois are actively considering such measures. While appropriately demonstrating leadership, however, the ultimate success and comprehensiveness of State actions will be limited due to the transport of pollution

across State boundaries, and the fear of competitive economic disadvantage from taking unilateral State action.

- Public opinion is increasingly supportive of steep power plant emission cutbacks. Opinion leaders throughout the Midwest and Southeast have voiced a concern about current emission levels, as evidenced by the major newspaper stories and editorials attached to this testimony.
- Many voices in industry are recognizing the value of a comprehensive rather than a balkanized approach and the wisdom of not throwing good money after bad. Surely the devil will be in the details, but the stage has been set for a policy discussion that could drive us to a better, cleaner outcome.

I again appreciate the opportunity to speak, and look forward to your questions.

EXHIBITS TO TESTIMONY OF ARMOND COHEN
MAY 17, 2000

1. Map of U.S. power plant S02 emissions. From MSB Associates, using EPA CEMS data base.

2. Plot of U.S. monitored ozone levels, August 7, 1999. From U.S. EPA data.

3. Annual per capital respiratory hospital admissions from ozone smog, by selected states. Adapted by the Clean Air Task Force from from Abt Associates, Adverse Health Effects Associated With Ozone in the Eastern United States, October 1999.

4. Charts comparing peak vs. 80 ppb ozone levels, Midwest vs. Northeast. From Ohio Environmental Council, "Ohio Valley - Ozone Alley," February 2000.

5. Contribution of selected Ohio Valley power plants to ozone smog above background levels. From "Ohio Valley – Ozone Alley," note 4 above.

6. Map of PM 2.5 concentrations, 1990-1992. Taken from IMPROVE/NESCAUM/Visibility Data.

7. Geographic distribution of per capital annual mortality risks from Salem Harbor, Ma. Power plant. From Levy, J., et al., Estimated Public Health Impacts of Criteria Pollutant Air Emissions from the Salem Harbor and Brayton Point Power Plants, Harvard School of Public Health, Department of Environmental Health, May 2000.

8. Map of estimated sulfate ion deposition, 1999. From National Atmospheric Deposition program/National Trends Network.

9. Comparison of Shenandoah National Park vista on cleanest day and high-sulfate day. Adapted by Clean Air Task Force from National Park Service data.

10. Visibility impairment and electric generator S02 sources. From IMPROVE data, adapted by E3 Ventures.

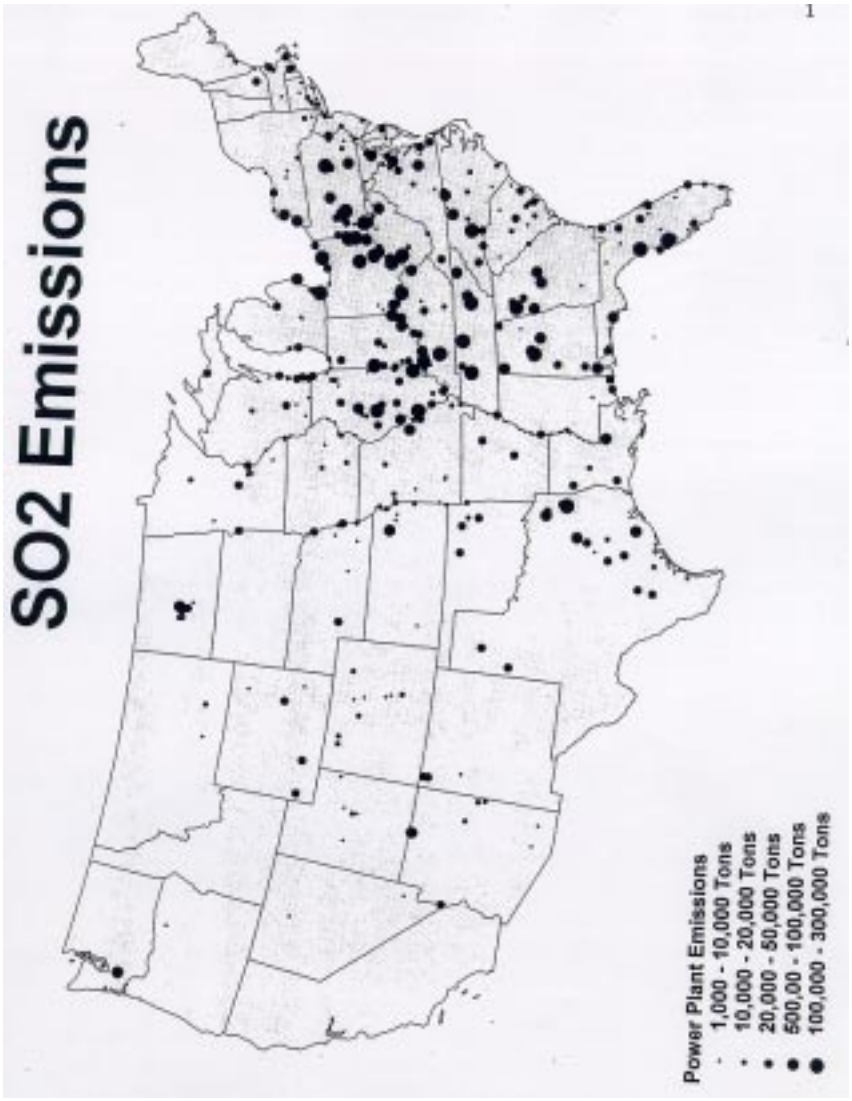
11. Map of sulfate transport to various regions of U.S. From Malm, W.C., Introduction to Visibility, Colorado State University, Cooperative Institute for Research in the Atmosphere, May 1999.

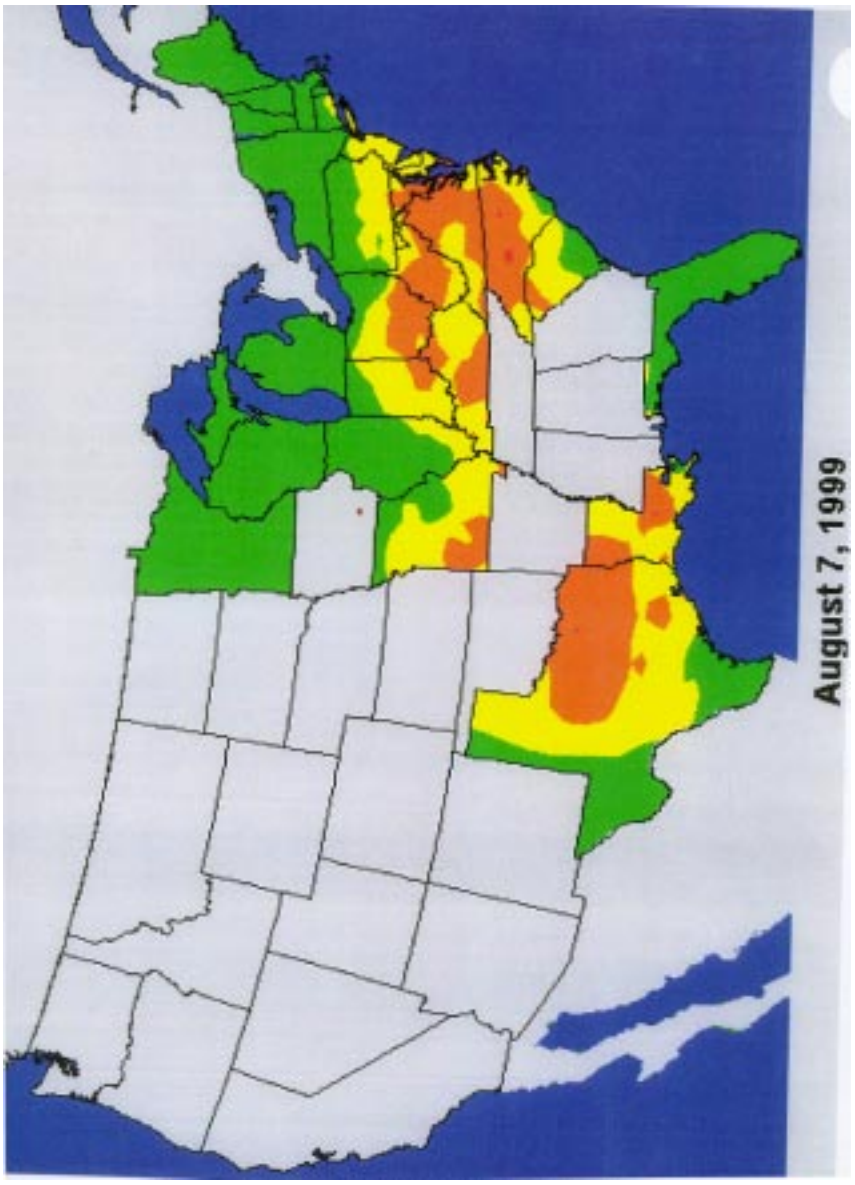
12. Proportion of nitrogen deposition, by source, in selected watersheds. From Puckett, L., Nonpoint and Point Sources of Nitrogen in Major Watersheds of the United States, U.S. Geological Survey, 1994.

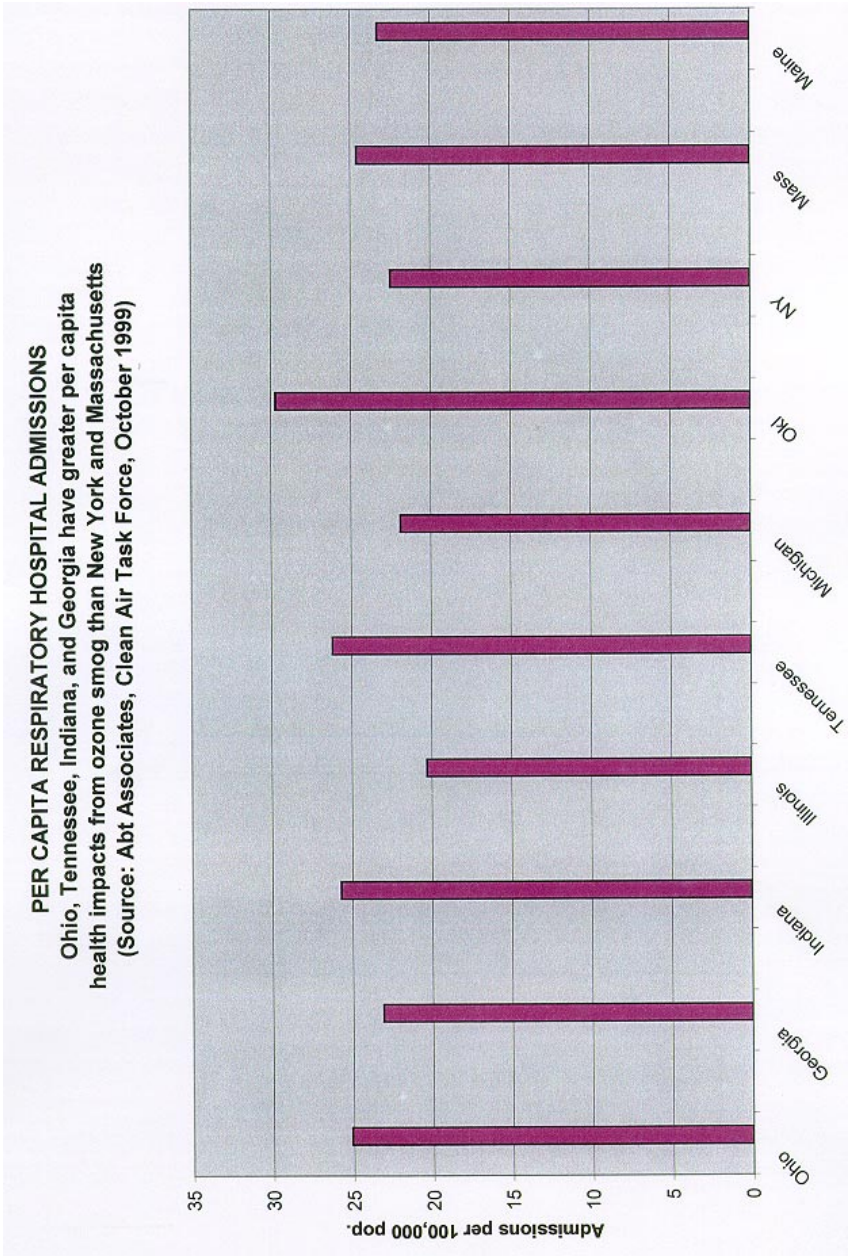
13. Clean Air Act Provisions Affecting Power Plants, schematic chart by the Clean Air Task Force.

14. Air Emissions Comparison: Old Coal vs. New Coal vs. Gas. Developed by Coalition for Gas-Based Environmental Solutions.

15. U.S. Coal Plant Distribution by Date of Construction. From MSB Energy Associates, adapting FERC data.


SO2 Emissions
Power Plant Emissions
1,000 - 10,000 Tons
10,000 - 20,000 Tons
20,000 - 50,000 Tons
500,00 - 100,000 Tons
100,000 - 300,000 Tons

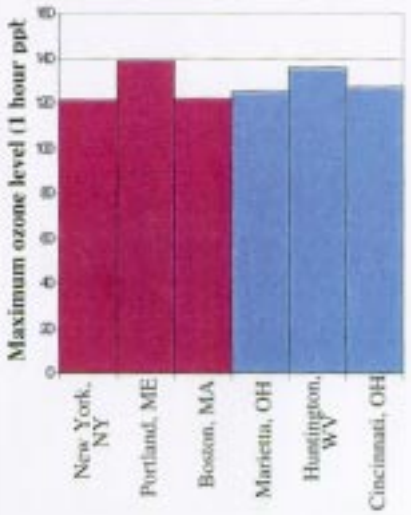

August 7, 1999


PER CAPITA RESPIRATORY HOSPITAL ADMISSIONS
Ohio, Tennessee, Indiana, and Georgia have greater per capita health impacts from ozone smog than New York and Massachusetts
(Source: Abt Associates, Clean Air Task Force, October 1999)
Admissions per 100,000 pop.
0
5
10
15
20
25
30
35
Ohio
Georgia
Indiana
Illinois
Tennessee
Michigan
Okl
NY
Mass
Maine

Peaks vs. Plateaus

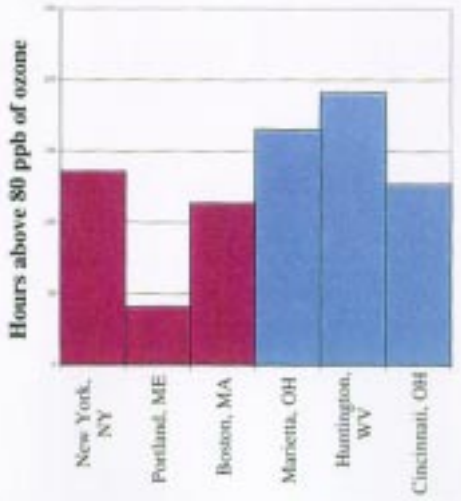
Peak levels, maximum ozone value, 1998 smog season

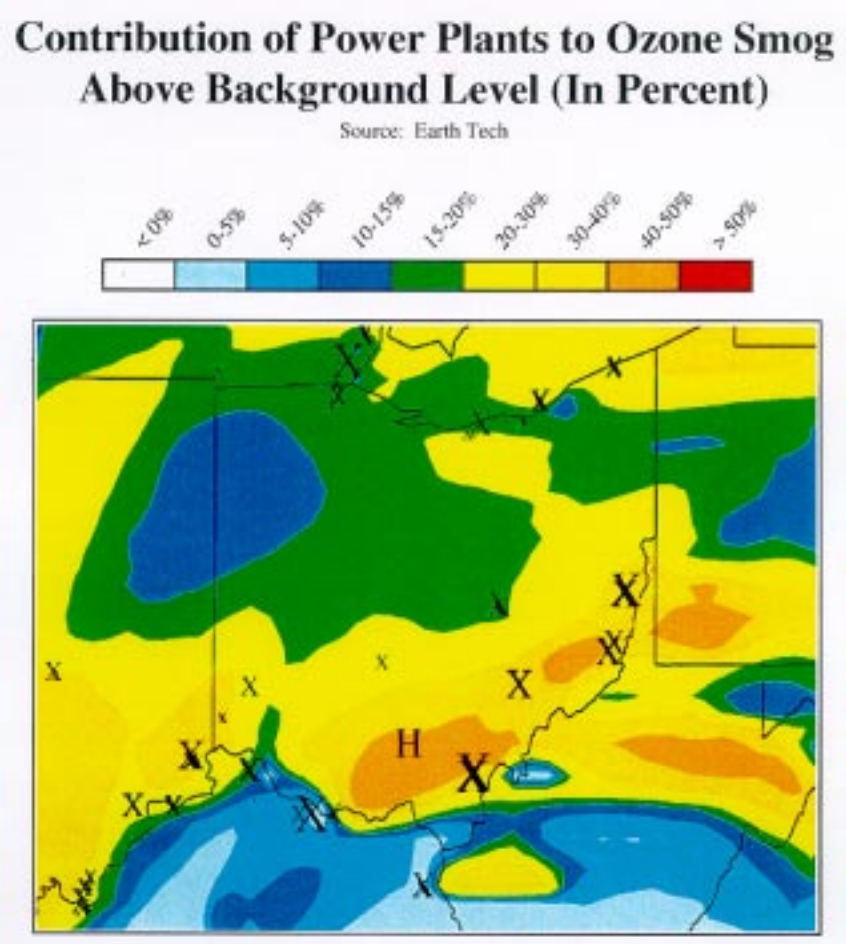
Source: USEPA AIRS database



Total hours of unhealthy air, April-October 1998

Source: Arlene Fiore, Harvard School of Planetary Science, 1999




Contribution of Power Plants to Ozone Smog
Above Background Level (In Percent)
Source: Earth Tech
< 0%
0-5%
5-10%
10-15%
15-20%
20-30%
30-40%
40-50%
> 50%
H

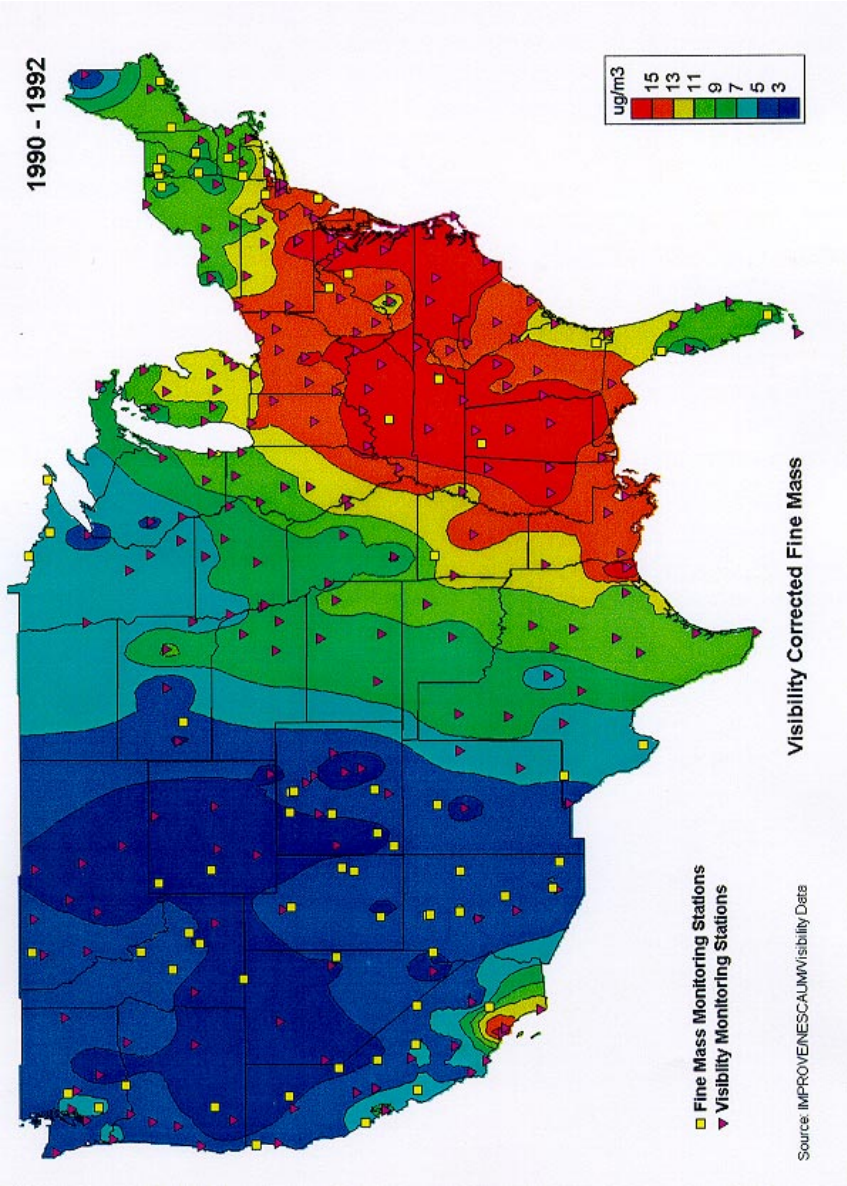
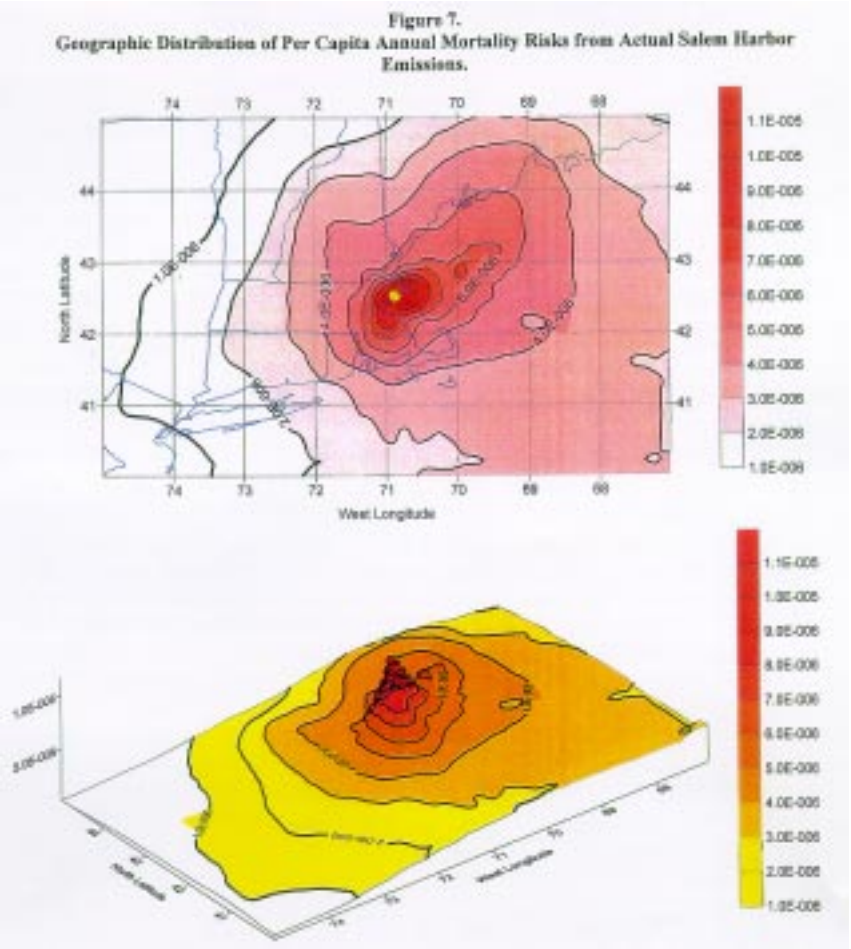
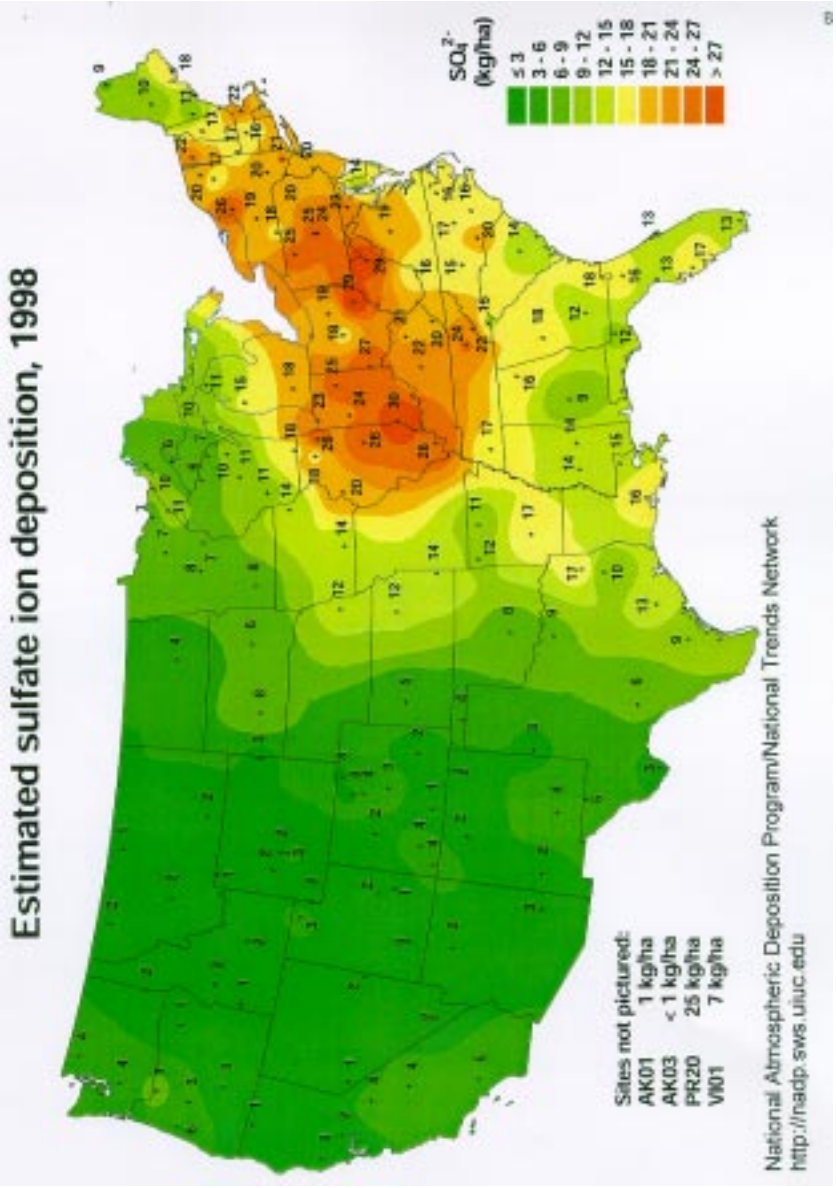
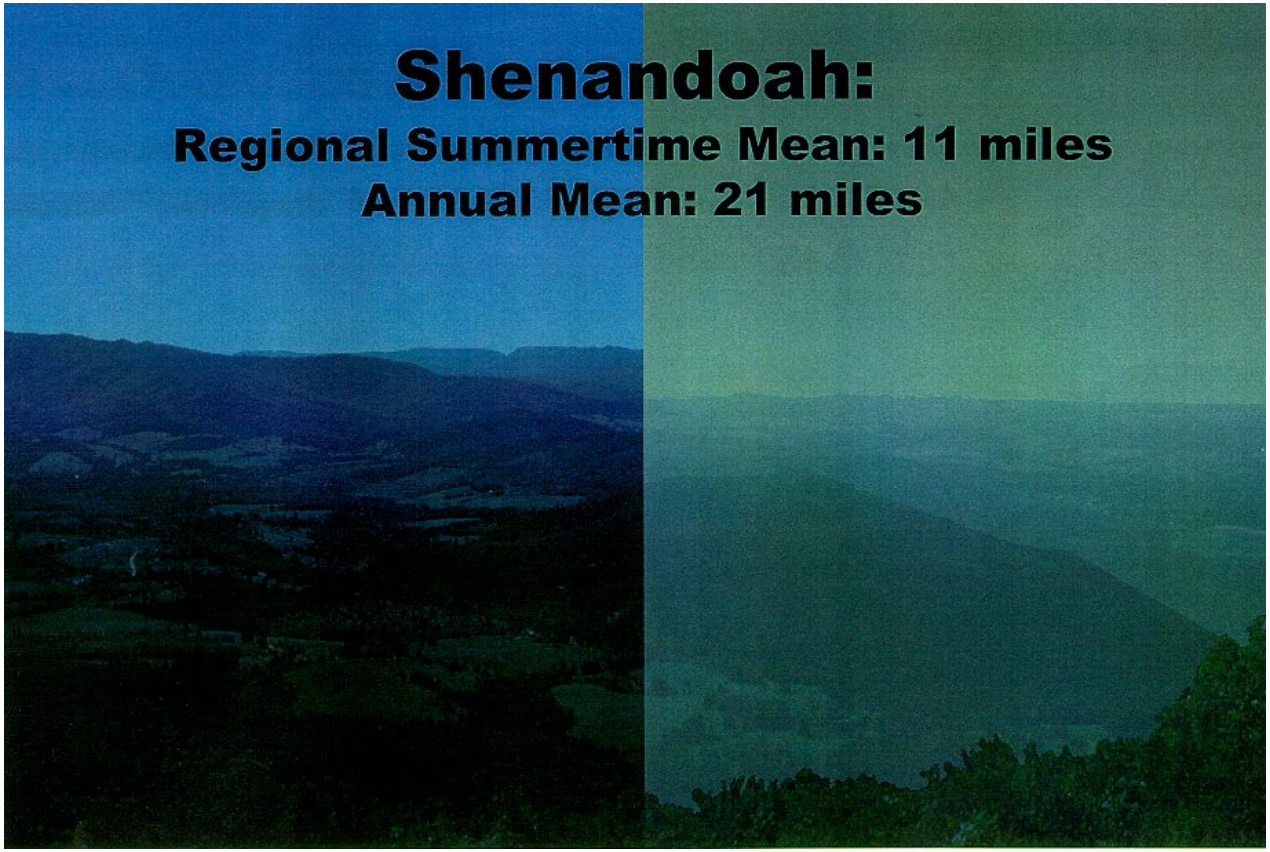

1990 - 1992
ug/m3
15
13
11
9
7
5
3
Fine Mass Monitoring Stations
Visiblity Monitoring Stations
Visibility Corrected Fine Mass
Source: IMPROVE/NESCAUM/Visibility Data

Figure 7.
Geographic Distribution of Per Capita Annual Mortality Risks from Actual Salem Harbor Emissions.




Estimated sulfate ion deposition, 1998
SO_4^{2-} (kg/ha)
≤ 3
3 - 6
6 - 9
9 - 12
12 - 15
15 - 18
18 - 21
21 - 24
24 - 27
> 27
Sites not pictured:
AK01 1 kg/ha
AK03 < 1 kg/ha
PR20 25 kg/ha
VI01 7 kg/ha
National Atmospheric Deposition Program/National Trends Network
http://nadp.sws.uiuc.edu


Shenandoah:
Regional Summertime Mean: 11 miles
Annual Mean: 21 miles

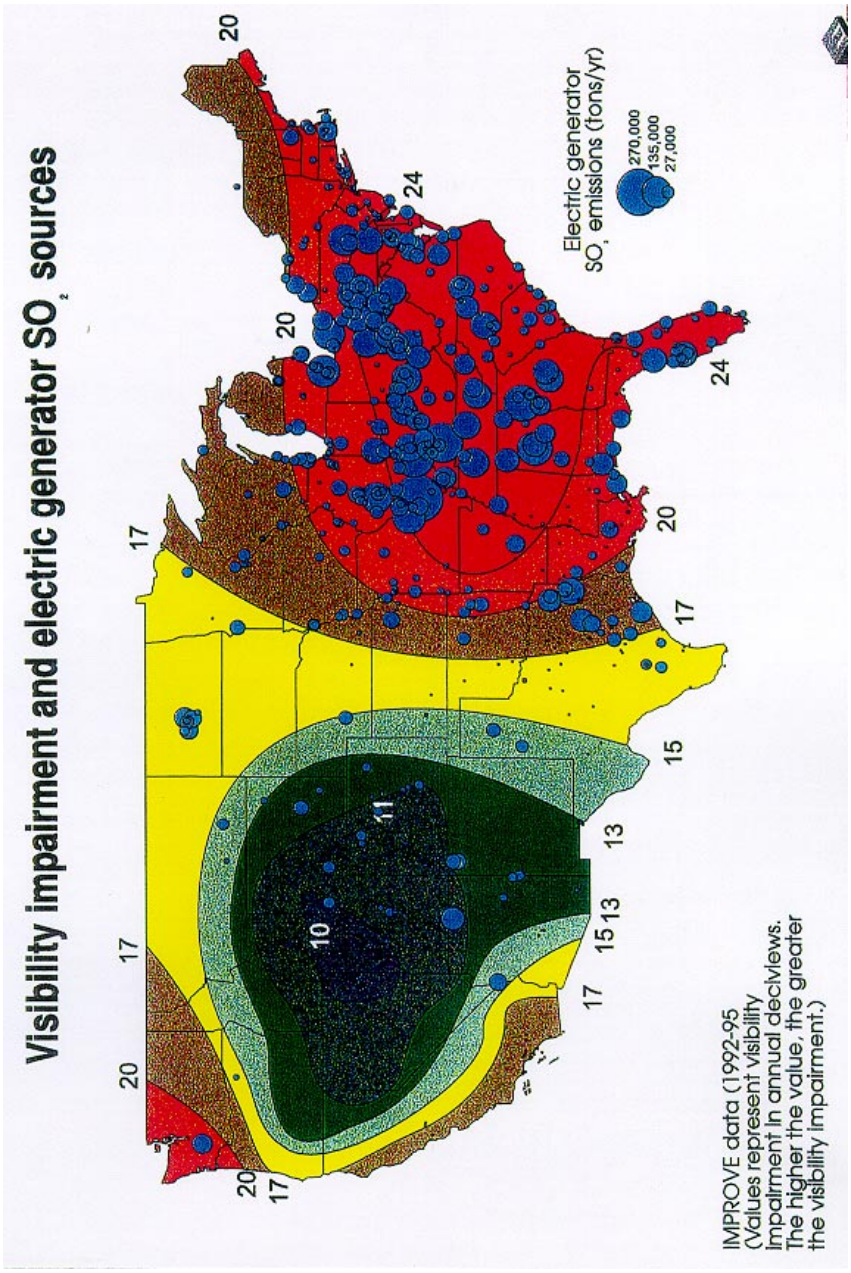

Visibility impairment and electric generator SO2 sources
Electric generator
SO2 emissions (tons/yr)
270,000
135,000
27,000
IMPROVE data (1992-95
(Values represent visibility
impairment in annual deciviews.
The higher the value, the greater
the visibility impairment.)

Fig. 7.12 Fraction of sulfate arriving at (a) Mount Rainier, (b) Grand Canyon, (c) Big Bend, (d) Acadia, (e) Shenandoah, and (f) Great Smoky Mountains National Parks, from various source regions.

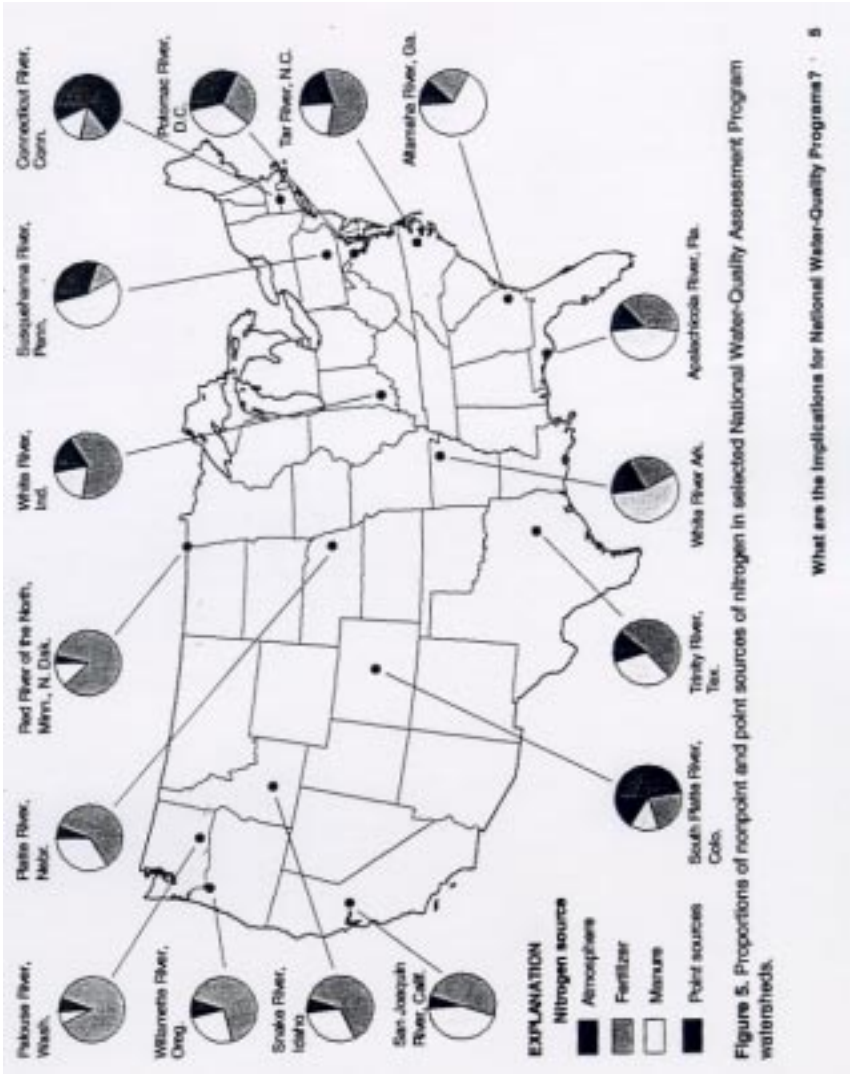
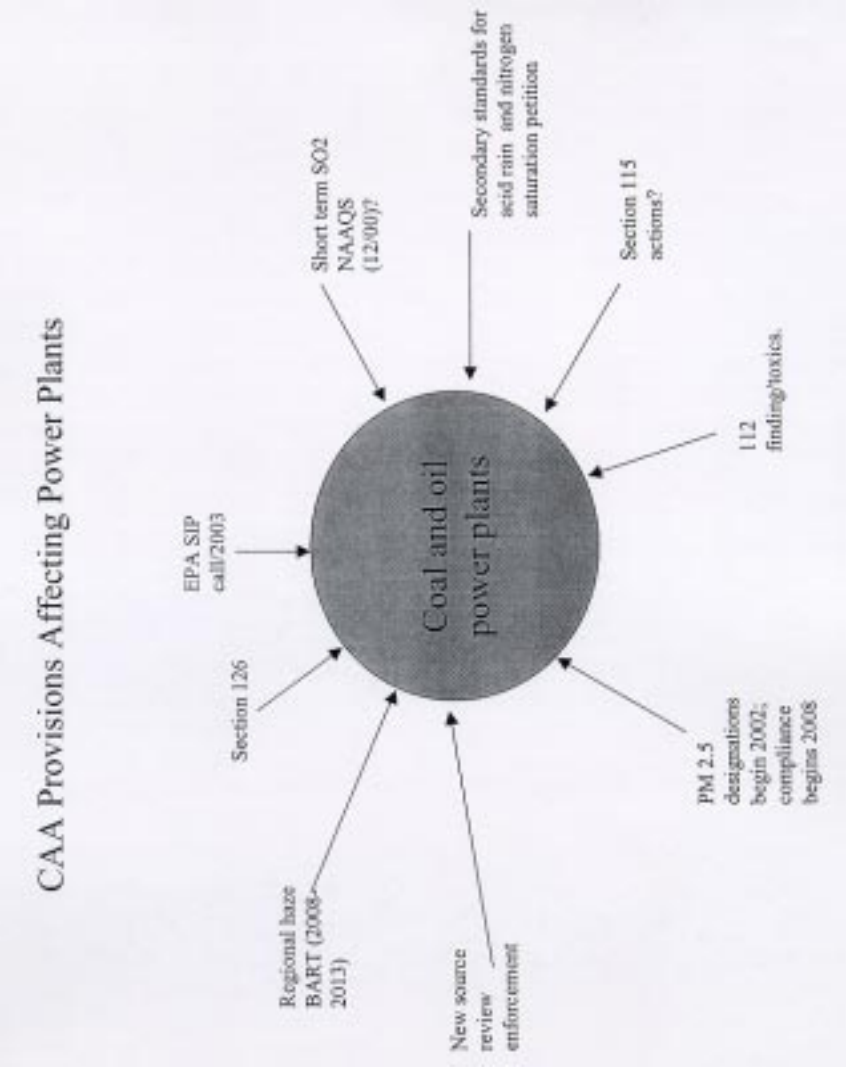


Figure 5. Proportions of nonpoint and point sources of nitrogen in selected National Water-Quality Assessment Program watersheds.



SUPPLEMENTAL STATEMENT OF ARMOND COHEN, CLEAN AIR TASK FORCE

With respect to the hearing at which I was a witness, I wish to clarify my remarks as follows:

1. In response to Chairman Inhofe's question regarding emissions trading, I did not mean to suggest that trading for mercury emissions should be allowed. Mercury emissions pose significant local hot spot problems close to the plants from which they are emitted especially for the communities that fish in nearby water bodies, and consequently the full recommended reductions must occur at each plant.

2. In response to Chairman Inhofe's questions regarding carbon dioxide as a "pollutant" within the definition of the current Clean Air Act, I declined to take a legal position on behalf of the Clean Air Task Force. However, I wish to affirm that, whether or not carbon dioxide meets the current statutory test, it is indeed an environmentally harmful gas that should be regulated consistent with the targets specified in my testimony.

Thank you for the opportunity to offer these clarifications to my testimony.

Sincerely,

ARMOND COHEN.

TESTIMONY OF WAYNE BRUNETTI, CHAIRMAN, NEW CENTURY ENERGIES, INC.

Mr. Chairman. My name is Wayne Brunetti, and I am the Chairman and Chief Executive Officer of New Century Energies, Inc. New Century Energies is a public utility holding company headquartered in Denver, Colorado, serving 1.6 million customers in Colorado, Texas, Wyoming, New Mexico, Kansas and Oklahoma. NCE will soon merge with Northern States Power, a utility based in Minneapolis, Minnesota, to form Xcel Energy. Xcel Energy will be the eighth largest utility in the country, serving 3.1 million customers and generating over 21,000 megawatts of electricity.

NCE has made environmental excellence one of its priorities. It has been responsible for a number of innovative environmental programs, such as its Windsource program. Windsource is the largest customer driven renewable energy program innovative program that in the country. Later, I will discuss another is especially pertinent to your efforts.

I appreciate the opportunity to testify today regarding some of our experiences with the Clean Air Act. As in other parts of the country, the West has often grappled with the Clean Air Act's rigidity and the EPA's inflexibility. In the last 5 years, we have found that one of our greatest challenges is complying with the requirements imposed on us by EPA under the Clean Air Act.

Much of the electricity in the West is generated by coal-fired power plants. For example, 74 percent of the electricity generated by NCE comes from coal-fired facilities. The West also produces a growing percentage of the coal burned in power plants throughout the country. The popularity of Western coal arises from its low sulfur content, something we in the West have known about for a long time. Typically, even our uncontrolled plants emit sulfur dioxide at a lower rate than two-thirds of the country's coal-fired plants.

The air quality concerns in the West are also different from the East. Most of the country's National Parks, Wilderness Areas and other "Class I" areas are located in the West, so the region is naturally concerned about the impact of emissions from mobile and stationary sources on visibility in these areas. For our company, that translates into concerns about emissions of sulfur dioxide, in spite of the fact that these emissions are already relatively low.

The West's urban centers have made great progress addressing air quality. For example, although it is still characterized as a "non-attainment" area, Denver has not violated an ambient air quality standard for 5 years. As the committee may know, the Denver metropolitan area is among the fastest growing in the country. Our company struggles daily to provide adequate power supplies to meet this expansive growth. Air quality issues have a significant impact on this effort.

In the West, as elsewhere, EPA administers the Clean Air Act in an irrational, costly way that often does not benefit the environment. Let me give you some examples:

As I mentioned, growth in Colorado is substantial and requires that we obtain significant new generating capacity to avoid energy shortages in the Denver metropolitan area. The Colorado Public Utilities Commission requires our subsidiary, Public Service Company of Colorado, to acquire these new resources through competitive bidding and encourages the company to enter into contracts with independent power producers rather than build new plants itself. Last fall, EPA ruled that a new, independent power plant owned by a third party was a modification of a nearby, existing plant. EPA based this ruling only on the fact that the independent power plant would be connected to the Public Service Company electric system. The effect of EPA's interpretation is to require expensive emission controls on new, independent "peaking" power plants that operate only a few hours a year—often making them uneconomical to operate. Because it may stand in the way of our efforts to provide adequate power to the people of Colorado, we have challenged EPA's interpretation in the 10th Circuit Court of Appeals.

- Earlier this year, we were attempting to obtain a Prevention of Significant Deterioration permit for a new gas-fired generating unit at our Fort St. Vrain plant. Rather than install EPA's preferred nitrogen oxide control equipment (selective catalytic reduction), we proposed to make much greater nitrogen oxide emission reductions—at much lower cost—at one of our existing coal-fired units. The State of Colorado and the environmental community were supportive of this proposal. EPA, however, rejected it as an affront to the "integrity" of the Clean Air Act.

These are just two examples of the perverse outcomes that often result from EPA's interpretation of the Clean Air Act. Our experience with the Agency stands in sharp contrast to our dealings at the State level, and I think you might find our experience useful as you grapple with these problems.

At NCE, one of our operating priorities is "Customer First." We try to be responsive to our customer needs and desires. During the initial phase of our Windsource program, we conducted surveys that indicated 62 percent of our customers would be willing to pay a little bit more for "cleaner" power.

As a result, we began to consider alternatives to address the customers' concerns. Our best opportunity was in Denver itself. Public Service Company operates three coal-fired power plants in the Denver metropolitan area. We became convinced that, unless we responded to the community's concerns, our next great challenge would be over the emissions from these plants. Therefore, in 1997 after much study of different alternatives, we proposed a voluntary emission reduction program to reduce sulfur dioxide emissions from those plants by 70 percent and nitrogen oxide emissions by 40 percent. We stated that we would need three things to implement our proposal:

- Flexibility in the operation of the facilities;
- Assurance that new State regulations would not require additional reductions from those facilities for a period of 15 years; and
- Recovery of the cost of the new controls.

Having worked successfully with the environmental community on our Windsource program, we first presented this proposal to them. We also took it to a wide range of other interested parties, including businesses, labor unions, coal suppliers, the local air quality planning agency and the appropriate Colorado State agencies. We worked closely with these groups to develop and pass legislation that would allow our proposal to become a reality. That legislation, Colorado Senate Bill 98–142, was passed by the General Assembly during the 1998 session. Senate Bill 142 encourages the Colorado Air Pollution Control Division to enter into flexible voluntary emission reduction agreements with stationary sources. It grants such sources a period of "regulatory assurance" during which they will not be subject to additional State regulatory requirements. For coal-fired power plants, Senate Bill 142 specifies that a 70 percent reduction in sulfur dioxide emissions will result in a fifteen-year period of regulatory assurance. The Act also ensures that regulated utilities (such as Public Service Company) can recover the costs of these controls from its customers.

In July 1998, Colorado and Public Service Company entered into a voluntary emission reduction agreement to implement our proposed Denver emission reduction program. The Agreement grants Public Service Company flexibility in complying with its requirements—through annual emissions averages, flexible tonnage caps and trading of emissions between the different plants. It grants us certainty by ensuring that the plants will not be subject to new or different State requirements for a period of 15 years. And, it assures that we can recover the costs of these controls in a way that does not put the plants at a competitive disadvantage should the electric utility industry in Colorado be restructured.

Unlike traditional command and control approaches, Senate Bill 142 allowed us to define the most cost-effective way to reduce emissions from the plants. Our analysis led us to retire the two oldest and smallest units, install relatively low cost, less effective controls on the smallest of the remaining units and install controls to achieve the maximum reductions on the largest units. We are now in the process of engineering these controls and will be in compliance with the new emission limits beginning on January 1, 2003.

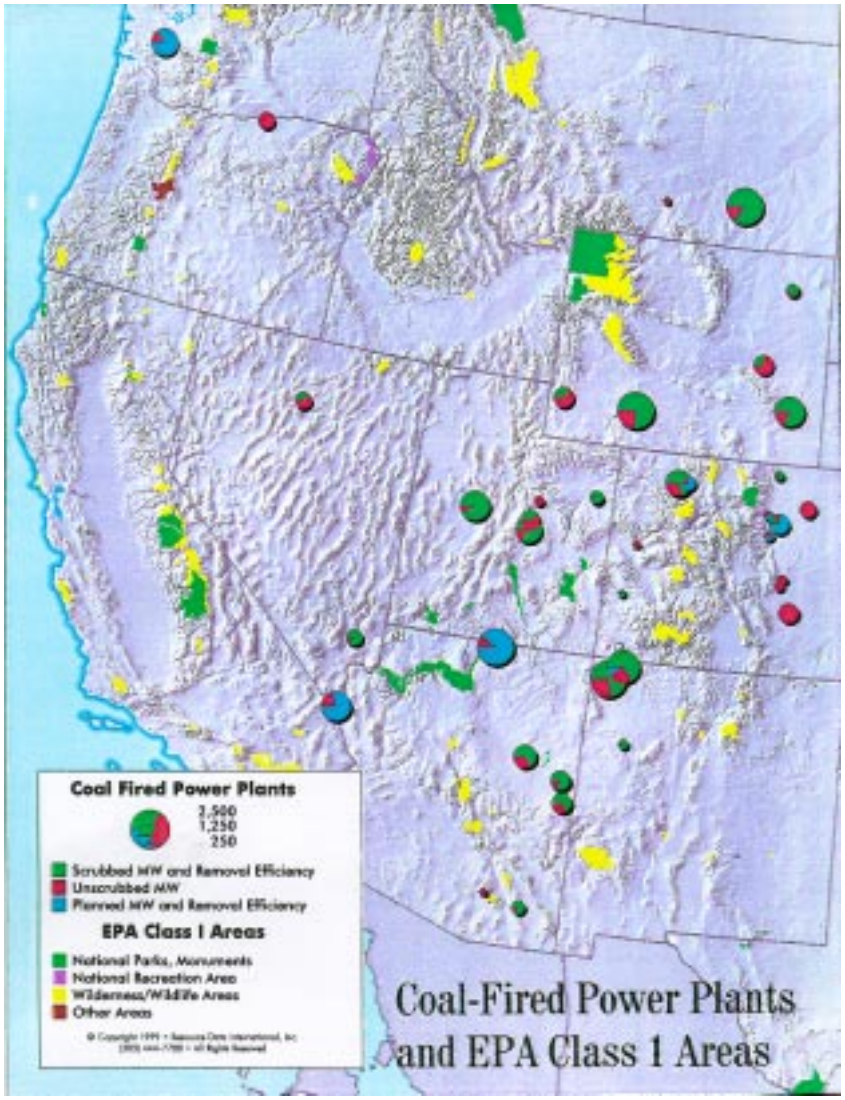
The success of this plan was the result of a great deal of hard work by a broad range of interests. I do not believe that, under the current Clean Air Act, we could have reached such an environmentally beneficial result by working with EPA. This plan became a reality largely because of the leadership of the State of Colorado.

As compared to our Denver emission reduction program, EPA's regulation of air quality under the Clean Air Act appears to be broken. It frequently creates obstacles to cost-effective environmental improvements. Our recent experience at our Fort St. Vrain plant confirms that fact. As Senate Bill 142 demonstrates, there are ways to make environmental improvements without jeopardizing the financial integrity of companies. We did it in Colorado.

Again, this committee is to be commended for exploring a new approach to regulation of air quality. I urge you to learn from our experience. I believe that the four broad concepts embraced in Colorado Senate Bill 142 should form the basis of any reforms to the Clean Air Act: flexibility, regulatory assurance, cost recovery and State control. These four concepts were at the heart of Senate Bill 142. We have already seen how effectively they can result in significant emission reductions. I be-

lieve that, in one form or another, they will work in your process as well. With them, you will be surprised by the degree of environmental progress that the utility industry can achieve.

Thank you for allowing me to be here today. We look forward to working with you and your staff on these issues in the months ahead.



VOLUNTARY EMISSIONS REDUCTION AGREEMENT BETWEEN THE COLORADO AIR POLLUTION CONTROL DIVISION AND PUBLIC SERVICE COMPANY OF COLORADO

This First Amendment ("Amendment") to the Voluntary Emission Reduction Agreement ("Agreement") is entered into this 6th day of September, 1999, by and between Public Service Company of Colorado ("PSCo"), a Colorado corporation with offices at 1225 17th Street, Denver, Colorado, and the Colorado Air Pollution Control Division ("Division"), a division of the Colorado Department of Public Health and Environment.

WHEREAS the Division and PSCo entered into the Agreement pursuant to the Voluntary Emission Reduction Act of 1998 (the "Act"), C.R.S. § 25–7–1201 et seq.;

WHEREAS the Division and PSCo wish to make non-material modifications to the Agreement;

WHEREAS the Division and PSCo have determined and agreed that the Act and the Agreement do not require that such nonmaterial modifications undergo review by the Colorado Air Quality Control Commission.

NOW THEREFORE, in consideration of the mutual promises made herein and in the Agreement and in accordance with the Act, PSCo and the Division agree as follows:

A. The definition of "Compliance Date" in Paragraph 1 of the Agreement is amended to read as follows:

"Compliance Date" means January 1, 2003."

B. The first sentence of Paragraph 9(a) is amended to read as follows:

"Nothing in this Agreement shall be binding upon PSCo or the Division unless and until PSCo, in its sole discretion, ratifies this Agreement in writing within 120 days after the Public Utilities Commission proceeding (including any associated appeals) regarding PSCo's right to recover its air quality improvement costs pursuant to §§40–3.2–102, C.R.S."

C. The last sentence of Paragraph 14 is amended to read as follows:

"The parties recognize that modifications to the Agreement may also require action by the Public Utilities Commission prior to becoming effective."

D. Exhibit A to the Agreement is deleted and replaced with "First Amended Exhibit A," attached to this Amendment.

IN WITNESS WHEREOF, the parties hereto, intending to be bound hereby, have caused this Agreement to be executed by their officers, duly authorized, as of the day and year first written above.

For: PUBLIC SERVICE COMPANY OF COLORADO

CHARLES H. FULLER, *Vice President, Generation and Thermal Energy.*

For: THE COLORADO AIR POLLUTION CONTROL DIVISION

MARGIE M. PERKINS, *Director, Air Pollution Control Division,*

VOLUNTARY EMISSIONS REDUCTION AGREEMENT

This Voluntary Emission Reduction Agreement ("Agreement") is submitted to the Colorado Air Quality Control Commission ("AQCC") for approval this 16th day of July, 1998 by Public Service Company of Colorado ("PSCo"), a Colorado corporation with offices at 1225 17th Street, Denver, Colorado, and the Colorado Air Pollution Control Division ("Division"), a division of the Colorado Department of Public Health and Environment.

WHEREAS PSCo owns and operates three coal-fired electric generating stations in the Denver Metropolitan Area known as the Arapahoe, Valmont, and Cherokee Stations (collectively the "Metro Facilities"); and

WHEREAS PSCo has proposed to add voluntarily SO_2 controls to reduce the average uncontrolled SO_2 emissions from the Metro Facilities by 70 percent; and

WHEREAS PSCo's proposal will result in reductions in the Metro Facilities' SO_2 emission rate by at least 50 percent from the average actual emission rate as represented by typical operations at the Metro Facilities; and

WHEREAS PSCo has proposed to reduce voluntarily the average uncontrolled NOx emissions from the Metro Facilities by 40 percent; and

WHEREAS the Division has determined that these proposed emission reductions are consistent with the requirements of Voluntary Emission Reduction Act of 1998 (the "Act"), §§ 25–7–1201 C.R.S. et seq., which is incorporated herein by reference.

NOW THEREFORE, in consideration of the mutual promises made herein and in accordance with the Act, PSCo and the Division agree as follows:

1. Definitions. The capitalized terms used herein shall have the meaning given to them in the Act. In addition, the terms set forth below shall have the following definitions:

"Metro Units" means coal-fired electric generating units located at electrical generating stations in the Denver Metropolitan Area owned by Public Service Company of Colorado and specifically consisting of all of the following:

i. Cherokee Electric Generating Station, 6198 North Franklin St., Denver, Colorado, Units 1, 2, 3, and 4.

ii. Arapahoe Electric Generating Station, 2601 South Platte River Drive, Denver, Colorado, Units 1, 2, 3, and 4.

iii. Valmont Electric Generating Station, 1800 North 63rd Street, Boulder, Colorado, Unit 5.

"Force Majeure" means any event arising in whole or in part from causes beyond the control of PSCo that delays or prevents or can reasonably be anticipated to delay or prevent PSCo from meeting the emission limitations by the Compliance Date despite PSCo's good faith efforts to meet the Compliance Date. Increase in costs does not by itself constitute a Force Majeure event.

"Upset Condition" means "upset condition" as defined under the Colorado Air Quality Control Regulations, Common Provisions Regulation, § II.E.

"Compliance Date" means the first day of January of the year following 4 years after the date that PSCo ratifies this Agreement as set forth in Paragraph 9.

"Significant Control Equipment Failure" means a substantial failure of control equipment that is caused by a force that PSCo could not have reasonably controlled and that prevents PSCo from complying with the SO_2 emission limitation contained in this Agreement. Significant Control Equipment Failures include, but are not limited to, acts of God, acts of war or terrorism, acts of the public enemy, and structural or operational failure of the control equipment not caused by poor or improper maintenance by PSCo.

"Startup Period" means the 1 year period following the Compliance Date.

"Startup Problem" means (1) defects in the design or construction of any pollution control equipment that PSCo could not have reasonably controlled; or (2) equipment or operational problems arising in any way from the startup of new pollution control equipment.

"Emission Credits" means the difference in tons of SO_2 between the SO_2 emission limitation imposed on the Metro Units under this Agreement and the Metro Units' actual emissions of the SO_2 during any calendar year. One Emission Credit represents the right to emit one ton of SO_2 in any one calendar year.

"Banked Emission Credits" means Emission Credits that PSCo may use to comply with SO_2 emission limitation as set forth in Paragraph 2. Banked Emission Credits are accumulated only in years in which the Metro Units' SO_2 emissions are less than the 10,500 ton per year SO_2 emission limitation contained in this Agreement. Banked Emission Credits may be used in any year after the year in which they are banked. Any Banked Emission Credits used by PSCo to meet the SO_2 emission limitation in 1 year shall be deducted from the Banked Emission Credits available for use in future years. To the extent they are available, PSCo shall use Banked Emission Credits to offset any SO_2 emissions in excess of the limitations contained in this Agreement that are attributable to Upset Conditions, Significant Control Equipment Failures, or Startup Problems. The Emission Credits available for use by PSCo as Banked Emission Credits may, at any time, include up to 2,000 Emission Credits.

2. Sulfur Dioxide Emission Limitations.

a. Limitation. Beginning with the calendar year that begins on the Compliance Date, the Metro Units shall be required to meet either of the following SO_2 emission imitations:

(i) The Metro Units considered as a whole shall not emit in excess of 10,500 tons of SO_2 per year as determined on a calendar year annual basis. Emissions from the Metro Units shall be determined from data generated by the continuous emission monitors installed on each unit pursuant to Regulation 1, Paragraph VII.A. If, in any year, the Metro Units emit more than 10,500 tons of SO_2, the Division shall, at PSCo's direction, deduct some or all of PSCo's Banked Emission Credits from the Metro Units' reported SO_2 emissions prior to determining whether the Metro Units have complied with the SO_2 emission limitation. In no event shall PSCo be allowed to bank Emission Credits in any year in which the emissions limitations have been exceeded due to Upset Conditions, Significant Control Equipment Failures, or Startup Problems, and PSCo shall be required to deduct Banked Emission Credits to the extent they are available to offset any excess emissions attributable to these defined events. Except to the extent necessary to offset excess emissions attributable to Upset Conditions, Significant Control Equipment Failures, or Startup Problems, PSCo may not deduct more than 1,000 Banked Emission Credits from the Metro Units' reported SO_2 emissions in any calendar year.

(ii) In the alternative, instead of meeting the 10,500 ton per year limitation set forth in Paragraph 2(a)(i), the Metro Units considered as a whole may comply with the SO_2 emission limitation contained in this Agreement by reducing uncontrolled SO_2 emissions by 70 percent as determined using the methods set forth in Exhibit A. The Metro Units' compliance with this alternative emission limit shall be determined on a calendar year annual basis.

b. Unset Condition. If PSCo is precluded from complying with any emission limitation under this Agreement because of an Upset Condition, it may assert the existence of the Upset Condition as an affirmative defense to an enforcement action provided that it has complied with all of the requirements related to Upset Conditions found in the Colorado regulations. All emissions, including those related to Upset Conditions, must be reported to the Division in accordance with Paragraph 7 below.

c. Significant Control Equipment Failure. In the event of a Significant Control Equipment Failure at any Metro Unit, PSCo may continue to operate the Metro Unit subject to the Significant Control Equipment Failure but shall be excused from complying with, and shall not be subject to penalties for failure to comply with, the SO_2 emission limitation to the extent that its noncompliance is the result of the Significant Control Equipment Failure, provided that PSCo:

(i) provides the Division with written notice of the Significant Control Equipment Failure within 15 working days after the date on which it first had knowledge of the Significant Control Equipment Failure; and

(ii) enters into an enforceable consent order with the Division, negotiated in good faith by both parties, requiring PSCo to return the control equipment at the affected Metro Unit to normal operation as soon as reasonably practicable. The consent order entered under this paragraph shall (1) establish a reasonable schedule for repairs of the control equipment; (2) require PSCo to implement measures to minimize emissions during the Significant Control Equipment Failure; and (3) establish an alternate SO_2 emission limitation for the Metro Units not subject to the Significant Control Equipment Failure. If PSCo and the Division cannot agree to an enforceable consent order after good faith negotiations, the Division may issue a compliance order without PSCo's consent. The issuance of such a unilateral compliance order and its terms will be subject to dispute resolution under Paragraph 10. During the negotiation of the consent order or resolution of any dispute regarding a unilateral compliance order, PSCo may continue to operate the Metro Unit subject to the Significant Control Equipment Failure even if such operation results in emissions in excess of the emission limitations contained in this Agreement.

Notwithstanding the foregoing, the Division may, as appropriate, collect penalties for any violation of the emission limitations contained in this Agreement to the extent such violation is caused by operation of a Metro Unit subject to a Significant Control Equipment Failure for a period of time in excess of 30 days. Nothing in the preceding sentence is intended to require the collection of such penalties or limit the Division's discretion to impose a penalty, if any, appropriate to the circumstances of the Significant Control Equipment Failure that exceeds 30 days in duration.

d. Startup Period. During the Startup Period, if PSCo cannot reasonably comply with the SO_2 emission limitation contained in this Agreement as a result of a Startup Problem(s), PSCo shall be excused from complying with the SO_2 emission limitation to the extent that the noncompliance is caused by the Startup Problem(s), provided PSCo (i) provides the Division with written notice of the Startup Problem(s) within 15 working days of the date on which it first had knowledge of the Startup Problem(s), and includes in its notice a description of the Startup Problem(s) and steps taken to correct the Startup Problem(s); and (ii) makes best efforts to operate the affected Metro Unit so that the Metro Facilities comply with the emission limitation. All emissions, including those related to Startup Problems, must be reported to the Division in accordance with Paragraph 7 below.

3. Nitrogen Oxides. In lieu of a NOx emission limitation, PSCo will retire Arapahoe Units 1 and 2. Such retirement will be permanent and will be effective on the Compliance Date. Nothing herein shall prevent PSCo or any other person from constructing or operating a new source on the site of Arapahoe Units 1 and 2 provided that such construction or operation is authorized by law or regulation applicable to such new sources. The emission reductions resulting from the retirement of Arapahoe 1 and 2 shall not be used in any netting process to avoid New Source Review for sources constructed on the Arapahoe plant site.

4. Division Determinations Regarding the Emission Limitations. Pursuant to § 257–1203(2), C.R.S. the Division has evaluated the emissions limitations and operational changes required by this Agreement and has determined that the emission limitations will (1) result in reductions in actual emissions or actual emission rates; (2) result in reductions earlier than required by existing laws or regulations; (3) result in reductions significantly greater than required by existing laws or regulations; and (4) protect human health and the environment. The bases for the Division's findings are set forth in Exhibits B and C.

5. Regulatory Assurance Period. Pursuant to the Act, the Metro Units are each granted the following Regulatory Assurance until the following dates:

(a) Fifteen years after the Compliance Date for requirements to install additional pollution control equipment or implement additional pollution control strategies to reduce SO_2 emissions; and

(b) Ten years after the Compliance Date for requirements to install additional pollution control equipment or implement additional pollution control strategies to reduce NOx emissions.

6. Division Evaluation of the Regulatory Assurance Period.

(a) As set forth in Exhibit B. the Division has determined that the Metro Units are eligible for the 15 year Regulatory Assurance Period described in Paragraph 5(a) of this Agreement for SO_2 pursuant to § 25–7–1206(1)(a), C.R.S., because they:

(1) constitute a group of coal fired power plant units located within the same airshed;

(2) will reduce uncontrolled SO_2 emissions by an average of at least 70 percent; and

(3) will reduce the actual emission rate of sulfur dioxide by at least 50 percent.

(b) As set forth in Exhibits B and C, the Division has determined that the Metro Units are eligible for the Regulatory Assurance Periods described in Paragraph 5(a) and (b) of this Agreement for SO_2 and NOx pursuant to § 25–7–1203(2), C.R.S., based on the Division's evaluation of (1) the environmental benefits of the emission limitations and their significance; (2) the time necessary to achieve the emission limitations; (3) the capital, operating and other costs associated with achieving the emission limitations; and (4) the energy and non-air environmental impacts of achieving the emission limitations.

7. Reporting and Recordkeeping.

(a) Beginning 1 year after the Compliance Date, and continuing each year thereafter, PSCo shall submit an annual emissions report to the Division 30 days after the end of the first quarter following the anniversary of the Compliance Date. The annual report shall describe (1) the total tons of SO_2 emitted from the Metro Units during the prior year; (2) PSCo's use, if any, of Banked Emission Credits to comply with the SO_2 emission limitation; and (3) if PSCo uses the alternative emission limitation set forth in paragraph 2(a)(ii), the percent reduction of SO_2 calculated in accordance with Exhibit A. The annual report shall be in a form mutually agreeable to the parties.

(b) PSCo shall maintain records of all data and other information used to prepare its annual report for a period of 5 years after the date of the report.

8. Force Majeure. PSCo shall be excused from meeting the Compliance Date if an event of Force Majeure occurs. If an event of Force Majeure has occurred, PSCo shall notify the Division in writing within 30 days after it first knew that the event was likely to cause a delay in meeting the Compliance Date. Such notification shall include (i) a description of the event; (ii) the anticipated length of the delay; (iii) a description of the activities that will be delayed; and (iv) a proposed new Compliance Date. The Division shall review PSCo's notification and provide PSCo with the opportunity for a meeting to discuss the Force Majeure event. Unless the Division finds that no event of Force Majeure has occurred, it shall establish a new Compliance Date. The Regulatory Assurance Periods for SO_2 and NOx granted under this Agreement shall be determined as set forth in Paragraph 5 of this Agreement using the new Compliance Date. In establishing a new Compliance Date, the Division shall take into consideration the Metro Facilities' role in providing electric service, weather, outage schedules, and remobilization requirements. If the Division finds that no event of Force Majeure has occurred or if it establishes a Compliance Date different from that proposed by PSCo, PSCo may submit the Division's determinations to dispute resolution under Paragraph 10 of this Agreement.

9. Approval and Ratification of Agreement.

(a) This Agreement shall be effective as of the date that the AQCC approves this Agreement pursuant to § 25–7–1203(4), C.R.S. Such approval shall be noted by formal vote of the AQCC recorded in the transcript from the relevant meeting at which the AQCC took the action to approve of this Voluntary Agreement. The transcript shall be attached to this Agreement after the AQCC meeting.

(b) Nothing in this Agreement shall be binding upon PSCo or the Division unless and until PSCo, in its sole discretion, ratifies this Agreement in writing within 60 days after the Public Utilities Commission proceeding (including any associated appeals) regarding PSCo's right to recover its air quality improvement costs pursuant to § 40–3.2102, C.R.S. PSCo's decision regarding ratification of the Agreement shall not be subject to review by the Division or the AQCC and shall not be subject to dispute resolution hereunder. Notwithstanding this paragraph, after AQCC approval, neither PSCo nor the Division may change any of the terms or conditions

of this Agreement without the express written consent of the other party and AQCC approval, if such approval is required by the Act.

10. Dispute Resolution. Any dispute that arises under this Agreement shall first be the subject of informal discussions between the parties. If PSCo concludes at any time that good faith informal discussions will not result in timely resolution of the dispute, it may appeal the dispute and any associated order, decision, determination, or finding of the Division to the AQCC in accordance with the AQCC's procedural rules as set forth in 5 CCR 1001–1, § 1.6.0 and § 25–7–119, C.R.S.

11. Enforceability of Emission Limitations.

(a) Within 1 year after the Compliance Date, PSCo shall apply for modifications of the Title V permits issued to the Metro Facilities. Such Title V applications shall include only the appropriate provisions contained in this Agreement concerning emission limitations, recordkeeping, reporting, and Regulatory Assurance, all as "State-only" permit conditions. PSCo shall provide the Division with all information necessary in sufficient detail to process the permit applications and issue the permits as contemplated by this Agreement. This Agreement shall terminate upon issuance by the Division of the Metro Units' modified Title V permits, except that the Regulatory Assurance granted hereunder shall survive termination. It is the intent of the parties that the emission reductions achieved under this agreement shall continue after the end of the Regulatory Assurance Periods granted hereunder.

(b) The Division will follow the "WEPCO rule," 57 FR 32314, in determining whether any collateral increases in criteria pollutants other than SO_2 and NOx that accompany the decreases in SO_2 and NOx contemplated in this Agreement qualify for "pollution control project" exclusions from New Source Review applicability.

(c) Prior to termination of this Agreement, the Division may enforce the terms of this Agreement as if in accordance with the provisions of § 25–7–1 15 and §§ 25–7–121 and 122, C.R.S. PSCo agrees not to challenge the provisions of this Agreement, the Division's authority to bring, or the Court's jurisdiction to hear, any action to enforce the terms of this Agreement under the Colorado Air Pollution Prevention and Control Act, § 25–7–101, et seq., C.R.S. Upon the issuance of the Title V permits and termination of this Agreement in accordance with Paragraph 11(a) above, the provisions of this Agreement shall be of no force and effect except as contained in the Title V permits issued under the State's Title V program authority or as set forth in Paragraph 11 (a) above. Notwithstanding the foregoing sentence, the emissions limitations contained in this Agreement shall remain state-only "applicable requirements" under the Title V program for the duration of the Regulatory Assurance Periods described in Paragraph 4 above.

12. Assignment. If PSCo transfers ownership or operation of any Metro Unit to another person, PSCo shall assign its rights and obligations under this Agreement to such person in whole or in part, as appropriate in light of the nature of the transfer. Such assignment shall become effective upon PSCo's written notice to the Division. The Division shall cooperate with PSCo to effectuate the transfer in a manner consistent with this Agreement.

13. Notice. All written communication required under this Agreement shall be directed to the individuals at their addresses set forth below, unless those individuals or their successors give notice of a change to the other party in writing:

FOR PSCO

Charles H. Fuller General Manager, Commodity Services North Public Service Company of Colorado 1225 17th Street, Suite 900 Denver, CO 80202

Olon Plunk Director, Environmental Services New Century Energies 550 15th Street, Suite 1000 Denver, CO 80202

FOR THE DIVISION

Director, Colorado Air Pollution Control Division Colorado Department of Public Health and Environment 4300 Cherry Creek Dr. S. Denver, CO 80246–1530

14. Modification. Modifications of this Agreement may be made only by mutual agreement of the parties. Material modifications of this Agreement must be in writing, signed by the Parties and reviewed by the AQCC in accordance with the Act. Non-material modifications must be made in writing and may be made by the parties without AQCC review. The parties recognize that modifications to the Agreement may also action by the Public Utilities Commission prior to becoming effective.

15. Entire Agreement. This Agreement, its Exhibits and Attachments, embody the entire agreement of the parties with respect to its subject matter and supersede any and all prior oral or written agreements, negotiations and communications by or on behalf of the parties.

IN WITNESS WHEREOF, the parties hereto, intending to be bound hereby, have caused this Agreement to be executed by their officers, duly authorized, as of the day and year first above written.

For: PUBLIC SERVICE COMPANY OF COLORADO

CHARLES H. FULLER, *General Manager, Commodity Services North.*

For: THE COLORADO AIR POLLUTION CONTROL DIVISION

MAGGIE PERKINS, *Director, Air Pollution Control Division.*

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