

A Breath *of* Fresh Air

*Reviving the New
Source Review
Program*

April 2003



NATIONAL ACADEMY OF
PUBLIC ADMINISTRATION

Report by a Panel of the
**NATIONAL ACADEMY OF
PUBLIC ADMINISTRATION**
For the U. S. Congress and the Environmental Protection Agency

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**BREATH OF FRESH AIR:
Reviving the New Source Review Program**

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ACKNOWLEDGEMENTS

The Academy Panel would like to acknowledge those whose dedicated and gracious work contributed to the research and writing of this report. The Panel offers its warmest thanks and appreciation to the following Academy interns:

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The views expressed in this report are those of the Panel. They do not necessarily reflect the views of the Academy as an institution.

This document was funded by the U.S. Environmental Protection Agency under contract number 68-D-01-047. Academy Project Number 1965

FOREWORD

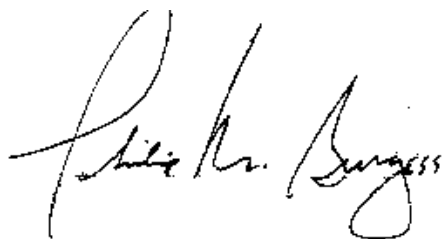
With this report, the Academy fulfills its charge from the U.S. Congress to conduct an independent management evaluation of the Clean Air Act's New Source Review (NSR) program. As with prior Academy studies aimed at improving our nation's programs for protecting the environment, this study offers concrete, practical recommendations based on the in-depth research and expertise of a Project Panel composed of seasoned public administration experts and former agency managers. Their conclusions challenge the regulated community, state and local regulators, EPA officials, and environmental groups to address significant environmental, economic, legal, technical, and management issues.

The Panel finds that the NSR program is critical for protecting public health, and that it has been effective in reducing pollution from newly built facilities. For existing facilities, however, NSR sometimes produces inequitable impacts and falls short of its environmental goals. The Panel recommends fundamental reforms designed to ensure that NSR achieves its clean air goals, as Congress intended. The recommendations focus on performance-based solutions that will provide flexibility for the regulated community and greater certainty for protecting the environment.

The Panel reviewed how the NSR program is managed, why it has generated so much debate in recent years, and how EPA and the states have shared their implementation roles. The Panel heard from regulated industries, state regulators, and environmental groups concerning parts of the program that work well and others that need improvement. These stakeholders were candid in their views of EPA regulations, policies, and guidance and how they are achieving Congress' intent. They especially were concerned about how NSR can produce cleaner air in places that do not meet air quality standards, and how it can protect areas with good air quality while encouraging industrial competitiveness, development and installation of new technologies, and pollution prevention.

This study benefited greatly from the public administration and environmental policy expertise of its Panel members, who gave generously of their time, energies, and creative thinking to develop solid and creative recommendations. I am grateful to the representatives of EPA, state and local environmental agencies, businesses, and environmental groups who frequently made themselves available for this effort. I also want to thank the project staff who worked tirelessly to assist the Panel in understanding the intricacies of the NSR program and to produce a report that is grounded in excellent research.

This report proposes innovative and practical recommendations to improve the NSR program and to help public institutions and regulated facilities become more effective, efficient, and accountable. It also shows how the nation can achieve the goals of protecting public health and strengthening the nation's economy, while responding to future environmental challenges. In short, it demonstrates how effective public administration can work for the benefit of all.

A handwritten signature in black ink, reading "Philip M. Burgess". The signature is written in a cursive style with a large initial "P" and "B".

Philip M. Burgess
President & Chief Executive

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ACRONYMS

ALAPCO	Association of Local Air Pollution Control Officials
BACT	Best Available Control Technology
CAA	Clean Air Act
CEMS	Continuous Emissions Monitoring System
CO	Carbon Monoxide
CO₂	Carbon Dioxide
ECOS	Environmental Council of the States
EPA	United States Environmental Protection Agency
FACA	Federal Advisory Committee Act
FIP	Federal Implementation Plan
DOJ	United States Department of Justice
GAO	Government Accounting Office
HAP	Hazardous Air Pollutant
LAER	Lowest Achievable Emissions Rate
MACT	Maximum Achievable Control Technology
NAAQS	National Ambient Air Quality Standards
NRDC	Natural Resources Defense Council
NESHAP	National Emission Standards for Hazardous Air Pollutants
NGA	National Governors Association
NOV	Notice of Violation
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standards
NSR	New Source Review
OTC	Ozone Transport Commission
PAL	Plantwide Applicability Limit
PM	Particulate Matter
PM 10	Particulate Matter of 10 microns or less in length
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
RACT	Reasonably Available Control Technology
RBLC	RACT/BACT/LAER Clearinghouse
SIP	State Implementation Plan
SO₂	Sulfur Dioxide
STAPPA	State and Territorial Air Pollution Program Administrators
TECO	Tampa Electric Company
TRI	Toxic Release Inventory
TSP	Total Suspended Particulates
VOCs	Volatile Organic Compounds
WEPCO	Wisconsin Electric Power Company

EXECUTIVE SUMMARY

The New Source Review program (NSR) is a critical tool enacted by Congress 25 years ago to protect public health and improve the nation's air quality. But, as applied to existing facilities, NSR is not working as Congress intended. Thus NSR should be fundamentally reformed and strongly enforced against past violations by existing facilities.

The complicated NSR program has been effective in controlling air pollution from newly built industrial facilities and utilities, but it has performed poorly in reducing pollution from the nation's oldest and dirtiest factories and power plants. The result is unfair to facilities that have invested in upgrading their equipment to reduce pollution, while others have avoided controlling their pollution. NSR's unpredictable and lengthy permitting process is also detrimental to facilities that must change operations quickly to compete effectively. Finally, NSR is not having the positive effect on the health of individuals, or on the quality of the nation's air, that Congress intended.

In this report commissioned by Congress, a Panel of the National Academy of Public Administration (the Academy) recommends that the oldest and dirtiest facilities be given a firm deadline to install cleaner equipment or close down. The Panel further recommends that Congress continue requiring NSR permits for new plants, but also replace NSR as it applies to existing facilities with a simpler, more effective, performance-based program.

In 1977, when Congress added NSR to the Clean Air Act, it gave the Environmental Protection Agency (EPA) and the states an essential tool for reducing air pollution from factories and power plants thus protecting public health. The Panel finds that Congress intended the NSR program would lead to a reduction in emissions through the development and application of cleaner technologies as sources wore out and were replaced or modernized over time. By making NSR applicable to existing sources only when they modified and increased emissions, Congress did not envision that these existing sources would operate perpetuity, but that they would be replaced or would install lower-emitting technologies, leading to a reduction in overall emissions. Thus, Congress believed that NSR's requirements for controlling pollution from such facilities would help to achieve the nation's air quality standards, while encouraging industries to develop and install new, cleaner technologies for preventing or controlling air pollution.

NSR is fundamentally two programs, both requiring permits for releasing air pollution. The first requires that new major sources be built with modern, cleaner equipment to minimize air pollution. The second requires that similar upgrades be installed when existing plants are modified in ways that may significantly increase their emissions.

The Panel's research indicates that the NSR permitting process works as Congress intended for new industrial facilities. Pre-construction permits for newly built sources have promoted development and installation of cleaner technologies in various industry sectors throughout the country, and those cleaner facilities have helped to protect air quality. The Panel believes the success of the program for new sources is primarily due to two factors: fairly straightforward

decisions about whether a proposed new source is covered by NSR; and an early EPA lawsuit to enforce NSR's requirement for pre-construction permits at brand new facilities.

But NSR has not been as effective in reducing air pollution when changes at existing sources are likely to increase emissions. Instead -- contrary to Congressional intent -- many large, highly polluting facilities have continued to operate and have expanded their production (and pollution) over the past 25 years without upgrading to cleaner technologies. This avoidance of NSR requirements has delayed the reduction in emissions that Congress expected to result eventually from the NSR program. The result: thousands of premature human deaths, and many thousand additional cases of acute illnesses and chronic diseases caused by air pollution.

The Academy Panel finds that, as applied to existing sources, NSR has *not* protected the environment and public health to the extent that Congress intended, and that EPA's implementation of NSR for existing facilities has:

- Allowed the persistence of old polluting equipment and production technology;
- Created incentives for more polluting facilities to continue operating, breaking the link between capital investments and equipment upgrade;
- Failed to accommodate adequately industries with short product cycles and large-scale batch production, affecting them in ways that may reduce their competitiveness;
- Produced a mixed record of promoting cleaner technologies;
- Placed heavy administrative burdens on regulators by requiring complicated applicability determinations, by allowing facilities to self-police their compliance with NSR, and by making enforcement difficult; and
- Created uneven and unfair burdens on newer facilities and those with upgraded equipment, on states that are downwind of older facilities with excess emissions, and on communities of color or low-income that are often located near older, more polluting facilities.

A combination of factors has prevented NSR from being effective in reducing emissions from existing facilities. They are:

- The structure of the NSR regulatory program -- because it applies only to new or modified facilities, relies on industry self-determinations of applicability, and offers broad regulatory loopholes;
- Lack of EPA's early enforcement against existing facilities that did not obtain NSR permits for modifications -- which would have clarified requirements for complying with NSR and deterred further violations;

- Pervasive data gaps and no requirement to report emissions -- which have handicapped EPA, as well as state and local air agencies, in monitoring the compliance of regulated facilities and analyzing whether NSR is reducing pollution; and
- Insufficient focus on performance-based approaches to achieve desired environmental results.

For those reasons, the Academy Panel believes that the NSR program, as applied to changes by existing sources, must be fundamentally reformed. Protection of the public health and welfare from air pollution is a critical goal of the Clean Air Act; and a strengthened and reformed NSR program can serve, as Congress intended, as an important tool to further that goal. Decisions on reforming NSR and continuing vigorous enforcement against past violations by existing facilities will directly affect the health of individuals -- particularly children, the elderly, and asthmatics.

Therefore, efforts to reform the NSR program should ensure both that NSR provides enhanced protection of health and the environment and should carefully avoid creating even broader loopholes or more exemptions from NSR's requirements.

Summary of Academy Panel's Recommendations

In brief, the Panel's core recommendations for reforming NSR include:

1: End Grandfathering.

Congress should end grandfathering of major sources with high emission levels as soon as possible. Within the next ten years, all major sources that have not obtained an NSR permit since 1977 should upgrade their equipment and lower their emissions to levels that are equivalent to the reductions achieved by the current BACT or LAER performance standards.¹

2: Retain NSR for Newly Built Sources.

Congress should continue to require that all newly, built major sources of any criteria air pollutant must obtain NSR pre-construction permits, operate at levels that meet the BACT or LAER performance standards, and fulfill all other requirements of the current NSR program, such as obtaining offsets in nonattainment areas.

3: Continue to Enforce NSR Vigorously.

EPA and the Department of Justice should continue their investigations and enforcement actions to correct violations of NSR, especially for changes at existing facilities. These actions will produce significant environmental benefits, deter future violations, and encourage other modified facilities to comply with NSR until Congress has adopted the Panel's other recommended reforms.

4: Reform NSR for Existing Sources Using a Performance-Based System.

Congress should amend the Clean Air Act to reform NSR for existing sources, replacing it with a compulsory, three-tier performance-based system that will require facilities to reduce air pollution. Emission limits for each tier will be based on the lower emissions that can be produced by the cleanest technologies available. With the development of newer technologies that can reduce emissions further, NSR's applicable performance standards will then be likely to decline over time.

The three performance tiers are:

Tier 1: Cap-and-Trade: A national or regional multi-pollutant cap-and-trade system for all fossil fuel-fired power plants, industrial boilers, and similar facilities that can monitor their emissions continuously, or can model their emissions reliably.

Tier 2: Cap-and-Net: Emission limits based on the BACT or LAER performance standards and covering an entire facility with multiple emission sources that cannot reliably monitor or model and report its emissions on a continuous basis, and thus cannot participate in the cap-and-trade system of Tier 1.

Tier 3: Unit-Cap: Unit-specific emission limits for individual sources where neither the cap-and-trade nor cap-and-net approaches of Tiers 1 and 2 can feasibly be adopted.

Under any of the three tiers, so long as an existing facility is performing in compliance with all applicable emission limits and has demonstrated that its emissions are reduced and will stay at levels equivalent to the BACT or LAER performance standards, it may make any modifications without applying for an NSR pre-construction permit.

5: Improve EPA and State Information Systems and Public Accountability.

Congress should require facilities to conduct frequent emission monitoring and to report the results regularly to a centralized database that is maintained by EPA and the states and made accessible to the public. Congress should also appropriate adequate funds for EPA to operate a comprehensive, easily used clearinghouse of technologies that can meet the BACT or LAER performance standards.

6. Establish Clear Requirements for Compliance.

All NSR reforms should specify clearly how facilities can verify and demonstrate they are meeting applicable emission limits and performance standards so that compliance -- and enforcement when necessary -- will be more predictable, more efficient, and less complicated for EPA, state and local governments, affected facilities, and the public.

7. Prepare for the Future.

The Panel recommends that Congress' NSR reforms anticipate future environmental challenges and more effectively integrate the NSR program with other elements of the Clean Air Act, such as Title V operating permits and state implementation plans. Most importantly, the Panel recommends that Congress adopt these reforms in a manner that provides future regulatory certainty for the regulated community, while ensuring that public health and the environment will be protected.

In conclusion, the Panel believes that its recommendations preserve the primary goal of Congress for the NSR program: protecting public health by the eventual installation of modern, cleaner technologies, thereby reducing air pollution and improving overall air quality. The Panel's recommendations also provide a workable solution to the problems that have made it so difficult for existing facilities to make changes and still comply with NSR.

Furthermore, the Panel's suggested reforms are designed to stimulate markets for developing and installing improved technologies for preventing or controlling air pollution. They also will eliminate the inequities in the current implementation of the NSR program by closing loopholes, remedying the noncompliance now evident among existing sources, and addressing NSR's ineffectiveness for certain industrial sectors.

ENDNOTE

¹ The Clean Air Act requires a new or modified source to meet the performance standards of best available control technology (BACT) if it is in an attainment area, or lowest achievable emission rate (LAER) if it is in a nonattainment area.

CHAPTER ONE

INTRODUCTION

The New Source Review Program

New Source Review (NSR) is one of the Clean Air Act's programs for regulating pollution from large industrial facilities. Although implementation of NSR is complex, the basic requirements of the program are straightforward:

- In areas where air quality is clean, a planned new facility that will emit air pollution at or above certain levels must obtain an NSR permit before construction can begin. That permit will require the new source to incorporate "best available control technology" as determined by a detailed analysis of its operations. Existing sources in clean air areas must also apply for an NSR permit, with the same control requirements, when they plan to make any changes that may significantly increase their emissions.
- In areas where national air quality standards are still not met, a new facility or an existing facility planning a change that triggers NSR must meet even stricter requirements -- "lowest achievable emission rate" -- and offset its emissions by arranging for other nearby sources to reduce their emissions before the NSR permit can be approved.

Controversy Surrounding NSR

By 2000, NSR had become very controversial and was gaining public attention. Among the main reasons for this increased visibility were EPA's enforcement actions launched in the late 1990s against companies that allegedly had violated NSR for decades by making major changes at their facilities without obtaining the required pre-construction permits. Those enforcement actions brought to the forefront the dilemma that had confounded EPA, state and local agencies, environmental groups, and the regulated community had struggled with for over a decade: how to promote NSR's goals of improving and protecting air quality while simultaneously avoiding unnecessary costs and providing clarity yet flexibility for regulated facilities.

While there is an overwhelming consensus among the stakeholders that changes are necessary in the NSR program, there is significant disagreement over what form those changes should take. A philosophical question arises as to whether the NSR approach or an incentives-based system would better achieve Congress' goal for the program. Many of the issues are mundane, technical and not easily understood. Yet, substantial public health concerns depend on how the problems associated with NSR are resolved.

The Academy's Review

To gain a better understanding of these problems, Congress directed EPA to enter into an agreement with the Academy for "an independent evaluation" of NSR and to publish a report of

its findings and recommendations to EPA and the Congress on how to manage better or reform the program.”¹ Congress asked the Academy to examine:

- The evolution of EPA’s NSR and Prevention of Significant Deterioration (PSD) regulations, guidance, and interpretation of those regulations, as well as the implementation of the programs;²
- The respective roles of the states and EPA in implementing the NSR and PSD programs;
- The evolution of EPA’s policies and strategies for enforcement of the programs; and
- The impacts of current program administration on industrial competitiveness, capital investment, technological innovation, pollution prevention, and environmental quality.³

An eight-member Panel has guided Academy researchers over a 20-month period. Their research entailed collecting and reviewing documents, opinion letters, decisions, books, articles from legal and trade journals, and other literature on the relevant topics. A comprehensive chronology of the significant events of NSR’s 25-year history provided context for the program’s evolution -- and its controversy. The research team conducted interviews with state, local, and EPA officials; industry representatives; leaders in the environmental community; and experts on various economic, legal, and environmental issues surrounding the subject. The team both convened and attended many meetings with Congressional staff, industry groups, academic specialists, economists and other experts in the field. During its meetings, the Panel received presentations from senior EPA managers, and from representatives of state and local governments, many different industrial sectors, and the environmental community.

Relying on that research and on the expertise of its members, the Academy Panel has focused on the public administration aspects of the NSR program to make its final recommendations. To accomplish its task, the Panel has also considered studies by previous Academy Panels, which have recommended that EPA and Congress adopt more innovative, cost-effective performance-based systems for managing environmental programs, such as facility-wide permits, cap-and-trade programs, and performance-track systems.

Consequently, the Panel has determined that any reforms to the existing NSR program must:

- Protect and enhance air quality and public health consistent with Congressional intent;
- Reduce and fairly distribute costs to government and the regulated community; and
- Collect data necessary to ensure accountability to regulators and the public.

On December 31, 2002, shortly before the Panel finalized this report, EPA issued final NSR reform rules and a proposed rule on the routine maintenance exclusion.⁴ EPA took final action on five changes to the NSR program that create alternative means for determining whether NSR applies. These changes were made to address some of industry's concerns and to provide greater regulatory certainty and flexibility for management and investment decisions. The final and

proposed rules have been strongly criticized by many state and local officials, environmental organizations, and legislators;⁵ and some state attorneys general have challenged the final rules in federal appeals court.⁶ Thus EPA's reforms appear unlikely to resolve the controversy surrounding the NSR program.

This report has eight chapters. Chapter Two provides historical background on the intent of Congress and the environmental importance of the NSR program. Chapter Three explains how the NSR requirements work, the role of the states in their implementation, and the history and evolution of the program and its enforcement. Chapter Four describes the current debate and how it came to the point where it is today. Chapter Five details the impact of NSR on environmental quality, public health, and industrial economic performance. Chapter Six presents the Panel's findings, and in Chapter Seven the Panel spells out its recommendations for reforming the New Source Review program.

ENDNOTES

¹ Senate Committee on Appropriations, S.Rept. 106-410, to accompany H.R. 4635 (2000).

² There are two sets of regulations governing the New Source Review program, one for sources located in areas that have not reached attainment of the national ambient air quality standards (referred to as the nonattainment NSR program) and one for attainment areas (referred to as the prevention of significant deterioration (PSD) program). They are found at 40 C.F.R. §165 and Appendix S to Part 51 (NSR SIP requirements for nonattainment areas) and 40 C.F.R. §51.166 (NSR SIP requirements for PSD areas)(2000). Throughout the report, the Academy will use the general term “NSR” to refer to both programs unless there is a specific need to distinguish the two.

³ S. Rept. 106-410.

⁴ Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR): Final Rule and Proposed Rule, 67 Federal Register 80186 (December 31, 2002). The proposed rule on the routine maintenance exclusion begins at 67 Federal Register 80290.

⁵ See, e.g., "Illinois, California add suits in fight over pollution rules," *Chicago Tribune*, February 28, 2003; "Ex-Clinton Staffer Leads Pa. in Legal Challenge of Bush NSR Reforms," *Greenwire*, January 28, 2003.

⁶ *State of New York, et al. v. EPA*, Docket No. 02-1387/03-1016 (consolidated cases) (D.C. Cir.).

CHAPTER TWO

PURPOSE AND IMPORTANCE OF NEW SOURCE REVIEW

The NSR program is clearly important for the nation's overall efforts to protect and improve air quality.¹ Congress stated this intent when adopting NSR, both in the language of the Clean Air Act itself and in the legislative history. Moreover, key court decisions interpreting the relevant provisions of the Act have affirmed three important goals of Congress for NSR as applied to existing sources of air pollution:

- Pre-construction permits are needed when existing sources will be modified in ways that will increase their emissions regardless of the magnitude of those changes;
- Although existing sources were not required to retrofit their equipment immediately, the “grandfathering” ends -- and upgraded technology must be installed -- when those facilities are modified or replaced; and
- Markets for developing and diffusing cleaner, less costly technologies to prevent and control pollution will be created by NSR's requirement for equipment upgrades that will reduce emissions when a new facility is constructed or changes are made at an existing source.

When Congress enacted the Clean Air Act in 1970, it declared: “The purposes of this [Act] are...to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population.”² Then, in the 1977 Amendments to the Act, Congress reaffirmed that declaration of purpose and enacted additional tools -- including NSR -- to achieve its overall goals.

In adopting NSR, Congress stated that the program's purpose is: “To protect public health and welfare from any actual or potential adverse effect...from air pollution...notwithstanding attainment and maintenance of all national ambient air quality standards.”³ To effectuate that ambitious purpose through NSR's requirement for pre-construction permits, Congress chose to require that all major industrial facilities must install modern technology to prevent or control air pollution. And Congress made those technology-based requirements applicable not only to construction of entirely new pollution sources, but also to changes at existing sources.⁴

Before a new source can receive a permit to begin construction in an area that meets clean air standards, Congress dictated that an analysis must be performed to identify the effects of the increased emissions on health and the environment⁵ and to identify the “best available control technology” -- including technologies to prevent pollution as well as end-of-pipe controls⁶ -- that the source must install to reduce its emissions. In nonattainment areas, Congress mandated an even stricter level of pollution prevention or control -- the “lowest achievable emission rate”⁷ -- and also required that future emissions from a new source must be offset by reductions from other nearby facilities before the new source can begin operating.⁸

Congress explicitly provided, however, that the new requirements apply only to major sources that will produce certain threshold levels of pollution.⁹ All new industrial facilities that will meet those thresholds are then required to obtain an NSR permit prior to construction.

For changes at existing sources, Congress further provided that NSR would be triggered by *any* modification. And Congress broadly defined “modification” as: “*any* physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted.”¹⁰

So broad, indeed, is Congress’s definition of modification that the D.C. Circuit struck down EPA’s initial NSR regulations for changes at existing sources in clean air areas (PSD) because the agency attempted to limit the number of changes subject to NSR by establishing a threshold for the amount of increased emissions that would trigger the need for a pre-construction permit. Rejecting EPA’s tonnage threshold for modified sources in *Alabama Power v. Costle*, the court observed:

For this departure in regulation language, no reasonable basis can be found in the statute. The Act requires PSD review for any construction of a major emitting facility; the same PSD review requirement applies for any modification of a major emitting facility; and the term “modification” is nowhere limited to physical changes exceeding a certain magnitude. There is some indication in the legislative history to suggest that at least one Senator intended some such limit. But the language of the statute clearly did not enact such limit into law. We are constrained here to follow the clear language.¹¹

Thus, although Congress grandfathered existing sources by deferring the application of NSR technology and offset requirements until an existing plant is modified, Congress at the same time made clear -- as the court found in *Alabama Power* -- that once a modification is planned, the Act’s requirement for a pre-construction permit will apply.

EPA has since then softened the effect of the original Congressional language by creating exemptions from NSR for “routine maintenance, repair, and replacements,” as well as for modifications not exceeding certain *de minimis* tonnage thresholds.¹² Even so, the broad language Congress used in creating the NSR program in 1977 -- making NSR applicable to any physical change in a major stationary source -- clearly demonstrates that Congress intended to impose meaningful regulatory requirements on existing sources, and thus reduce their emissions by ensuring they would upgrade their equipment by installing cleaner technologies when making other changes.

The legislative history of the relevant provisions of the Clean Air Act bolsters the Panel’s conclusions about the Congressional purpose of NSR. The Conference Report on the 1977 Amendments instructed EPA that the regulations implementing the NSR pre-construction review program were “to provide: (a) specific numerical measures against which permits may be tested; (b) a framework for stimulating improved control technology; (c) protection of air quality values; and (d) fulfill the goals set forth in the purposes provisions.”¹³ To implement that purpose, the

Conference members adopted the House bill's definition of "lowest achievable emission rate" that would be required in nonattainment areas for the issuance of NSR pre-construction permits. Then the Conference members confirmed in their report that, although "cost will have to be taken into account" when determining whether a facility can meet the lower emission rate, "cost factors in the nonattainment context will have somewhat less weight than in determining new source performance standards"; and, "[o]f course, health considerations are of primary importance."¹⁴

When the House was debating the final bill, one of the House conferees, Representative Paul Rogers, summed up the purpose of the 1977 amendments in an explanatory statement:

The conference agreement is founded on several major principles. First, and foremost, protection of the public health remains the paramount purpose and value under the Act. Consideration of costs, energy, and technology is expressly authorized or required in many sections of the bill, but the overriding commitment of the 1977 Act (just as the 1970 legislation) is to the protection of public health. An example of this is the conferees' provision defining the "lowest achievable emission rate" for nonattainment areas.¹⁵

Congress was also clear that the purpose of NSR's pre-construction permits was for "stimulating improved control technology."¹⁶ Both the House and Senate reports stressed the importance of requiring the cleanest technology for NSR permits so the program would promote development and diffusion of new, improved technologies to reduce air pollution. In adopting NSR, Congress intended that facilities would have "incentives for improved technology," those improvements would "become widespread far more rapidly," and vendors of cleaner technologies would have a "guaranteed market."¹⁷

By structuring the NSR program so that technology requirements would be triggered prior to constructing a new source or modifying an existing one, Congress reasoned that it would be more cost-effective and efficient for facilities to incorporate new, cleaner equipment into the design and construction of a new source or a modification than it would be to retrofit or add controls at a later time when air quality standards still were not being met.¹⁸ As the 1977 House report explained, requiring technology upgrades prior to construction or modification of facilities would also "help minimize the need for enforcement or other actions under the state implementation plan requiring additional post-construction control measures on the permitted plants."¹⁹

Given the breadth of the statutory language as it applies to existing sources and the legislative history of NSR, the Panel believes that Congress clearly did not intend for grandfathering of existing sources to continue indefinitely. Rather, Congress envisioned that sources already planned or existing by 1977 would either be upgraded or replaced over time and that, whenever changes were made later, existing facilities would install new, cleaner technologies to prevent or control air pollution.²⁰

Once again, the D.C. Circuit's decision in *Alabama Power* is instructive. In striking down EPA's attempt to narrow the reach of the NSR program as applied in PSD areas, the court concluded: "The statutory scheme intends to 'grandfather' existing industries; but the provisions

concerning modifications indicate that this is not to constitute a perpetual immunity from all standards under the PSD program.”²¹ Ten years later, the 7th Circuit reaffirmed that conclusion in *Wisconsin Electric Power Co. v. Reilly*:

“The development of emission control systems is not furthered if operators could, without exposure to the standards of the 1977 Amendments, increase production (and pollution) through the extensive replacement of deteriorated generating systems.”²²

Thus, the Panel believes Congress clearly intended -- as the courts have recognized -- that NSR’s pre-construction review would force facilities to install improved technologies for preventing and controlling pollution and to reduce their levels of emissions. The Panel further notes that utility regulators have similarly found Congress expected that the gradual installation of these new technologies over time would lead to “lower overall emissions.”²³

To summarize, in 1977 Congress grandfathered existing sources by providing that NSR’s technology standards would not apply until those plants made changes that would increase their emissions. However, it is clear to the Panel -- as it has been to the courts -- that Congress adopted the grandfather provision simply to ease those facilities’ immediate economic burden of retrofitting with cleaner equipment.

A vital aspect of this grandfather provision was the clear assumption of Congress that older, high-emitting sources would gradually be upgraded or phased out. Then, once a grandfathered facility makes any changes or is replaced, NSR is triggered and requires it to install improved technologies that will prevent or control pollution. The Panel believes these requirements are, *without question*, designed to lead to an overall reduction in emissions from existing sources.

Based on its review of the Clean Air Act, the legislative history, and court decisions, the Panel concludes that Congress intended the NSR program to play a fundamental and important role in gradually reducing air pollution throughout the nation. That purpose is clear from both the statutory language and the role of NSR in relation to the overall structure of the Act. NSR contributes to that goal by creating a mechanism that requires major sources of air pollution, over time, to install equipment that will produce increasingly superior reductions of air pollution. Congress intended NSR to assure that new sources would be clean, existing sources would become cleaner over time, and a moving frontier of improved technology would be the benchmark against which “clean” is measured when NSR permit applications are reviewed by the states or EPA.

ENDNOTES

¹ In areas that have cleaner air or already satisfy air quality standards, NSR is usually called the "PSD" -- Prevention of Significant Deterioration -- program, referring to Congress' intent to prevent the air quality there from degrading any further. In nonattainment areas where air quality does not meet the standards, the program is sometimes referred to as "nonattainment NSR." For simplicity, the Panel refers to both elements as "the NSR program" or "NSR" unless it is important to differentiate between the two.

² 42 U.S.C. § 7401(b). Moreover, as stated in the House Report, "The purpose of the 1970 Act was to speed up, expand, and intensify the war against air pollution in the United States with a view to assuring that the air we breathe throughout the Nation is wholesome once again." H.R. Rep. 91-1146, 91st Cong., 2d Sess. 1 (1970), reprinted in Congressional Research Service, *Legislative History of the Clean Air Act Amendments of 1970*, 5356.

³ 42 U.S.C. 7470(1). The conference committee adopted the statement of purpose for the PSD provisions from the House bill. "Joint Explanatory Statement of the Committee of Conference," Report No. 95-564, 95th Congress, 1st Sess., reprinted in Congressional Research Service, *A Legislative History of the Clean Air Amendments of 1977*, (hereinafter, *1977 CRS Legislative History*),531.

⁴ The definition of "commencing construction" includes the modification of any source or facility. 42 U.S.C. § 7479(2)(C).

⁵ 42 U.S.C. § 7475.

⁶ Best available control technology "means an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under this chapter emitted from or which results from any major emitting facility, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems, and techniques...."42 U.S.C. § 7479(3).

⁷ Lowest achievable emission rate "means for any source, that rate of emissions which reflects--(A) the most stringent emission limitation which is contained in the implementation plan of any State for such class or category of source, unless the owner or operator of the proposed source demonstrates that such limitations are not achievable, or (B) the most stringent emission limitation which is achieved in practice by such class or category of source, which is more stringent." 42 U.S.C. § 7501(3).

⁸ 42 U.S.C. § 7503(a) - (c).

⁹ 42 U.S.C. § 7602(j).

¹⁰ 42 U.S.C. § 7411(a)(4), as incorporated in the NSR program by 42 U.S.C. §§ 7479(2)(C), 7501(4) (emphasis added).

¹¹ *Alabama Power v. Costle*, 636 F.2d 323, 400 (D.C. Cir. 1979).

¹² 40 C.F.R. §§ 52.21(b)(2)(iii)(a), 52.21(b)(23).

¹³ "Joint Explanatory Statement of the Committee of Conference," *1977 CRS Legislative History*, 531.

¹⁴ *Ibid.*, 537. The NSR permit program adopted by the conference committee was "similar to the program required in the House bill." *Ibid.*

¹⁵ Statement of Rep. Rogers, "Clean Air Act Conference Report (1977): Statement of Intent; Clarification of Select Provisions," House Consideration of the Report of the Conference Committee (August 4, 1977), *1977 CRS Legislative History*, 319.

¹⁶ “Joint Explanatory Statement of the Committee of Conference,” 531: Pre-construction review program was to provide “a framework for stimulating improved control technology.” See also, Senate Committee on Public Works, *Clean Air Act Amendments of 1970*, 91st Cong., 2d Sess., S.Rept. 91-1196 (1970), 17: “Standards of performance should provide an incentive for industries to work toward constant improvement in techniques for preventing and controlling emissions from stationary sources” (discussing technology-forcing aspect of NSPS pre-construction permit program in 1970 Act).

¹⁷ Senate Committee on Environment and Public Works, *Clean Air Act Amendments of 1977*, 95th Cong., 1st Sess., S.Rept. 95-127 (1977), 31; *1977 CRS Legislative History*, 1405: A “flexible approach [to making the case-by-case decision on best technology] allows the adoption of improvements in technology to become widespread far more rapidly than would occur with a uniform federal standard.” House Committee on Interstate and Foreign Commerce, *Clean Air Act Amendments of 1977*, 95th Cong., 1st Sess., H.R. Rept. 95-294 (1977), 186; *1977 CRS Legislative History*, 2653: “The best technology requirement was intended to create incentives for improved technology . . . to be accomplished by assuring any vendor who produced such an improved technological system that the standards would be revised to reflect that improvement, and a guaranteed market for the technology would thereby be created.”

¹⁸ H.R. Rept. 95-294, 185; *1977 CRS Legislative History*, 2652: “Building control technology into new plants at time of construction will plainly be less costly then (sic) requiring retrofit when pollution ceilings are reached.” See also, Senate Committee on Public Works, *The Clean Air Act Amendments of 1970*, 91st Cong., 2d Sess., S. Rept. 91-1196 (1970), 16 (discussing NSPS pre-construction review).

¹⁹ H.R. Rept. 95-294, 145; *1977 CRS Legislative History*, 2612.

²⁰ See, e.g., *Wisconsin Electric Power Co. v. Reilly (WEPCO)*, 833 F.2d 901, 910 (7th Cir. 1990). “To adopt WEPCO’s definition of ‘physical change’ would open vistas of indefinite immunity from the provisions of NSPS and PSD. Were we to hold that [WEPCO’s replacement of systems was not a modification] the application of NSPS and PSD to important facilities might be postponed into the indefinite future. There is no reason to believe that such a result was intended by Congress...Congress did not permanently exempt existing plants from these requirements.”). See Senate Debate on the 1990 CAA Amendments, remarks by Sen. Chafee discussing an amendment to exempt modifications in power plants subject to the Acid Rain Program from NSR: “The rationale that is behind permitting these old plants to emit [at grandfathered emission capacity] is, first of all, they are inefficient, and at some point they are so inefficient they are going to be replaced. And there you come in with a new plant and a clean plant...The flaw in his argument [that the Acid Rain Program should exempt major modifications at old power plants from NSR requirements] is that we are not seeing the end of these plants.” Senate Debate (April 3, 1990); *CRS Legislative History*, 6970; B. Biewald, D. White and T. Woolf (Synapse Energy Economics) and F. Ackerman and W. Moomaw (Global Development and Environment Institute), *Grandfathering and Environmental Comparability: An Economic Analysis of Air Emission Regulations and Electricity Market Distortions*, prepared for the National Association of Regulatory Utility Commissioners (June 11, 1998), 2.

²¹ 636 F.2d 323, 400 (D.C. Cir. 1979).

²² *Wisconsin Electric Power Co. v. Reilly (WEPCO)*, 833 F.2d 901, 910 (7th Cir. 1990).

²³ Biewald *et al.*, *op.cit.*: “Participants in the original Congressional debates and official reports from the 1970s and 1980s, make it clear that lower overall emissions were expected to result from the gradual phase-in of new plants and new energy technologies. Unfortunately, it turns out that many old plants are remaining in service far longer than expected, causing an indefinite delay in the anticipated emissions reduction from facility retirement.”

CHAPTER THREE

BASIC CONCEPTS, SCOPE, AND HISTORY OF NSR

3.A The Regulatory Scheme of the Clean Air Act

The Clean Air Act of 1970 relied on a two-pronged approach for protecting and enhancing the nation's air quality. The first approach was based on setting ambient air quality goals for regulated pollutants and requirements to control emissions at levels that will protect the nation's air quality.

EPA has set national ambient air quality standards (NAAQS) for six criteria air pollutants: sulfur dioxide (SO₂), nitrogen oxides (NO_x), lead (Pb), carbon monoxide (CO), particulate matter (PM), and ground-level ozone (O₃).¹ State and local authorities must devise federally approved plans, called State Implementation Plans (SIPs), for achieving or maintaining those standards. SIPs include requirements for controlling emissions from individual sources as part of an overall state strategy to preserve air quality or to make progress toward achieving clean air.²

The second approach was based on mandating technology, emission, or performance standards aimed at specific industrial processes that generate air pollution. Reductions in air emissions are determined by how much a process at a particular source can be cleaned up, considering economic and technical factors. That dual approach teamed an overall management strategy based on air quality targets, with facility-specific requirements that set emission and technology standards for new and modified sources.

Just prior to publication of the Panel's report, EPA released final rules changing some of the NSR regulatory requirements outlined here. The Panel has not evaluated the new rules in detail, but they are summarized in Chapter 4, Section 4.B.

3.A-1 NSR's Regulatory Requirements

NSR requires facilities to obtain pre-construction permits for new or modified sources of pollution. Under the program, a company must obtain an NSR permit if it is building a new major stationary source of air pollution or if it is making a major modification to an existing source that will result in a significant net emissions increase. Because EPA has delegated its NSR permitting authority to most states (or has approved a SIP incorporating the NSR program), state and local air pollution agencies have the main responsibility for implementing the NSR review and permit program.³ A state may devise its own pre-construction permit program if it demonstrates that its program is at least as stringent as the federal one and is approved by EPA. Some states also have "minor source NSR" programs to regulate new construction or modifications of facilities that will produce new emissions in amounts lower than the levels that qualify as major sources.⁴

The sections below describing when NSR is applicable and when a permit will be issued are based on the federal regulations -- which for the most part are followed by state and local agencies in making NSR determinations.

Whether a source falls into the NSR review and permit program, as well as the requirements for receiving a pre-construction permit, depends on the facility's location and on the amount of air pollutants it will emit. For facilities located in nonattainment areas that have not yet met the NAAQS, NSR determinations and requirements are usually more stringent than in clean air areas. This is to ensure that air quality improves in nonattainment areas when new sources are built or when existing sources undergo major modifications, so that there can be reasonable progress towards attainment of the NAAQS, while still allowing economic growth in an area.⁵ NSR programs that encompass those requirements and determinations for these areas are called "nonattainment NSR" programs.⁶

Clean air areas that already meet the NAAQS are called "attainment areas," and permits for new and modified sources in these areas are governed by the Prevention of Significant Deterioration (PSD) portion of NSR. The purpose of the PSD requirements is to assure that healthy air does not deteriorate significantly when new or modified sources are added.

The PSD program is implemented under Part C of Title I of the Clean Air Act, and the nonattainment NSR program is implemented under Part D of Title I. The federal requirements for each of these two programs are located in different sections of the Code of Federal Regulations.⁷ Throughout this report, the Panel refers to both sets of requirements as "NSR" unless there is a specific need to distinguish between the two.

3.A-2 Applicability of New Source Review

Newly Constructed Sources

NSR is applicable to newly constructed sources or modifications at existing major stationary sources. Under the PSD program in attainment areas, a "major stationary source" usually is one that emits, or has the potential to emit, 250 tons per year of a regulated pollutant.⁸ However, for certain sources identified in the regulation -- electric power plants, pulp mills, portland cement plants, primary zinc smelters, iron and steel mill plants, and petroleum refineries -- the threshold for a major source is 100 tons per year.⁹

In nonattainment areas, the threshold for a major stationary source is even lower. For most air pollutants, a source in a nonattainment area is major if it emits, or has the potential to emit, 100 tons per year.¹⁰ The Clean Air Act Amendments of 1990 reduced the threshold amount even further for a major source in certain ozone nonattainment areas, depending on the seriousness of the pollution problem.¹¹ In areas classified as severe, a major source is one that emits 25 tons per year of volatile organic compounds (VOCs) or nitrogen oxides (NO_x).¹² Although those changes have already been incorporated into most SIPs, EPA still has not issued final rules adopting them.¹³

Managers proposing to construct new sources of air pollution can determine rather easily whether they must apply for NSR review and a pre-construction permit. If a source will emit more than the allowable threshold amount in its geographic area, it is a major source and must comply with NSR. Proposed new sources have no emission history, of course, so EPA and the states examine potential emissions to determine the need for NSR permits.

EPA has defined “potential to emit” (PTE) as the “maximum capacity of a stationary source to emit a pollutant under its physical and operational design.”¹⁴ Under that definition, any limitation on a source’s capacity to emit that is included as a permit condition can be considered part of the source’s design, as long as it is “federally enforceable.”¹⁵ These criteria for determining a source’s potential to emit were challenged and reviewed in the seminal 1979 NSR decision, *Alabama Power Co. v. Costle*.¹⁶ The current NSR rules reflect the changes mandated by that court decision.

There is, also continued disagreement, as well as differing court decisions, about whether limitations on PTE must be federally enforceable.¹⁷ While the Clean Air Act Amendments of 1990 dictated that any emission reductions used to determine offsets must be federally enforceable, they did not address whether that requirement applies to reducing a source’s PTE. EPA has issued a transition policy allowing sources to limit their PTE without a federally enforceable limitation,¹⁸ if a source has actual emissions between 50 and 100 percent of the major source threshold and holds a permit with state-enforceable limits that are “enforceable as a practical matter.”¹⁹

Modifications of Existing Sources

As noted in Chapter 2, the Clean Air Act defines “modification” very broadly to mean “any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted.”²⁰ From the outset, however, EPA’s regulations have limited the applicability of NSR only to “major” modifications.²¹ For both PSD and nonattainment NSR, a “major modification” is “any physical change in, or change in the method of operation of, a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act.”²²

Determining whether a change at an existing facility constitutes a major modification subject to NSR is a two-step process. The permitting agency first establishes whether physical or operational change will occur. If so, the agency next determines if the change will produce a significant net increase in emissions.

STEP ONE: Determining Whether a Physical Change Will Occur

Congress has never clarified the phrase “a physical change or change in the method of operation” of a facility. Although EPA has not provided a regulatory definition of the phrase itself, it has promulgated several regulatory exclusions describing what it is not.²³

One of the most commonly used exclusions from NSR applicability is for “routine maintenance, repair, and replacement.”²⁴ EPA has not formally defined what activities fall within this exclusion but, at least since 1988, the Agency has applied the exemption on a case-by-case basis when asked for an applicability determination.

As mentioned earlier, a facility is not required to ask for approval or to notify a permitting agency when it performs a construction activity that is “routine maintenance, repair or replacement.” Because there is no agency notification or review, the regulated source itself determines whether an action qualifies as a routine activity, and therefore exempt from NSR requirements.

When an agency is requested to make an applicability determination, permitting officials contact the facility’s owners or operators to clarify whether the intended actions will require an NSR permit.²⁵ To do so, the permitting agency weighs the nature, extent, and purpose of the source modification, along with the frequency of changes and the cost of the work.

The NSR regulations also provide exemptions for other types of changes, such as the use of certain alternative fuels, an increase in the hours of operation or in the production rate (unless it is prohibited under a permit condition), and a change in ownership, as well as certain pollution control and clean fuels projects.²⁶

STEP TWO: Determining Whether There Will Be a Significant Net Emission Increase

After deciding that a physical or operational change will occur -- and that it does not qualify for any exemption under EPA regulations -- the permitting agency must determine if the change will “result(s) in a significant net emissions increase of any pollutant subject to regulation under the Act.”²⁷ To do so, it asks three questions: Will the change increase emissions? Will there be a net increase in emissions from the facility? Will the net increase be significant?

- Will the change increase emissions?

To determine if a possible increase in emissions will result from a change, the permitting agency compares the actual emissions before the change to what they would be after the change. To determine the baseline for the actual emissions prior to the change, the rules state that the agency uses the average rate, in tons per year, actually emitted during the previous two years -- if those emissions were representative of normal operations during this time.²⁸ Pursuant to a 1992 rule, EPA presumes that any two consecutive years within the five years prior to the proposed change is representative of normal operations for an electric utility.²⁹ The determination as to what the emissions will be after the change is, however, more challenging. EPA’s current regulations state that, if a unit (other than one at an electric utility) “has not begun normal operations,” actual emissions after the change will be equal to the potential to emit (PTE).³⁰

Under its pre-2002 regulations, EPA initially presumed that a changed unit “has not begun normal operations” and that it will operate at its full PTE year round. To calculate the increase, the average of the two years of actual emissions preceding the submission of a permit application is subtracted from the PTE after the change. This test for comparing pre-change and post-change

emissions is called the “actual-to-potential” test. In many cases, the actual emissions after a change are far lower than the PTE because most existing sources, for various reasons, do not operate at full capacity year-round. In order to avoid what could possibly be a large increase in the calculated emissions using PTE, a source can agree to a permit condition setting an enforceable emission limit on its changed unit, and thus escape NSR review. Sources that do so are known as “synthetic minors.”³¹

After a challenge by an electric utility to the presumption that a changed unit will operate at its PTE, the court required a different set of calculations for a utility’s “like-kind” replacements of equipment for which an emission history could be established.³² Instead of the “actual-to-potential” approach, EPA agreed to utilize an “actual-to-projected-actual” test for coal-fired electric utilities, which is calculated by comparing a utility’s actual emissions before a change to the unit’s projected future actual emissions following the change. A utility is required to monitor actual emissions from the changed unit, and to submit the results annually to either its permitting state agency or EPA for five years. That reporting ensures the actual post-change emissions do not increase.³³ EPA or the state may require a monitoring period of up to ten years, if the longer time period is determined to be more representative of typical emissions.³⁴

- Will there be a net increase in emissions?

If calculations show that there would be an increase in emissions from a changed unit, the permitting agency must determine if there will be a *net* increase. Net emissions are calculated by adding the increase in actual emissions from a particular change to any other increases or decreases at the source that are contemporaneous with the change.³⁵ EPA has defined contemporaneous as within five years prior to the change, but states can define it differently.³⁶ Thus, if a source makes a change at its facility that causes a pollution increase exceeding the amount for triggering NSR, it can “net out” of NSR by subtracting any decreases it made in the last five years. Any increases during the time period, however, must also be used in the netting calculation.

Generally, EPA does not treat *de minimis* (below the significance level) net increases as triggering NSR, although the increases consume PSD increments, must be aggregated in nonattainment areas, and must be considered in evaluating air impacts to show progress toward attaining NAAQS.³⁷ The 1990 Clean Air Act Amendments changed that policy for serious ozone nonattainment areas, requiring NSR review if the aggregate of increased emissions of volatile organic compounds over a five-year time period exceeds 25 tons.³⁸ It is not likely, however, that a permitting agency would catch the accumulation of such minor increases -- which together might total a significant emission increase -- unless a facility simultaneously seeks review for changes at all its minor sources.

Currently, a facility is not required to notify EPA, or its permitting agency, when it calculates that it has netted out of NSR. In 1979, EPA proposed a pre-construction notification requirement for sources avoiding NSR due to offsets.³⁹ That requirement was dropped from the final rule, however, after many of the commenters objected that it was burdensome and was essentially the equivalent of pre-construction review.⁴⁰ Furthermore, EPA believed at the time that existing state programs could obtain the information in other ways. Although the notification

requirement was dropped, EPA stated that “owners and operators are hereby put on notice” that they should maintain sufficient records regarding contemporaneous emission increases and decreases so as to verify no permit was required.⁴¹

- Will the net increase be significant?

The third determination for NSR applicability is whether the net increase of emissions will be “significant.” EPA’s regulations list the amount of each pollutant that is deemed a significant increase, and thus will trigger NSR. In the PSD rules, for example, a 100-ton per-year increase is significant for carbon monoxide, while a 40-ton per-year increase is significant for nitrogen oxides and sulfur dioxide.⁴²

To summarize: a newly constructed facility must seek an NSR permit if it will be considered a major source in the area where it is locating. An existing facility that is making a modification must seek an NSR permit if: (1) it is a major source of pollution; (2) it is making a modification (a physical or operational change) that is not exempt from NSR; and (3) if that change will produce a significant net increase in emissions of any regulated pollutant.

3.A-3 Overview of the NSR Application Process

The NSR application process generally involves the following steps:

- Facility representatives participate in pre-application meetings with state or local officials and then prepare a permit application;
- Agency officials develop a draft permit and negotiate with the facility on permit limits;
- Agency officials seek public comments and, if necessary, respond to those comments;
- Agency officials issue a permit, with appropriate limits and conditions; and
- The facility or other interested party may seek administrative or judicial review of the permit if they disagree with any provisions of the permit.⁴³

In addition, if the source will be located in an area that may affect a national park, wilderness area, or other “Class I” area,⁴⁴ the federal land manager for that area must review the permit application, and may impose additional requirements.

3.A-4 General Requirements for NSR Permits

When NSR applies to a new or existing facility, that facility must obtain its NSR permit before construction can begin. Close communication with permitting authorities can greatly reduce the time it takes for permit review and approval because complete permit applications avoid agency or public requests for additional information. The emission limits for a major new or modified source and the contents of the permit application also vary depending on whether it will be located in an attainment or nonattainment area.

The state or local permitting agency must provide EPA with a copy of every permit application, address EPA's comments, if any, and notify EPA of action taken.⁴⁵ In the 1990 Clean Air Act Amendments, Congress further required state agencies to submit promptly to EPA control-technology information from nonattainment NSR permits.⁴⁶

PSD Permit Requirements for Attainment Areas

As detailed in the Clean Air Act, all PSD permits require the following elements:

- A “control technology review”;⁴⁷
- A “source impact analysis”;⁴⁸
- An air quality analysis, both pre-application and post-construction;⁴⁹
- Source information;⁵⁰ and
- Additional “impact analyses” on impairment to visibility, soils, and vegetation.⁵¹

If emissions would affect a federal Class I area, such as a wilderness area or national park, the permitting agency must forward within 30 days all relevant information to the federal land manager in charge of the area.⁵² The manager evaluates the effect of the increased emissions on air quality related values, including visibility, and may determine that the emissions will adversely affect those values, even if the emissions will not exceed the allowable increments for the area. If the permitting agency concurs in a land manager's negative determination, it can deny the PSD permit.

In the control technology review, a permit applicant must demonstrate that it will meet all applicable emissions limitations under the state implementation plan or federal regulations, and that it will meet the best available control technology (BACT) standard for each criteria pollutant that would significantly increase.⁵³ The Clean Air Act defines BACT as “an emission limitation based on the maximum degree of reduction of each pollutant...which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems, and techniques....”⁵⁴

The EPA's Technology Clearinghouse has helped sources and permit writers identify and determine the best technology to install at a new source or modification in a PSD area. However, there is some debate about how the determination should be made and what technologies should be considered.⁵⁵ In a 1987 memorandum, EPA encouraged a top-down approach, whereby the permitting authority ranks the technology options for effectiveness, with the most effective at the top.⁵⁶ If the source shows that the first technology identified is technically or economically infeasible for it, then the next most stringent level of control is determined and similarly evaluated. The top-down approach shifts the burden of proof to the applicant to justify why it is unable to apply the best available technology, and requires that the applicant analyze technologies only if it objects to meeting emission levels achieved by the cleanest technology available.⁵⁷

In the source impact analysis, a permit applicant must demonstrate that the allowable emission increases would not cause or contribute to violations of the national ambient standards. It must also show that any emission increases will not violate any “maximum allowable increase over the baseline concentration.”⁵⁸ (“Maximum allowable increases” are also known as “increments.”) That requirement seeks to limit the effect that new or modified sources could have on the air quality in a PSD area. If the increased emissions would cause the concentration of a pollutant to rise by more than a certain amount, then the increase is prohibited, even if it would not surpass the national standard for that pollutant. That requirement is designed to prevent one source from using up all the allowable emission increments for a clean air area, but is currently required only for SO₂, particulate matter, and NO_x.⁵⁹

For the air quality analysis, the facility must perform a pre-application analysis of ambient air quality in the nearby area. Generally, air quality monitoring data must be gathered for at least one year prior to submitting the permit application, unless a shorter period can be shown to be representative.⁶⁰ In most cases, ambient data from existing monitors run by state and local air agencies can be used to determine background air quality. Post-construction monitoring to determine the effects of the increased emissions on air quality may also be required if the permitting agency determines it is necessary.⁶¹ The regulations also include a *de minimus* exemption from the air quality analyses, if the increase in emissions is less than a certain amount.⁶²

NSR Permit Requirements for Nonattainment Areas

If new emissions or increased emissions of a particular pollutant will occur in an area that already exceeds the ambient standards for that pollutant, the facility must follow more stringent requirements than in attainment areas.⁶³ For example, the area’s SIP must be able to produce annual incremental reductions in the pollutant that causes nonattainment. Thus, not only must a new or modified source in a nonattainment area agree to stringent limits on its emissions when it applies for an NSR permit, it must also obtain offsets for its emissions to produce a net improvement of air quality. Emission reductions for offset credits may also be achieved by shutting down an existing source -- or by curtailing its production or operating hours -- if those reductions are permanent, quantifiable, and federally enforceable.⁶⁴

To obtain an NSR permit in a nonattainment area, an applicant must meet the following four conditions:⁶⁵

- It must meet the lowest achievable emissions rate (LAER),⁶⁶ the most stringent emission limitation that is either contained in any SIP for that type of source, or is achieved in practice by that category of sources;⁶⁷
- It must certify that all of its other existing major facilities are in compliance with applicable standards;
- It must obtain emission reductions (offsets) from existing sources in the area. The offsets must be of the same pollutant that is being emitted by the new or modified

source; inter-pollutant offsets are not allowed; and all emission reductions claimed as offset credits must be federally enforceable;⁶⁸ and

- It must demonstrate that those emission offsets will provide a positive, net improvement of air quality in the affected area. The offsets must therefore be greater than a one-to-one exchange in order to achieve a positive benefit as well as reasonable progress toward the area's compliance with the ambient standards.⁶⁹

Before a permitting agency may issue an NSR permit in a nonattainment area, it must also analyze alternatives to the proposed construction or modification and show that the benefits of the proposed activity outweigh its environmental and social costs.⁷⁰

3.B Other CAA Programs For Reducing Air Emissions

Many government programs address specific air quality issues; and some regulate the same pollutants and sources targeted by NSR, but in different ways. The Panel reviewed eight of them to determine their differences and similarities -- as well as ways they interact with NSR:

- State and local SIP-based emissions standards;
- Regional Haze Program;
- New Source Performance Standards;
- National Emissions Standards for Hazardous Air Pollutants (NESHAP);
- Title IV Acid Rain Program;
- NO_x SIP Call and interstate pollution control petitions;
- Title V Operating Permits; and
- Mobile source controls.

This section contains a brief description of those programs and their interaction with NSR.

3.B-1 State and Local Implementation Plans

Title I of the Clean Air Act addresses air pollution from stationary sources.⁷¹ As discussed earlier, EPA has established National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants: sulfur dioxide, nitrogen dioxide, lead, carbon monoxide, particulate matter, and ground-level ozone.⁷² State or local authorities must devise a plan for achieving or maintaining those standards in their federally approved SIPs. A state's NSR pre-construction permit program is contained in its SIP and is one of the tools used to reach or maintain the NAAQS.

In nonattainment areas, a SIP must require existing sources to apply reasonably available control technology that will provide for reasonable further progress toward attainment of the NAAQS.⁷³ Under the SIP process, each state must determine its own program for emissions reductions. While EPA must approve all SIPs, it may not insert its own control measures if the SIP is adequate to attain and maintain the NAAQS. Under the 1990 Amendments, however, EPA may mandate certain control requirements for SIPs in the Ozone Transport Region if the Ozone Transport Commission (OTC) recommends them.⁷⁴ In general, major statutory sources are

subject to specific emission limits through the SIPs. Smaller sources, such as dry cleaners or gasoline stations, may be controlled as “area sources,” with specific control technologies or management practices required by the SIP for an entire industrial classification rather than for individual sources. See below, Section 3.C, for discussion of the states’ role in implementing NSR.

3.B-2 Visibility Protection and the Regional Haze Program

In addition to its aims of protecting public health, the Clean Air Act also established a specific program to protect clean air and prevent smog.⁷⁵ It is intended to prevent the impacts of air pollution on ecosystems, particularly in areas like national parks and wilderness areas. It is further intended to improve visibility, which is often reduced by sulfur oxides, mostly from coal-fired power plants, petroleum refiners, and metal smelting operations.⁷⁶ Another important contributor to smog is a secondary pollutant formed from nitrogen oxides, which are generated by combustion sources and motor vehicles.⁷⁷

Unlike the PSD program, which requires consideration of air quality impacts on parks and wilderness areas prior to construction of new or modified sources, the visibility program in Sections 169A and 169B of the Clean Air Act primarily affects existing sources.⁷⁸ A major stationary source constructed between 1962 and 1977, “which may reasonably be anticipated to cause or contribute to any impairment of visibility” in a Class I area, must install the best available retrofit technology (BART) to control such emissions.⁷⁹ Under the Act, a state must consider five factors in deciding what technology qualifies as BART for a particular source. Those factors are “the costs of compliance, the energy and non-air quality environmental impacts of compliance, any existing pollution control technology in use at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.”⁸⁰

In its 1999 Regional Haze Rule, EPA required each state to develop and implement plans to control emissions from sources within the state that may reduce visibility in parks and wilderness areas, including Class I areas in a downwind state.⁸¹ The rule required states to identify sources that may have to comply with BART, and then to require BART controls if the source is located within a region that may contribute to visibility impairment. In determining what BART controls should be applied, the “degree of improvement in visibility” must be determined on a group-wide or area-wide basis, rather than on the individual improvement that would be contributed by the specific source. However, a recent federal appeals court decision struck down a portion of the Regional Haze Rule for unlawfully restricting a state’s authority to determine BART, finding that the rule did not require specific evidence of a particular source’s individual contribution to visibility impairment.⁸² To date, it appears that the BART requirements have been applied only to one facility in the United States,⁸³ and the new court ruling will likely further slow the application of technologies to control pollution from existing sources that affect visibility.

3.B-3 New Source Performance Standards

The Clean Air Act directed EPA to develop categories of sources that contribute significantly to air pollution and to establish federal standards of performance for new and modified sources within each category.⁸⁴ Those standards, known as New Source Performance Standards (NSPS), apply to newly constructed sources or to existing sources that are modified⁸⁵ or reconstructed.⁸⁶ Under NSPS, any increase of emissions (calculated by comparing hourly emission rates) caused by a modification at any stationary source is subject to NSPS requirements unless it qualifies for an exclusion. By comparison, NSR requirements apply only to major stationary sources,⁸⁷ and only if there is a significant increase in emissions based on tons per year.

As mandated by Congress, EPA set standards of performance for source categories based on the best adequately demonstrated technology, taking into consideration costs, non-air quality health and environmental impacts, and energy requirements.⁸⁸ Unlike NSR's BACT requirements, which are determined on a case-by-case basis, NSPS are national, uniform emission limits for approximately 69 source categories.⁸⁹ Under the statute, EPA must set NSPS as emission limits, not based on particular technologies, unless it is not feasible to prescribe or enforce a standard without setting a design or equipment standard.⁹⁰ The NSPS serve as a floor for the NSR determinations of best available control technology and lowest achievable emission rate applicable to major stationary sources.⁹¹ But, EPA historically has not updated the NSPS very often because doing so typically requires a long, complicated, and potentially contentious notice and comment rulemaking process.⁹²

3.B-4 Hazardous Air Pollutants

Although the Clean Air Act has always contained provisions for controlling hazardous air pollutants (HAPs), EPA did little to implement them until the 1990 Amendments.⁹³ The new approach for determining HAP emission limits for new sources is based on requiring the maximum degree of reduction in emissions that is achievable in practice by the best controlled similar sources.⁹⁴ Thus, the maximum achievable control technology (MACT) standards for HAPs are similar to NSR's BACT standards, in that they are based on the availability of technological controls of emission, rather than on the SIP approach that focuses on emission reductions needed to attain ambient standards. The MACT standards apply to both new and existing sources,⁹⁵ although the standards are less stringent for existing sources than for new ones.⁹⁶ But the Act specifies that the PSD provisions of NSR do not apply to the listed hazardous pollutants.⁹⁷

EPA has identified more than 80 categories⁹⁸ of major and area sources⁹⁹ that must limit one or more of the 188 listed hazardous pollutants.¹⁰⁰ The source categories include major industrial sources, such as chemical plants, refineries, aerospace manufacturers, and steel mills, as well as smaller sources like dry cleaners, commercial sterilizers, secondary lead smelters, and chromium electroplating facilities. Since 1990, EPA has developed 45 MACT standards for hazardous air pollutants, which are applicable to both new and existing sources. Once EPA sets a MACT standard, sources have three years to comply unless otherwise specified. HAP requirements must be incorporated into a source's operating permit, which clarifies and enforces the HAP

limits,¹⁰¹ and they are implemented through the Title V operating permit program, also established in 1990 (see section 3.B-7 below).¹⁰²

3.B-5 Title IV Acid Rain Program

Established in Title IV of the 1990 Clean Air Act Amendments, the Acid Rain Program applies to fossil fuel-fired power plants¹⁰³ and addresses two criteria pollutants: sulfur dioxide (SO₂) and nitrogen oxides (NO_x).¹⁰⁴ It uses a market-based approach, implemented in two phases, to reduce emissions of the two pollutants.

In Title IV, Congress adopted a national cap on sulfur dioxide emissions from power plants, and, based on historic fuel consumption, allocated emission allowances to those plants. Facilities built after 1995 are not allocated allowances, but must either obtain them from EPA, or buy them from others. Each allowance covers the emission of one ton of sulfur dioxide per year; and they may be bought, sold, or banked for later use. A facility has the flexibility to achieve emission reductions in the most cost-effective way, so long as its emissions do not exceed its allowances. Even if a plant is emitting pollution within its allowances, however, emissions are not allowed to violate SIP requirements. In addition, NSR requirements still apply to new and modified sources. Monitoring and record keeping are essential to the integrity and success of the market for allowances. Each facility must collect hourly data on its emissions of SO₂, NO_x and CO₂, usually through a continuous emission monitoring system (CEMS), and must report its emission data to EPA quarterly.

The Acid Rain Program regulates NO_x emissions differently than it does SO₂. It does not set a cap on NO_x emissions and does not provide for allowance trading. It does, however, allow flexibility in achieving emission reductions by setting emission limits based on emission rates, *i.e.*, lbs/mBtu of heat input. Focusing only on coal-fired electric utility boilers, the NO_x program was implemented in two phases, with the stricter Phase II requirements imposed in 2000.¹⁰⁵

3.B-6 The NO_x SIP Call and Interstate Transport Controls

The Clean Air Act forbids state implementation plans from allowing emission levels in one state that will prevent other states from attaining the NAAQS, or that will interfere with PSD requirements.¹⁰⁶ Under Section 126 of the CAA, a state may petition EPA for a finding that a violation of its NAAQS has occurred -- or will occur -- from transported air pollution from upwind states.¹⁰⁷

In 1997, eight states in the Northeast sent Section 126 petitions to EPA, seeking relief from the NO_x emissions of several upwind states in the Southwest and Midwest.¹⁰⁸ The petitions all identified power plants in those areas as sources that were contributing to adverse impacts on their air quality.¹⁰⁹

After much litigation over the issue, EPA deferred action on the Section 126 petitions to allow time for SIP revisions pursuant to its 1998 NO_x SIP Call.¹¹⁰ That SIP Call was designed to mitigate the regional transport of NO_x emissions by requiring 22 states and the District of Columbia to adopt specific requirements to reduce such emissions in their state implementation

plans. EPA then issued a rule for a model budget-trading program and a cap-and-trade system for large combustion sources of NO_x. The plan sets forth provisions for allocating allowances, monitoring emissions, and protocols for trading.¹¹¹ The federal NO_x budget-trading program was adopted in direct response to the states' Section 126 petitions in order to mitigate significant transport of NO_x, one of the main precursors of ozone. States can modify the model provisions to include more sources or limit its applicability, so long as the program meets minimum criteria. Under the trading program, EPA records the state allowance allocations in the NO_x Allowance Tracking System.

3.B-7 Title V Operating Permit Program

Title V of the 1990 Amendments established an operating permit program to consolidate a source's obligations for controlling air pollution controls into one permit.¹¹² Before 1990, about 35 states had their own air permitting programs but, with the exception of NSR pre-construction permits, there was no federal permit requirement. Most state and local agencies now have approved operating permit programs that help to clarify for sources their air quality obligations, allow for better tracking of compliance, provide for public participation in reviewing permit applications, and establish a more efficient process for implementing new pollution control requirements.

Rather than setting emission standards, however, Title V permits serve as a central repository for all the program requirements applicable to a source. For major sources, the permits incorporate the requirements of a state SIP and all applicable emissions limitations, including hazardous air pollutant standards, new source performance standards, and acid rain provisions. NSR permits may be integrated into operating permits through an administrative amendment, but permitting agencies are not required to do so.¹¹³ Monitoring and reporting requirements are also codified in the Title V permits, which are issued for a period of five years. Many state and local agencies have operating permit programs for minor sources as well.

3.B-8 Mobile Source Program

Motor vehicles contribute significantly to acid rain, toxic emissions, ground-level ozone, carbon monoxide, visibility, and particulates. To address those problems, the 1990 Amendments strengthened and expanded provisions to control emissions from motor vehicles.¹¹⁴ Unlike most of the other programs in which states implement the requirements of the Clean Air Act, the mobile source program generally preempts state regulation with only a few exceptions. The new federal requirements assure tighter tailpipe standards and adopt special programs to address ozone, such as controlling evaporative gas emissions, carbon monoxide, diesel fuels, nonroad engines, and air toxics. Cleaner fuels, or reformulated gasolines, are also required.¹¹⁵

3.C State Role in NSR Implementation

NSR is primarily administered by state and local air agencies. In particular, local governments and special purpose units of government (such as California's air quality management districts) play a more significant role in implementing NSR across the country than they do for many other

environmental programs. There are more than 160 local air pollution control authorities throughout the country,¹¹⁶ 35 in California alone.¹¹⁷

Each state and local permitting agency must incorporate the basic NSR requirements into its SIP. For nonattainment areas, a state's NSR program must meet the criteria listed in EPA's NSR regulations for SIP approval -- often referred to as an "approved" NSR program.¹¹⁸ If a state fails to adopt a SIP that meets federal requirements for a nonattainment area, EPA must impose statutory sanctions against the state and promulgate a "federal implementation plan" (FIP) for the area.¹¹⁹ In addition to areas that are designated as nonattainment because they exceed the National Ambient Air Quality Standards, nonattainment NSR also applies to major sources of certain pollutants in the federally designated Ozone Transport Region consisting of 11 northeastern states.¹²⁰

For attainment areas, a state or local NSR program can be either "approved" or "delegated." The former applies if a state chooses to design its own attainment NSR program as part of its SIP; the latter, if the state agrees to adopt the entire NSR program contained in EPA's regulations.¹²¹ EPA retains PSD permitting authority for attainment areas where a state has not developed an approved PSD permitting process through its SIP, or has not been delegated PSD permitting authority for new sources. Twelve states have fully delegated PSD programs; the state of Washington was the most recent addition in early 2002.¹²²

EPA retains the right to review state NSR permits, although the number of permits reviewed, and the depth of that review, varies from one EPA regional office to another. Either as a condition for EPA to approve a SIP or as a condition of delegation, the state and local NSR requirements must be federally enforceable. That provision has allowed EPA and the U.S. Department of Justice to initiate many NSR enforcement cases, even though state or local agencies are the permitting authorities.

EPA estimates that about 250 facilities apply for PSD or nonattainment NSR permits annually, which is a relatively small percentage of approximately 20,000 sources that are classified as major sources under the Clean Air Act.¹²³ The state of Washington, as an example, processes an average of only five PSD permits each year.¹²⁴ Pennsylvania has made 98 BACT determinations in the last 24 years; the most in one year was 12 in 1986, and there were several years with none at all. Because of the state's low emission thresholds for major sources, however, California's air agencies make many BACT or LAER determinations.

A number of stakeholders have asserted that the NSR permitting process can be very slow, delaying important facility changes and hindering competitiveness. Anecdotal evidence does indicate that the NSR permitting process can take a year or more. State officials, however, maintain that, if a company has done a thorough job of identifying the best available control technology and files a complete application, the NSR permitting process can be completed more promptly. An EPA review of 900 permits indicated "the average time needed to obtain a major NSR or PSD permit, across all industries, is approximately seven months from receipt of the complete application."¹²⁵

Many state and local agencies see NSR as an important tool in their efforts to improve air quality in nonattainment areas and to preserve air quality in attainment areas. Especially in nonattainment areas, NSR is often critical for a SIP to produce progress in meeting national ambient air quality standards. For example, the State and Territorial Air Pollution Program Administrators (STAPPA) and the Association of Local Air Pollution Control Officials (ALAPCO) have described NSR requirements as “an essential tool, critical to state and local air pollution agencies’ ability to attain and maintain the health and welfare standards mandated by the [Clean Air] Act.”¹²⁶ California sees NSR as playing an “integral role” in the state’s ability to make progress on air quality problems,¹²⁷ and the state and its air quality management districts have adopted new source regulations that go beyond the minimum requirements of federal NSR.¹²⁸ California’s Air Resources Board has asserted that there is no need to make substantial changes in the federal NSR program, suggesting instead that the most appropriate NSR reforms would be to eliminate netting as a way to avoid NSR, and to strengthen the BACT/LAER clearinghouse so that better information is available on state-of-the-art technologies.¹²⁹

Other states, including Alabama, Michigan, North Carolina, South Carolina, Virginia, and West Virginia, have suggested more substantial changes in NSR that include use of a “potential emissions-to-potential emissions” test to trigger NSR in attainment areas, more autonomy for states in making determinations about what constitutes BACT, and making all significant policy changes related to NSR through rulemaking rather than guidance.¹³⁰ These six states expressed concern that “the sheer number of ‘instructions’ or ‘clarifications’ is overwhelming, that it is virtually impossible to keep up with individual determinations and interpretations related to the PSD program, and that significant changes to NSR should be accomplished through rulemaking, with its associated public involvement process rather than through the issuance of guidance.”¹³¹ However, even they take the position that “any reform of the PSD regulations should not weaken the fundamental requirements of the NSR program.”¹³²

A number of states have established NSR programs more stringent than EPA requires, although some states have adopted legislation precluding their environmental agencies from adopting any regulations stricter than federal requirements. In California, for example, the South Coast Air Quality Management District has set NSR thresholds as low as one pound per day for some releases.¹³³ Nor does California allow facilities to avoid NSR by netting. Furthermore, the state requires existing facilities that meet certain emission thresholds to implement BART, even though a source is not modified in a way that would trigger NSR.¹³⁴ Michigan has adopted a toxics BACT program for new or modified sources that applies to all facilities, except those with *de minimus* releases.¹³⁵

States have also begun to address concerns about emissions from grandfathered power plants through proposed statutes or regulations that require significant emission reductions by utilities. On June 20, 2002, for example, North Carolina enacted “clean smokestacks” legislation that will require 14 coal-fired power plants to reduce NO_x emissions from a 1998 baseline of 245,000 tons to 56,000 tons by 2009 (78 percent), and SO₂ emissions from a 1998 baseline of 489,000 tons to 250,000 tons by 2009 (49 percent).¹³⁶ The reduction targets were set through a collaborative process that involved environmental organizations, utilities, utility customers, the state utility commission, and the state environmental agency. The state’s two power-generating companies were given system-wide limits based on the reduction goals, allowing them to decide what type

of controls to place on each of their units. Those limits will become part of their Title V operating permits, and most plants are expected to add control technologies to meet the requirements.¹³⁷

In 2001, Massachusetts adopted a regulation requiring all fossil-fueled fired boilers, or indirect heat exchangers with a nameplate capacity of 100 megawatts or more, to meet emission rate standards that are expected to cut NO_x emissions by 50 percent and SO₂ emissions by up to 74 percent. The regulation also requires the use of the most protective mercury reductions achievable, as well as CO₂ reductions of 6,750 tons based on an emission rate limit, although demonstrating off-site reductions or sequestration can offset emissions.¹³⁸

The New Hampshire legislature has adopted an “Integrated Power Plant Strategy.”¹³⁹ The strategy places emission caps on three grandfathered power plants owned by Public Service Company of New Hampshire (PSCNH) to produce an approximate 75 percent reduction in current SO₂ levels and about a 70 percent reduction in current NO_x levels. The legislation also requires significant CO₂ emission reductions by 2010, and the Department of Environmental Services is required to establish a mercury cap by 2004. PSCNH is allowed to meet those requirements by reducing emissions at its plants and/or by purchasing or banking emission credits. However, the legislation provides incentives for PSCNH to:

- Reduce emissions on-site by limiting the number of allowances that can be purchased;
- Obtain credits from other plants in the region by providing a 0.2 allowance credit for allowances purchased in the region as opposed to allowances purchased from power plants outside of the region; and
- Invest in energy efficiency and renewable energy technologies by allowing the electric utilities to use some of the state’s “system benefit charge”-- an energy efficiency surcharge on electric rates -- to improve core efficiency of their power plants.

Some states use both pre-construction and operating permits to deal with facilities subject to NSR. New sources or modifications of existing sources in these states can avoid a pre-construction permit by agreeing to limits in their operating permits that restrict emissions to levels below the thresholds that trigger NSR. Termed “synthetic minor” permits, they are commonly utilized by states and facilities to reduce the workload that would otherwise be associated with full-fledged NSR.¹⁴⁰ Pre-construction permits set initial emission limits based on the level of control that BACT or LAER can achieve but do not further restrict the actual emissions from the facility once it is operational. But synthetic minor permits set maximum emission levels that cannot be altered without amending the permit limits, if demand for production increases or if production processes change. As a result, sources may be reluctant to accept synthetic minor permits because such permits may constrain their operational flexibility.¹⁴¹

To streamline permitting, some states now issue a “construction and operation permit” that combines the pre-construction permit with a source’s Title V operating permit.¹⁴² The two program’s different reporting and public participation requirements, however, have often led states to retain a separate NSR pre-construction permit for major sources.¹⁴³

3.D History and Evolution of NSR Regulations

In 1970, the Clean Air Act established the goal that all Americans should breathe healthy air.¹⁴⁴ In the Act, Congress created two separate strategies for protecting air quality. Existing sources were subject to requirements set out in SIPs, which were designed to maintain or attain the health-based National Ambient Air Quality Standards. Newly constructed, modified, or reconstructed sources had to meet the more stringent requirements of the New Source Performance Standards, which reflect the best levels of emission reduction adequately demonstrated at the time.

It soon became clear that the tools provided in 1970 were inadequate to attain the NAAQS by the Act’s original 1977 deadline.¹⁴⁵ Although concerned about the country’s dependence on oil imports and a deepening recession, Congress adopted NSR in the Clean Air Act Amendments of 1977 to strengthen the measures available to the states and federal government for improving air quality. Thus, Congress required that newly built and modified sources must prevent pollution, upgrade their equipment, or install pollution controls.

The NSR program also addressed some unanswered questions left by the 1970 Clean Air Act. The Act did not, for example, make clear whether EPA could allow new or modified sources, even equipped with NSPS, to degrade the air in clean air areas. Although EPA took the position that such degradation could occur, a U.S. district court in 1972 found -- and the Supreme Court affirmed -- that Congress intended to improve air quality and prevent its deterioration, no matter how pure that air quality is.¹⁴⁶ The court in *Sierra Club v. Ruckelshaus* required EPA to establish regulations to prevent significant deterioration (PSD) of existing clean air. That decision gave rise to EPA’s first set of PSD regulations.¹⁴⁷

Neither did the 1970 Act offer guidance on whether -- or how -- new stationary sources could be built or could expand in areas where pollution exceeded the national ambient standards. If an area was not achieving the NAAQS, how could new sources of pollution be constructed or modified in that area if they would increase emissions even further? In December 1976, EPA issued the Emissions Offset Rule, which addressed this issue, and provided guidance to state and local agencies on how to apply pre-construction review in nonattainment areas.¹⁴⁸ It allowed new or expanded sources to operate in nonattainment areas only if emissions from existing sources were reduced by an amount greater than emissions from a proposed source and only if the source was required to limit its emissions to the lowest achievable emission rate (LAER) for the particular type of source.¹⁴⁹

3.D-1 Clean Air Act Amendments of 1977

The 1977 Clean Air Act Amendments codified the NSR program, generally following the regulatory scheme implemented by EPA following the *Sierra Club* decision. The pre-

construction permit program that Congress established “represented a balance between ‘the economic interests in permitting capital improvements to continue and the environmental interest in improving air quality.’”¹⁵⁰ In setting out the NSR and PSD provisions, Congress declared that its purpose was, among other things, to protect the public health, as well as the air quality in national parks and wilderness areas, and “to insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources.”¹⁵¹ Congress made it clear that “any decision to permit increased air pollution...[should be] made only after careful evaluation of all the consequences of such a decision and after adequate procedural opportunities for informed public participation in the decisionmaking process.”¹⁵² Requiring pre-construction technology review for new and modified facilities was seen as a cost-effective and efficient way to promote development and use of better technologies and to replace old sources with cleaner facilities. The establishment of the NSR program in 1977 thus settled the debate over whether air quality in clean air areas could be degraded. In response to the changes mandated in the 1977 Amendments, EPA issued final rules for PSD and nonattainment NSR in June 1978 and January 1979.¹⁵³

3.D-2 *Alabama Power Decision*

Almost immediately, industry and environmental groups challenged the NSR regulations. In December 1979, the U.S. Court of Appeals in *Alabama Power Company v. Costle* upheld many provisions of the PSD regulations, although some were found to be invalid.¹⁵⁴ In many ways, the court’s decision has shaped the way the NSR regulations have been implemented ever since. While the court had before it only the PSD regulations, the decision affected the nonattainment NSR program as well, because the court’s opinion addressed several definitions common to both programs.

One important concept upheld by the *Alabama Power* decision was the use of offsets -- or “netting” -- to avoid PSD review. The court said that if a modification is made, a source can avoid triggering NSR by making reductions to offset its emissions, as long as the offsets are substantially contemporaneous and within the same source.¹⁵⁵

The court also declared that the PSD provisions applied to all modifications, as they are broadly defined by the statute, and held invalid EPA’s regulation that limited NSR applicability to only modifications that caused emission increases of 100 tons or 250 tons per year, depending on the source category. The court found that “the term ‘modification’ [as defined by Congress] is nowhere limited to physical changes exceeding a certain magnitude.”¹⁵⁶ The court also found that, while EPA could exempt some modifications that caused emission increases that were *de minimis* or due to administrative necessity, the exemption for such large emission increases was not supported.¹⁵⁷ The court acknowledged that the broad definition of modification “will undoubtedly prove inconvenient and costly to affected industries.”¹⁵⁸ However, the court found that NSR did apply to these broadly defined modifications, not just to new sources, and determined that Congress never intended for facilities to be grandfathered indefinitely.¹⁵⁹

Resolving another important regulatory issue, *Alabama Power* further decided that the definition of “potential to emit” (PTE) must take into account not only emissions associated with maximum

production capacity but also emission reductions attributable to installing pollution control equipment.¹⁶⁰

3.D-3 The 1980 NSR Regulations

Following the *Alabama Power* decision, EPA promulgated its revised PSD and Nonattainment NSR rules on August 7, 1980.¹⁶¹ The new regulations redefined PTE to take into account limits from pollution control equipment. EPA, however, went a step beyond what *Alabama Power* required by allowing PTE to take into account limits on hours of operation, and the amount or type of materials stored or combusted, so long as those limits were federally enforceable. The new regulations also codified the contemporaneous requirement for determining net offsets, and removed fugitive emissions from consideration in determining actual emissions -- unless they came from specified source categories. Despite several proposed revisions and court challenges, those 1980 regulations are, in substantial part, the rules governing the NSR program today.

3.D-4 Federal Enforceability of Limits on Potential to Emit

The 1980 regulations were immediately challenged by the Chemical Manufacturers Association (CMA) and other industry associations, particularly in regard to whether the limits reducing a source's PTE had to be federally enforceable.¹⁶² CMA also challenged the methodology for determining whether a source had undertaken a modification based on its potential to emit. EPA entered into settlement negotiations with the petitioners in June 1981, and reached a comprehensive settlement agreement in February 1982. The circuit court granted a stay of the case pending the agreement's implementation.

On August 25, 1983, EPA proposed amendments to its 1980 regulations to fulfill its obligation under the *CMA* settlement. Instead of requiring that any limits on PTE be federally enforceable, EPA proposed that they should be "enforceable under federal, state or local law and discoverable by the Administrator and any other person."¹⁶³

In June 1989, EPA took final action on the August 1983 proposed rules on federal enforceability.¹⁶⁴ Reversing its earlier proposal, EPA decided to keep the federal enforceability requirement for limitations on PTE in determining NSR applicability. EPA believed the federal enforceability of those limits was essential to achieving the purposes of the Clean Air Act. The rule provided new procedures explaining how to make a source's controls and limitations federally enforceable. Industry then filed another challenge to the federal enforceability requirement.¹⁶⁵ On June 7, 1990, the D.C. Circuit Court of Appeals issued an order deferring briefing on the case because of the imminent passage of the Clean Air Act Amendments, hoping that Congress would address and clarify the long-standing issue.¹⁶⁶ When Congress failed to resolve the PTE issue in the 1990 Amendments, the court in 1995 vacated the regulations requiring federal enforceability for PTE limits.¹⁶⁷

Although the 1990 Amendments did require that any emission reductions used as offsets must be federally enforceable,¹⁶⁸ they did not address whether restrictions to reduce a source's PTE must be federally enforceable. EPA thus continues to operate under a transition policy that allows a source to limit its PTE without a federally enforceable limitation if the source has actual

emissions between 50 percent and 100 percent of the major source threshold and holds state limits that are federally enforceable as a practical matter.¹⁶⁹

3.D-5 The *Chevron* Decision

In June 1984, the U.S. Supreme Court ruled in *Chevron, U.S.A., Inc. v. NRDC* that facilities could use plant wide offsets to net out of NSR. EPA had revised the definition of stationary source by allowing a state to treat all of the pollution-emitting devices within the same facility grouping, located on adjacent properties and under the control of the same person, as though they were encased within a single bubble.¹⁷⁰ A plant wide definition of stationary source thus allows an existing facility that contains several pollution-emitting devices to install or modify one piece of equipment without triggering NSR, as long as the alteration does not increase the total emissions from the plant. That decision affirmed the position taken by the *Alabama Power* court that a facility could use offsetting decreases in emissions from one unit to avoid NSR when making a physical change at another unit that would increase emissions.

3.D-6 The Issue of Determining BACT

The issue of how to determine best available control technology during a PSD pre-construction permit review also drew considerable attention during the 1980s. In 1986, EPA conducted a national program audit and found that BACT determinations by the states were deficient. In response, EPA recommended a new methodology, outlined in its 1990 Draft NSR Workshop Manual.¹⁷¹ The methodology employs a top-down process that first identifies all the technically feasible and available control options, then ranks them based on their overall control effectiveness, with the most effective on top. The top-ranked option is the control technology that a source must use unless it can demonstrate to the satisfaction of the permitting authority that this technology is inappropriate due to energy, environmental, or economic impacts.¹⁷² Several industry groups challenged that methodology in a series of administrative and judicial filings,¹⁷³ resulting in a settlement in which EPA agreed to revise or clarify how BACT determinations should be made.

Although EPA proposed clarifications on BACT methodology in its 1996 proposed rules for NSR to satisfy its obligations in the settlement, the agency has never finalized that proposal. A few states have also questioned the application of the top-down process as restricting the discretion granted to the states by Congress to determine technology requirements on a case-by-case basis.¹⁷⁴

The use of the top-down BACT methodology is at the center of a court action currently being appealed to the U.S. Supreme Court that involves whether EPA can lawfully block an NSR permit issued by a state government.¹⁷⁵ In June 1998, Teck Cominco Alaska, Inc. (Cominco) applied for a new PSD permit to increase its NO_x emissions from an existing generator at its “Red Dog” mine. Cominco’s application proposed to use “low NO_x” technology as the best available control technology. However, the Alaska Department of Environmental Conservation (ADEC) reached the contrary conclusion that a selective catalytic reduction (SCR) process was required pursuant to the top-down BACT methodology. In April 1999, Cominco responded by amending its application and volunteered to install the less costly low NO_x pollution control

technology on all six of its existing generators as well as on a planned new generator, rather than putting the SCR technology on the one modified generator and the new generator. In July 1999, EPA entered the discussion, determining that SCR was indeed BACT in this case, and that the PSD program does not allow a less stringent standard even if the equivalent emission reductions are obtained by imposing new controls on other units.

Despite EPA's objections, ADEC made a final determination and issued the PSD permit anyway, deciding that SCR was not economically feasible and that low NO_x was BACT. EPA responded by issuing an order to stop construction based on its formal finding that the PSD permit failed to comply with the federal and state PSD requirements. ADEC petitioned to the Ninth Circuit Court of Appeals, challenging EPA's authority to block its PSD permit and claiming that ADEC acted within its discretion when making its BACT determination. The Ninth Circuit issued an opinion in July 2002, holding that EPA had authority to issue enforcement orders when it determined that a PSD permit had been issued based on an improper BACT determination, and that EPA did not act arbitrarily and capriciously in concluding that ADEC abused its discretion in making its BACT determination.¹⁷⁶

3.D-7 The *WEPCO* Decision

In 1990, the Seventh Circuit Court of Appeals issued its decision in *Wisconsin Electric Power Co. v. Reilly*.¹⁷⁷ The case addressed two important issues involving NSR. First, the court was asked to determine whether renovations at a coal-fired steam-generating unit were "modifications" triggering compliance with the NSPS or NSR.¹⁷⁸ WEPCO claimed that its replacement of large steam drums and air heaters was simply routine maintenance and did not qualify as a modification, making it exempt from NSPS or NSR. EPA had used a set of factors -- including the nature, extent, purpose, frequency and cost of the work -- determine that WEPCO's large "life extension" project did not qualify for the routine maintenance exemption. The court upheld EPA's interpretation that the renovation was a modification covered by NSPS and NSR.¹⁷⁹

The second issue in *WEPCO* was whether the modification produced a significant emissions increase. EPA compared WEPCO's pre-change actual emissions to its post-change potential -- or round-the-clock maximum capacity -- emissions to determine that a significant increase would occur, even though WEPCO had never operated its unit that way. EPA argued that the changed unit had "not yet begun operation" and that the source's potential to emit (PTE) after the renovation should determine its future emission rates. That computation is known as the "actual-to-potential" test.

The court held that EPA could not assume post-change continuous operation would cause a significant emission increase.¹⁸⁰ The court said that EPA could apply an "actual-to-potential" test if a renovation made the unit very different; but when the renovation was a "like-kind replacement" such as occurred at WEPCO, EPA should base the predicted future emissions on the unit's emission history, an actual-to-projected-actual test.¹⁸¹ The court therefore set aside EPA's finding that the modification needed an NSR pre-construction permit. Two years later, EPA promulgated revisions to its NSR regulations reflecting the *WEPCO* court's analysis and allowing an actual-to-projected-actual test, but only for electric utilities.¹⁸²

3.D-8 The Clean Air Act Amendments of 1990

In the legislative history explaining the conference bill for the Clean Air Act Amendments of 1990, Senator George Mitchell explained that there was a need for “adequate enforcement and oversight. One of the problems that has plagued the Clean Air Act is the ‘gaming’ that has continued in the form of paper trails starting everywhere and leading to no emissions reductions....Facilities subject to the requirements of the Act must know that compliance is the best and least expensive route for them to choose. Aggressive enforcement is key.”¹⁸³

With regard to NSR, the 1990 Amendments changed the threshold for determining a major stationary source and the amount of the offset required to obtain an NSR permit for ozone precursors making those rates dependent upon the severity of an area’s ozone problem. While the Amendments made some changes in the NSR program, they did not resolve several NSR controversies. Congress required that NSR offsets be federally enforceable, but did not address the issue of whether limitations on PTE also had to be federally enforceable.¹⁸⁴ Neither did the Amendments clarify the definition of modification, leaving EPA’s prior NSR regulations intact. Moreover, although attempts were made to amend the conference bill and expand the exclusions from NSPS and NSR requirements for modifications at electric utilities (known as the “WEPCO provisions”), those amendments were defeated.¹⁸⁵

3.D-9 The 1992 WEPCO Rule

In 1992, EPA followed the Seventh Circuit’s mandate in *WEPCO* and promulgated a special rule for electric utility steam generating units.¹⁸⁶ The WEPCO Rule requires “actual-to-projected-actual” methodology to compare pre- and post-change emission rates at electric utilities.¹⁸⁷ Under that calculation, a utility compares its actual annual emissions before the change with projected annual emissions after the change to determine if the change would result in a significant increase in emissions that will trigger NSR.

In order to assure that its projections are accurate, a utility is required to submit emission rate data to the permitting agency for five years after the modification. Thus, although NSR requirements may be avoided, a utility must still verify and report that its emissions are not significantly increasing as a result of the modification to the facility. This change seemed favorable to the electric utility industry, allowing a more flexible method for determining when an emissions increase has occurred and enabling more utilities to avoid the NSR process. But the *quid pro quo* for this special electric utilities rule was the requirement that they monitor and report their emissions for five years after the change.

EPA reasoned that the electric utility industry was unique because of the general similarities of equipment within the sector and because of the extent of publicly available emission data.¹⁸⁸ There was thus a greater assurance that sources would actually reduce their emission levels in the future to avoid NSR. Moreover, EPA believed that Title IV of the 1990 Amendments, which focused exclusively on power plants to address the acid rain problem, would force most utilities to undertake pollution control projects because the cap and trade system gave them additional incentives for technological improvements apart from the NSR program.¹⁸⁹ Consequently, the new regulations also contained a broad NSR exclusion for pollution control projects at electric

utilities. EPA did not change the formula for other industries, however, keeping the “actual-to-potential” scheme for those calculations of NSR applicability.

3.E History and Evolution of the Routine Maintenance Exclusion

One of the most controversial issues in the history of the NSR program is the determination of what actions qualify as modifications at existing facilities, particularly in applying the exclusion, for routine maintenance and repairs. In this section, the Panel examines the history, evolution, and implementation of the routine maintenance exclusion.

For existing facilities, NSR only applies to modifications that significantly increase emissions. For purposes of the NSPS, PSD, and nonattainment NSR programs, the Clean Air Act defines modification as “*any* physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted.”¹⁹⁰

The statutory definition provides for no exceptions to the term “modification” and, as EPA explained in the 1992 WEPCO rulemaking, theoretically could “encompass the most mundane activities at an industrial facility (even the repair or replacement of a single leaky pipe, or a change in the way that pipe is utilized).”¹⁹¹ EPA realized that Congress obviously did not intend such draconian coverage. So EPA promulgated “common-sense exclusions from the ‘physical or operational change’ component of the definition”¹⁹² and created this regulatory exclusion. The exclusion from pre-construction permitting requirements for routine maintenance originated in the 1971 NSPS regulations and was mirrored in the 1974 PSD regulations.¹⁹³ Prior to issuing the final NSR rules in 1980, EPA received no significant comments on its proposed “routine maintenance” exclusion and therefore promulgated it as proposed, with no further description of what the term meant.¹⁹⁴

Early in the history of the NSR program, the *Alabama Power* court ruled on whether and how EPA could limit the scope of the statutory definition of “modification.” As discussed above, EPA had defined “modification” to trigger NSR only if there was an increase in emissions of 100 to 250 tons per year. Noting the broad scope of the statutory definition of modification, however, the court found no basis in the legislative history for limitations to the term, except on grounds of *de minimis* increases or administrative necessity.¹⁹⁵ The court stated:

Implementation of the statute’s definition of “modification” will undoubtedly prove inconvenient and costly to affected industries; but the clear language of the statute unavoidably imposes these costs except for *de minimis* increases. The statutory scheme intends to “grandfather” existing industries; but the provisions concerning modifications indicate that this is not to constitute a perpetual immunity from all standards under the PSD program. If these plants increase pollution, they will generally need a permit. Exceptions to this rule will occur when the increases are *de minimis*, and when the increases are offset by contemporaneous decreases of pollutants....These two exceptions, we believe, will allow for improvement of plants, technological changes, and replacement of

depreciated capital stock, without imposing a completely disabling administrative and regulatory burden.¹⁹⁶

There was little discussion about the “routine maintenance” exclusion from the modification provision of NSR until the late 1980s. In 1988, when WEPCO proposed to the Wisconsin Public Service Commission a “life extension project” at a coal-fired power plant, the Commission consulted with the state air office to determine whether a PSD pre-construction permit was required. The matter was referred to EPA headquarters, which solicited additional information. EPA then determined that the project did not fit into the routine maintenance, repair, and replacement exclusion and was therefore subject to NSPS and PSD permit review.¹⁹⁷ WEPCO asked the Seventh Circuit to overturn that interpretation, but the court upheld EPA’s application of the routine maintenance exclusion.

The *WEPCO* court examined the legislative history of the PSD provisions and further noted:

To adopt WEPCO’s definition of “physical change” would open vistas of indefinite immunity from the provisions of NSPS and PSD. Were we to hold that the replacement of major generating station systems -- including steam drums and air heaters -- does not constitute a physical change (and is therefore not a modification), the application of NSPS and PSD to important facilities might be postponed into the indefinite future. There is no reason to believe that such a result was intended by Congress. A too restrictive interpretation of “modification” might upset the economic-environmental balance in unintended ways.¹⁹⁸

The decision also examined and approved the factors used by EPA to determine that WEPCO’s project was not routine maintenance and upheld EPA’s “case-by-case determination weighing the nature, extent, purpose, frequency, and cost of the work, as well as other relevant factors.”¹⁹⁹

When drafting the 1990 Amendments to the Clean Air Act, Congress attempted to address some of the concerns raised by the *WEPCO* decision with respect to NSR and NSPS requirements affecting the utility industry, particularly during the debate over the Acid Rain program. But, the Conference Committee deleted the proposed amendments without prejudice, and urged EPA “to propose clarifications on the matter of what kind of changes constitute a modification to an existing source that will continue to protect local air quality while responding to some of the issues raised in the *WEPCO* debate.”²⁰⁰

Despite that urging from Congress, EPA did not then promulgate any formal clarifications of activities that may or may not fall into the routine maintenance exclusion.²⁰¹ In 1994, EPA staff circulated to stakeholders a new draft definition of routine maintenance, creating broad categories of activities and excluding from NSR “minor maintenance or repair of parts or components and the replacement of minor parts or components with identical or functionally equivalent items.”²⁰² That definition met resistance in the regulated community, which apparently feared that a possibly more stringent clarification of routine activities would hamper its ability to make other changes.²⁰³ One utility group objected to EPA’s attempt to apply a broad definition of routine activities “across the spectrum of industries” subject to NSR.²⁰⁴

Consequently, EPA did not include a clearer definition of routine maintenance in its 1996 proposed NSR reforms.

Nevertheless, since 1977, industry sources have sought very few NSR applicability determinations.²⁰⁵ The *WEPCO* factors articulated in the 1988 applicability determination -- nature, extent, purpose, frequency, and cost of work -- continue to be used by EPA and the states to determine what qualifies as routine maintenance.²⁰⁶ The *WEPCO* decision remains the only one to articulate an in-depth examination of the exclusion, and the factors it discussed have been used by EPA to support its enforcement actions against companies that have changed their facilities without obtaining NSR permits.

In recent litigation, utility representatives have argued that EPA has issued contradictory guidance on what constitutes routine maintenance, and that the agency is now precluded from enforcement because it is targeting activities that were not treated as violations in the past. In May 2001, the National Energy Policy Development Group recommended that the Department of Justice (DOJ) review the on-going NSR enforcement actions to determine if they are consistent with the CAA and EPA's regulatory interpretations. While DOJ found a few informal statements regarding the scope of the routine maintenance exclusion,²⁰⁷ DOJ concluded that EPA's use of the *WEPCO* factors for determining the routine maintenance exclusion in the recent enforcement cases was a permissible interpretation of the exclusion and that there was a reasonable basis for EPA's definition of the term.²⁰⁸

In one of the enforcement cases, a U.S. District court in Indiana issued two rulings just before this report went to print, rejecting a utility's argument that EPA changed its interpretation and did not give "fair notice" of its interpretation.²⁰⁹ The court upheld EPA's five-factor test for determining routine maintenance as reasonable and consistent with the purposes of the Act and, after examining several public statements that had been made over the years, the court concluded that the utility had notice of the interpretation.²¹⁰

3.F History and Evolution of NSR Enforcement

The early years of the NSR program produced more judicial proceedings over the validity and interpretation of the regulations themselves than proceedings to enforce the basic pre-construction permit requirements.²¹¹ One of the earliest cases involved the failure of a company to apply for NSR permits for its brand new facilities.²¹²

In that case, Louisiana-Pacific Corporation (LPC) constructed two new wood products manufacturing facilities in 1983, without obtaining PSD pre-construction permits.²¹³ While LPC had obtained state minor source permits with restrictions on emissions, the company had continuously violated those restrictions. Although the facilities' potential emissions put them into the major source category -- and thus subject to a PSD pre-construction permit -- EPA found out about the plants only because a federal inspector happened to notice smoke as he drove by one of the sites.²¹⁴ In 1986, EPA filed a civil action against LPC seeking civil penalties and an injunction for failure to obtain a PSD permit. After lengthy negotiations and proceedings, the court concluded in 1988 that LPC should have obtained a PSD permit and assessed civil penalties of \$65,000.²¹⁵

EPA's recent actions involving the failure of many ethanol companies to apply for NSR pre-construction permits for their new facilities indicate that vigilance is still important to ensure basic applicability of NSR for newly built sources.²¹⁶ However, the few cases brought in the late 1980s involving plant modifications came to EPA's attention because either the facility owner or state agency requested an applicability determination from EPA.²¹⁷

In *Puerto Rican Cement Co v. EPA*,²¹⁸ the company requested a non-applicability determination that its conversion from a wet process to a more efficient dry kiln process would not trigger NSR, because there would be no accompanying increase in emissions if the new kiln were operated at the same level of production as the old one.²¹⁹ The company did not dispute that the construction activity was a modification, but claimed that there would not be a significant increase in emissions. The court upheld EPA's determination that the new kiln had the potential to emit more pollution -- because it could potentially run at significantly higher production levels -- and it therefore had to comply with PSD requirements.²²⁰

WEPCO also involved a modification at an existing plant.²²¹ The utility intended to renovate its Port Washington plant, and had asked the Wisconsin Public Service Commission for permission, as required by law. The company "explained in its proposal that 'renovation is necessary to allow the units to operate beyond their currently planned retirement dates of 1992 (units 1 and 2) and 1999 (units 3, 4 and 5) . . . [and that renovation would render the plant] capable of generating at its designed capability until year 2010. . . .'"²²²

After EPA determined that the renovation project was not excluded by the "routine maintenance" exemption, *WEPCO* appealed to the Seventh Circuit; and the court upheld EPA's determination that the proposed renovation was a modification covered by NSR. The court set aside EPA's determination that a PSD permit was required, however, because it found that EPA improperly assumed continuous operation as the basis for finding an emission increase, and that an actual-to-projected-actual calculation should have been used.²²³

Not until the early 1990s did EPA begin to focus significant attention on existing facilities that had undertaken substantial construction without obtaining NSR permits. In 1992, EPA's lengthy investigation of the plywood and wood products industry led to the filing of civil actions, after the discovery that several facilities had failed to obtain required NSR permits when making renovations and modifications.²²⁴ Most of the cases resulted in settlements, with the companies agreeing to pay penalties and to install new pollution control equipment.²²⁵

During the mid-1990s, EPA began evaluating entire industry sectors that produced significant amounts of air pollution and issued Sector Notebooks that provided EPA and state officials with comprehensive environmental profiles of industrial processes and pollution releases.²²⁶ With the aid of those notebooks, EPA focused its inspections on industry sectors suspected of potential NSR violations, especially those with decreasing numbers of facilities but increased or unchanged production rates. These economic data suggested that facilities in some sectors might have been making major modifications to increase production and extend the life of their equipment without obtaining NSR permits. Despite these increases in production, EPA found that state and local air agencies received very few applications for NSR permits during the

1990's, a time when there was tremendous economic growth and expanding industries were making large capital investments. EPA targeted its NSR investigations on coal-fired power plants, petroleum refineries, steel mini-mills, chemical manufacturers, and the pulp and paper industry.²²⁷

The investigation of the utility industry began in 1996, when EPA sent information requests to several utilities, seeking access to their facilities and documents.²²⁸ Pursuant to referrals from EPA, the Department of Justice filed seven enforcement actions on November 3, 1999, against electric utilities in the Midwest and South for failure to seek PSD or NSR permits for modifications they had made over many years.²²⁹ EPA determined that those modifications -- which the industry claimed were routine maintenance -- had cost tens of millions of dollars, took years to complete, and were performed infrequently. EPA also issued an Administrative Compliance Order to the Tennessee Valley Authority, alleging multiple NSR violations at nine of its plants in Kentucky, Tennessee, and Alabama.²³⁰ More recently, EPA filed a notice of violation against Xcel Energy, a Colorado utility, for making unpermitted modifications at two of its generating stations between 1994 and 2000.²³¹ In many of the federal cases, state attorneys general have also filed petitions to intervene against the power plants under the citizens suit provision of the Clean Air Act.²³²

Two of the cases have been settled. DOJ announced its settlement with Tampa Electric Company (TECO) on February 29, 2000. TECO agreed to pay a \$3.5 million civil penalty, to install emissions control equipment, and to apply other pollution reduction measures.²³³ PSEG Fossil LLC also signed a consent agreement with DOJ on January 23, 2002. It agreed to spend \$337 million to install state of the art pollution controls, pay civil penalties, and spend \$6 million on additional pollution projects to offset past emissions.²³⁴

In late 2000, two other utilities signed Agreements in Principle to settle their NSR cases, but they have now delayed reaching final settlements.²³⁵ As an incentive for settlement, the agreements contain covenants that the United States will not sue for past violations, and will provide safe harbors for the utilities to modify their plants over a lengthy period of time without triggering NSR, as long as they comply with the terms of their agreements.²³⁶ The possibility that EPA would soon reform the NSR modification provisions favorably to industry may have led to the companies' reluctance to settle their cases.²³⁷ In his resignation letter, the former director of EPA's Office of Regulatory Enforcement criticized current EPA attempts to weaken the NSR program as having a detrimental effect on the companies' willingness to settle.²³⁸

The Tennessee Valley Authority challenged EPA's Administrative Compliance Order on the issue of routine maintenance, and, at the time of this report, the case was before the Eleventh Circuit.²³⁹ The remaining NSR cases were scheduled for trial or court hearings during 2003. See Appendix C.

EPA has also targeted other companies, including petroleum refineries, in its investigation of NSR violations, again asserting that they made major renovations without seeking pre-construction permits. Generally, the defendants in those cases have not challenged EPA's interpretation of the term "routine maintenance," and many of the cases have been settled.²⁴⁰ One oil refinery case went to trial on the merits in a federal district court in Wisconsin, and the

court ruled that Murphy Oil had made major modifications at its refinery without obtaining the required PSD permit.²⁴¹ The company agreed to pay a \$5.5 million civil penalty, in addition to installing new control technologies and programs.²⁴²

For a summary of settlements of NSR enforcement cases, see Appendix B. Appendix C contains the status of pending NSR enforcement cases as of March 2003.

ENDNOTES

¹ 40 C.F.R. Part 50. “Four of these pollutants (CO, Pb, NO_x, and SO₂) result primarily from direct emissions from a variety of sources. PM results from direct emissions, but is also commonly formed when emissions of nitrogen oxides (NO_x), sulfur oxides (SO_x), ammonia, organic compounds, and other gases react in the atmosphere. Ozone is not directly emitted but is formed when NO_x and volatile organic compounds (VOCs) react in the presence of sunlight.” EPA, *National Air Quality: 2001 Status and Trends*. See <http://www.epa.gov/air/aqtrnd01/sixpoll.html>. (retrieved March 3, 2003).

² The Clean Air Act sets forth the elements that must be included in the State Implementation Plans (SIPs). 42 U.S.C. §7410(a)(2)(A)-(M). Under the nonattainment provisions, the SIP must include, among other things, requirements for the installation of reasonably available control technology (RACT) on existing sources in order to achieve reasonable further progress toward attainment of the NAAQS. 42 U.S.C. §7502(c).

³ For tribal lands and U.S. territories, EPA issues the new source review permits.

⁴ The minor NSR programs at the state and local level vary greatly as to stringency and scope. The minor source requirements range from SIP requirements, or RACT, to either a presumptive best available control technology or case-by case BACT (referred to in some jurisdictions as state-of-the-art). Most minor NSR programs require permits for the installation of an individual piece of equipment, such as a boiler, degreaser, or paint spray booth, as opposed to a permit for an entire plant.

⁵ As set in the 1970 CAA, the original target date for attainment of the NAAQS, was May 31, 1975, with extensions allowed until mid-1977. The 1977 CAA Amendments required states to meet the NAAQS by December 31, 1982, or December 31, 1987, for pollutants primarily from automobiles. 42 U.S.C. §7502 (pre-1990 Acts). Arnold W. Reitze, *Air Pollution Control Law: Compliance and Enforcement* (Environmental Law Institute: 2001), 55. The basic nonattainment provision in the 1990 Amendments requires compliance by five years from date of designation as nonattainment, which may be extended to ten years by EPA. 42 U.S.C. §7502(a)(2). For ozone and carbon monoxide nonattainment areas, however, the Act sets forth tables for primary standard attainment dates from three to twenty years after the date of enactment of the 1990 CAAA, depending on the severity of the area classification. 42 U.S.C. §§7511 - 7514a.

⁶ The NSR requirements for nonattainment areas also apply to the Ozone Transport Region (OTR), which comprises the District of Columbia, Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Northern Virginia. 42 U.S.C. §7511c(a). CAA §184(c)(a).

⁷ 40 C.F.R. §165 and Appendix S to Part 51 (NSR SIP requirements for nonattainment areas) and 40 C.F.R. §51.166 (NSR SIP requirements for PSD areas)(2000). See also 40 C.F.R. §52.24 (federal nonattainment NSR regulations—used if a SIP is not approved). 40 C.F.R. §52.21.51(federal PSD NSR regulations—used if a SIP is not approved).

⁸ 40 C.F.R. §52.21(b)(2).

⁹ 40 C.F.R. §52.21(b)(1).

¹⁰ 40 C.F.R. §51.165(a)(1)(iv).

¹¹ 42 U.S.C. §§7511a and 7511d.

¹² The 1990 CAAA identified five area classifications for ozone depending on its ambient concentrations: marginal, moderate, serious, severe, and extreme. The more severe an ozone problem, the lower the major source threshold. The threshold for a major source in ozone transport areas, however, is 50 tons per year of VOCs. 42 U.S.C. §7511c(b)(2).

¹³ EPA proposed to incorporate changes required by the 1990 Amendments in the 1996 NSR Simplification Proposal, which has never been finalized. 61 *Federal Register* 38249 (July 23, 1996).

¹⁴ 40 C.F.R. §§51.165(a)(1)(iii); 51.166(b)(4); 52.21(b)(4).

¹⁵ *Ibid.*

¹⁶ 636 F.2d 323 (D.C. Cir. 1979).

¹⁷ See *Chemical Mfrs. Ass'n v. EPA*, 70 F.3d 637 (D.C. Cir. 1995)(vacating the requirement for federal enforceability in PTE definition); *National Mining Ass'n v. EPA*, 59 F.3d 1352 (D.C. Cir. 1995) (limitations on permit in hazardous air pollutant program do not require federal enforceability as long as they are effective); *Clean Air Implementation Project v. EPA*, No. 96-1224 (D.C. Cir. 1996) (vacating PTE definition as requiring federal enforceability in Title V operating permits regulations).

¹⁸ 42 U.S.C. §7503(a)(5).

¹⁹ “Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act,” January 25, 1995. That policy has been extended several times. See the memorandum, “Third Extension of January 25, 1995 Potential to Emit Transition Policy,” December 20, 1999, extending the policy to December 31, 2000.

²⁰ 42 U.S.C. §7411(a)(4). In both the PSD and nonattainment sections of the Act, “modification” has the same meaning as it is defined in the NSPS section at 42 U.S.C. § 7411(a). 42 U.S.C. §§ 7479(2)(C); 7501(4).

²¹ See, e.g., “Requirements for Preparation, Adoption, and Submittal of State Implementation Plans; Approval and Promulgation of State Implementation Plans,” 45 *Federal Register* 52676 (August 7, 1980).

²² 40 C.F.R. §§52.21(b)(2)(ii) and 51.166(b)(2)(PSD); 40 C.F.R. §§52.24(f)(5) and 51.165(a)(1)(v); and 40 C.F.R. Part 51, App.S II.4 (nonattainment).

²³ 40 C.F.R. §52.21(b)(2)(iii).

²⁴ 40 C.F.R. §§52.21(b)(2); 52.24(f)(5); 51.166(b)(2).

²⁵ When a source owner or operator requests an applicability determination “EPA writes responses to source owners or operators who need to know whether certain intended actions constitute the commencement of construction, reconstruction, or modification to the NSPS in 40 CFR Parts 60 and the National Emission Standards for Hazardous Air pollutants in 40 CFR Parts 61 and 63, under the Clean Air Act.” US EPA Compliance Assistance, <http://www.epa.gov/compliance/assistance/applicability/index.html>.

²⁶ 40 C.F.R. §§52.21(b)(2)(iii)(b)-(k); 52.24(f)(5)(iii)(b)-(i); 51.166(b)(2)(iii)(b)-(k).

²⁷ 40 C.F.R. §§52.21(b)(2)(ii) and 51.166(b)(2)(PSD); 40 C.F.R. §§52.24(f)(5) and 51.165(a)(1)(v); and 40 C.F.R. Part 51, App.S II.4 (nonattainment).

²⁸ 40 C.F.R. §§52.21(b)(21); 51.165(a)(1)(xii); 51.166(b)(21). The agency is allowed to use a different time period to determine actual emissions if the source shows that it is more representative of normal operations. An emissions unit means “any part of a stationary source which emits or would have the potential to emit any pollutant subject to regulation under the Act.” 40 C.F.R. §§52.21(b)(7); 51.165(a)(1)(vii); 51.166(b)(7).

²⁹ “Requirements for Preparation, Adopting and Submittal of Implementation Plans; Approval and Promulgation of Implementation Plans; Standards of Performance for New Stationary Sources,” 57 *Federal Register* 32314 (July 31, 1992).

³⁰ 40 C.F.R. §§52.21(b)(21); 51.165(a)(1)(xii); 51.166(b)(21).

³¹ Such permit conditions are known as “synthetic minor permits,” which set enforceable emission limits on a source that keep it below the threshold for triggering NSR.

³² *Wisconsin Electric Power Co. v. Reilly*, 893 F.2d 901(7th Cir. 1990). The 1992 regulation that resulted from the decision is known as the WEPCO rule.

³³ 40 C.F.R. §§52.21(b)(21)(v); 51.165(a)(1)(xii)(E); 51.166(b)(21)(v).

³⁴ *Ibid.*

³⁵ 40 C.F.R. §52.21(b)(3). See *New Source Review Workshop Manual*, Draft October 1990, 51, for an example of netting calculations.

³⁶ States may specify what is considered to be a contemporaneous increase or decrease as long as the change occurs within a reasonable period before the date of the change. The federal requirements specify that an increase or decrease is contemporaneous if it occurs five years before construction of the particular change. 40 C.F.R. §§ 52.21(b)(3); 51.165(a)(vi); 51.166(b)(3).

³⁷ Memorandum from Richard Biondi, Stationary Source Compliance Division, to Michael Johnston, Region X, “Accumulation of Emissions” (January 5, 1982). See also, Memorandum from Ronald Shafer, Stationary Source Compliance Division, to Ron Van Mersbergen, Region V, “Review of *De Minimis* Emissions-Sanctions” (October 28, 1988).

³⁸ 42 U.S.C. §7511a(c)(6). This requirement also applies to Severe and Extreme ozone nonattainment areas. 42 U.S.C. §7511a (d)-(e).

³⁹ Requirements for Preparation, Adoption, and Submittal of State Implementation Plans; Approval and Promulgation of State Implementation Plans,” 44 *Federal Register* 51923 (September 5 1979).

⁴⁰ “Requirements for Preparation, Adoption, and Submittal of State Implementation Plans; Approval and Promulgation of State Implementation Plans,” 45 *Federal Register* 52676 (August 7, 1980).

⁴¹ *Ibid.* Interestingly, EPA finalized in 1975 an amendment to the NSPS that required an owner to notify and to demonstrate to EPA that it had correctly “netted out” of the NSPS requirements when it made a physical change that increased emissions. 40 *Federal Register* 58416, 58419 (December 16, 1975). That notification requirement was subsequently removed from the NSPS regulations.

⁴² 40 C.F.R. §§52.21(b)(23); 51.165(a)(x); 51.166(b)(23). The rate of emissions that constitutes a significant increase includes: Carbon monoxide: 100 tons per year (tpy); Nitrogen oxides: 40 tpy; Sulfur dioxide: 40 tpy; Particulate matter 25 tpy of PM emissions, 15 tpy of PM₁₀; Ozone: 40 tpy of VOCs; Lead: 0.6 tpy.

⁴³ See U.S. Environmental Protection Agency, *NSR 90-Day Review Background Paper* (June 22, 2001), Docket A-2001-19, Document II-A-01, 5.

⁴⁴ 42 U.S.C. §7472(a).

⁴⁵ 42 U.S.C. §7475(d)(1).

⁴⁶ 42 U.S.C. §7503(d) and 42 U.S.C. §7408(h).

⁴⁷ 40 C.F.R. §52.21(j).

⁴⁸ 40 C.F.R. §52.21(k).

⁴⁹ 40 C.F.R. §52.21(m).

⁵⁰ 40 C.F.R. §52.21(n). Source information must include location, design capacity, typical operating schedule, a detailed construction schedule, and emission estimates.

⁵¹ 40 C.F.R. §52.21(o). The source must analyze any potential impairment as a result of its increased emissions as well as other growth associated with the source. If the vegetation has no significant commercial or recreational value, the impact on vegetation does not need to be addressed. The Agency may require visibility monitoring in any nearby Federal Class I area if it deems necessary.

⁵² 40 C.F.R. §52.21(p); 42 U.S.C. §7475(d)(A) and (B).

⁵³ 40 C.F.R. §52.21(j)(2) and (3).

⁵⁴ 42 USC §7479(3). See 40 C.F.R. §§52.21(b)(12) and 51.166(b)(12).

⁵⁵ See discussion on the debate over BACT determinations at Section 3.D-6.

⁵⁶ “Improving New Source Review (NSR) Implementation,” Memorandum from J. Craig Potter, Assistant Administrator for Air and Radiation to Regional Administrators (December 1, 1987), 3-4.

⁵⁷ *Ibid.*

⁵⁸ 42 U.S.C. §7475(a)(3).

⁵⁹ 40 C.F.R. §52.21(c).

⁶⁰ 40 C.F.R. §52.21(m).

⁶¹ 40 C.F.R. §52.21(m)(2).

⁶² 40 C.F.R. §52.21(i)(8).

⁶³ If the area is in attainment for the pollutant being emitted, however, the source may follow the permit requirements for PSD areas.

⁶⁴ 40 C.F.R. §51.1659(2).

⁶⁵ 40 C.F.R. §51.165(2) and Part 51, Appendix S, Section IV (Emission Offset Interpretative Ruling). The regulations require a state’s plan regarding offset credit and emission reductions to be at least as stringent as the EPA Emissions Offset Interpretative Rule found at 40 C.F.R. Part 51, Appendix S, Section IV-D.

⁶⁶ LAER is the emission limit applied to new or modified sources that will significantly increase net emissions in a pollutant that is in nonattainment in the area where the unit is located.

⁶⁷ 40 C.F.R. §51.165(a)(1)(xiii).

⁶⁸ 40 C.F.R. § 51.165(a)(3)(ii)(E).

⁶⁹ 40 C.F.R. §51.165(2) and Part 51, App. S, Section IV (Emission Offset Interpretative Ruling).

⁷⁰ 42 U.S.C. §7503(a)(4)-(5).

⁷¹The Act defines a stationary source as “any building, structure, facility, or installation which emits or may emit any air pollutant.” 42 U.S.C. §7411(a)(3). The new source review regulations define stationary source as any building, structure, facility, or installation that emits or may emit any air pollutant subject to regulation under the Act or for which a national standard is in effect. See 40 C.F.R. §§52.01(a); 51.165(a)(1)(i); 52.24(f)(1); 52.21(b)(5)(2000). A “building structure, facility or installation” means “all of the pollutant-emitting activities which belong to the same industrial grouping” and are located on contiguous or adjacent properties and are under the same control. 40 C.F.R. §§165(a)(1); 52.24(f)(2), 52.21(b)(6).

⁷² 40 C.F.R. Part 50.

⁷³ 42 U.S.C. §7502(c).

⁷⁴ 42 U.S.C. §7511c(c)(5).

⁷⁵ 42 U.S.C. §7491-7492.

⁷⁶ Reitze, *op.cit.*, 113.

⁷⁷ *Ibid.*, 114.

⁷⁸ 42 U.S.C. §§7491 and 7492.

⁷⁹ 42 U.S.C. §7491(b).

⁸⁰ 42 U.S.C. §7491(g).

⁸¹ 64 *Federal Register* 35714 (July 1, 1999).

⁸² *American Corn Growers Ass’n v. EPA*, D.C. Cir. No. 99-1348 (May 24, 2002).

⁸³ Reitze, *op cit.*, 114.

⁸⁴ 42 U.S.C. §7411.

⁸⁵ 42 U.S.C. §7411(a)(1). “Modification” is defined as “any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted.” This definition is the same as the one used in the Act for NSR modifications.

⁸⁶ Under the NSPS regulations, any replacement of parts at an existing facility (or “reconstruction”) that exceeds 50 percent of the capital cost to build a new facility is subject to NSPS even without an increase in emissions.40 C.F.R.§60.15.

⁸⁷ Generally, a major stationary source in a nonattainment area is one that emits 100 tons of a regulated pollutant per year, although the threshold may be lower depending on the severity of the pollution in a particular area.

⁸⁸ 42 U.S.C. §7411(s)(1).

⁸⁹ 40 C.F.R. Part 60, subpart C.

⁹⁰ 42 U.S.C. §7411(9b)(5) and (h).

⁹¹ The CAA specifically states that “[I]n no event shall application of ‘best available control technology’ result in emissions of any pollutants which will exceed the emissions allowed by an applicable standard established to [NSPS].” 42 U.S.C. §749. See also, Reitze, *op cit.*, 177.

⁹² See, e.g., 40 CFR Part 60, subparts D, Da, Db, and Dc for NSPS governing electric utilities and steam generating units.

⁹³ See Reitze, *op cit.*, 131.

⁹⁴ 42 U.S.C. § 7412(d).

⁹⁵ 42 C.F.R. §7412(d)(2).

⁹⁶ For new sources, MACT is the emission reduction achieved in practice by the best controlled similar source. For existing sources, MACT cannot be less stringent than the average emission limitation achieved by the best performing 12 percent of the existing sources. 42 U.S.C. §7412(d)(3).

⁹⁷ 42 U.S.C. §7412(b)(6).

⁹⁸ See <http://www.epa.gov/air/toxicair/newtoxics.html#progress> (retrieved on January 14, 2003).

⁹⁹ An area source is any stationary source that is not major, but does not include motor or nonroad vehicles. 42 U.S.C. §7412(a)(2).

¹⁰⁰ 42 U.S.C. §7412(b).

¹⁰¹ Reitze, *op cit.*, 141.

¹⁰² 42 U.S.C. §7412 (g)(2), (i), (j).

¹⁰³ Provided they meet certain requirements, any operating stationary combustion sources that emits SO₂ is eligible to option into the Title V Acid Rain Program. Combustion sources are defined as fossil fuel-fired boilers, turbines or internal combustion engines. The certification of monitoring systems for those combustion sources follows the same procedures and requirements as for affected units in the mandatory utility program. Correspondence with Andrew Mingst, EPA Office of Air and Radiation.

¹⁰⁴ 42 U.S.C. §7651.

¹⁰⁵ See Byron Swift, “How Environmental Laws Work: An Analysis of the Utility Sector’s Response to Regulation of Nitrogen Oxides and Sulfur Dioxide under the Clean Air Act, *Tulane Environmental Law Journal*, vol. 14, no. 2 (Summer 2001), 309–425.

¹⁰⁶ 42 U.S.C. §7410(a)(2)(D).

¹⁰⁷ 42 U.S.C. §7426(b). Such petitions are known as “126 Petitions.”

¹⁰⁸ Reitze, *op cit.*, 242.

¹⁰⁹ *Ibid.*, 243.

¹¹⁰ *Ibid.*, 243-244.

¹¹¹ 63 *Federal Register* 57355 (October 27, 1998).

¹¹² 42 U.S.C. §§7661 - 7661f. These operating permits are also known as Title V permits.

¹¹³ 40 C.F.R. §70.7(d)(v).

¹¹⁴ 42 U.S.C. §7521 *et seq.*

¹¹⁵ 42 U.S.C. §7545 *et seq.*

¹¹⁶ See www.cleanairworld.com/stappa/about.html (retrieved December 5, 2002).

¹¹⁷ Testimony of Peter D. Venturini, Chief, Stationary Source Division, California Air Resources Board, on the U.S. Environmental Protection Agency's NSR 90-Day Review Background Paper (July 12, 2001), 1.

¹¹⁸ U.S. Environmental Protection Agency, NSR 90-Day Review Background Paper (June 22, 2001), 2.

¹¹⁹ National Association of Attorneys General, "State Attorneys General Guide to the Clean Air Act Amendments of 1990" (1992), 34.

¹²⁰ NSR 90-Day Review, 3.

¹²¹ *Ibid.*

¹²² The twelve states with delegated PSD programs are: HI, IL, IN, MA, MI, MN, NV, NH, NJ, NY, SD, and WA. U.S. Environmental Protection Agency, "PSD Program Status." (June 2002). Available at <http://www.state.ak.us/local/akpages/ENV.CONSERV/dawq/aqm/psdmap.pdf>.

¹²³ NSR 90-Day Review, 7.

¹²⁴ See www.ecy.wa.gov/news/2002news/2002-022.html. (retrieved January 14, 2003).

¹²⁵ NSR 90-Day Review, 7.

¹²⁶ Testimony of John A. Paul on behalf of the State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials on the U.S. Environmental Protection Agency's 90-Day NSR Review Process (July 10, 2001), 1.

¹²⁷ Testimony of Peter D. Venturini, *op cit.*, 2.

¹²⁸ *Ibid.*, 1.

¹²⁹ *Ibid.*, 4-5.

¹³⁰ Letter from Russell Harding, Director, Michigan Department of Environmental Quality, to Christine Whitman (March 12, 2001), 1-2.

¹³¹ *Ibid.*, 11-12.

¹³² *Ibid.*, 2.

¹³³ Interview with Larry Bowen, Senior Manager, and Bill Wong, Senior Deputy District Counsel, South Coast Air Quality Management District (February 2002).

¹³⁴ Interview with Lynn Terry, California Air Resources Board (February 2002).

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- ¹³⁵ www.michigan.gov/deq/0,167,7-135-3310_4105-11749--,00.html. (retrieved December 22, 2002).
- ¹³⁶ www.daq.state.nc.us/news/pr/2002/smokestack3_0602.shtml. (retrieved December 22, 2002).
- ¹³⁷ Phone interview with Keith Overcash, North Carolina Department of Environment and Natural Resources, Division of Air Quality (April 2002).
- ¹³⁸ 310 Code of Massachusetts Regulation § 7.29; www.state.ma.us/envir/news/speech_3.htm (retrieved December 22, 2002).
- ¹³⁹ H.B. 284, New Hampshire Session Laws 2002, to be codified at New Hampshire Statutes Chapter 125-O.
- ¹⁴⁰ New York Department of Environmental Conservation, Air Guide 10 (October 5, 1994), 2, available at www.dec.state.ny.us/website/ogc/egm/airguide10.html. (retrieved December 22, 2002).
- ¹⁴¹ R. Chettri, "Synthetic Minors: To Be or Not to Be," *Metal Finishing* (September 1996), 61.
- ¹⁴² Interview with Bob Hodenbosi, Ohio EPA (April 2002).
- ¹⁴³ *Ibid.*
- ¹⁴⁴ 42 U.S.C. § 7401(a).
- ¹⁴⁵ House Committee on Interstate and Foreign Commerce, H.R. Rept. 95-294, 95th Congress, 1st Sess. (1977), 207. The report lists some of the reasons EPA Administrator Train gave for failure to achieve timely compliance with the air quality standards: 1) "the complexity of pollution abatement and unforeseen problems such as the energy crisis and the economic recession;" 2) "noncompliance by individual sources coupled with either inadequate or unsuccessful enforcement;" 3) "inadequacy of State regulations;" and 4) court challenges which prevent federal or state enforcement action."
- ¹⁴⁶ *Sierra Club v. Ruckelshaus*, 344 F. Supp. 253, 256 (D.C.Cir 1972), *aff'd per curiam*, 4 Env't Rep. Cas. (BNA) 1815 (D.C.Cir. 1972), *aff'd by an equally divided Court sub nom. Fri v. Sierra Club*, 412 U.S. 541 (1973).
- ¹⁴⁷ Air Quality Implementation Plans: Prevention of Significant Air Quality Deterioration, Final Rule, 39 *Federal Register* 42510 (December 5, 1974). EPA issued those rules under court order, despite "the lack of precise direction either in the Clean Air Act or in the Court order," and despite the fact bills were before Congress to amend the CAA. *Id.* at 42510. Both industry and environmental groups challenged EPA's 1974 PSD rules immediately, but the D.C. Circuit Court upheld the regulations, and ruled that EPA had authority to issue them. *Sierra Club v. EPA*, 540 F.2d 1114 (1976), *vacated sub nom. Montana Power Co. v. EPA*, 434 U.S. 809 (1977). Although the Supreme Court granted industry petitions to review the holding, the passage of the Clean Air Act Amendments of 1977 rendered the issue moot, and the Court subsequently vacated the decision.
- ¹⁴⁸ Air Quality Standards; Interpretative Ruling, 41 *Federal Register* 55524 (December 21, 1976).
- ¹⁴⁹ In discussing the relationship between NSPS and LAER, EPA stated: "While cost may be an important factor in determining an NSPS applicable to all areas of the country (clean as well as dirty) as a minimum, it is accorded less weight when a source would produce a significant emission increase in an area already violating health-based air quality standards." 41 *Federal Register* 55526 (1976).
- ¹⁵⁰ *Wisconsin Electric Power Co. v. United States*, 893 F.2d 901(7th Cir. 1990) (quoting *Chevron U.S.A. Inc. v. Natural Resources Defense Council*, 467 U.S. 837, 851 (U.S. 1984)).
- ¹⁵¹ 42 U.S.C. §7470.
- ¹⁵² *Ibid.*

¹⁵³ Prevention of Significant Deterioration, 43 *Federal Register* 26380 (June 19, 1978); Emission Offset Interpretative Ruling, 44 *Federal Register* 3282 (January 16, 1979). EPA's decision to issue all PSD permits under its new Part 52 rules (rather than allowing the state to issue them under the old regulations) until it had approved a state's PSD SIP revisions was upheld in *Citizens to Save Spencer County v. EPA*, 600 F.2d 844 (D.C. Cir. 1979).

¹⁵⁴ 636 F.2d 323 (D.C. Cir. 1979). The court had issued a summary opinion on June 18, 1979, but stayed the effect of its decision until it had issued a supplemental opinion. 606 F.2d 1068 (D.C. Cir. 1979). Before the final ruling was issued, EPA proposed new rules to replace the provisions that the court had held invalid, such as the definitions of "source," "modification," and "potential to emit." Requirements for Preparation, Adoption and Submittal of SIPS; Approval and Promulgation of State Implementation Plans, 44 *Federal Register* 51924 (September 5, 1979).

¹⁵⁵ 636 F.2d 323, 401-403 (D.C. Cir. 1979).

¹⁵⁶ *Ibid.*, 400.

¹⁵⁷ *Ibid.*

¹⁵⁸ *Ibid.*

¹⁵⁹ *Ibid.*

¹⁶⁰ *Ibid.*, 353.

¹⁶¹ Requirements for Preparation, Adoption, and Submittal of Implementation Plans; Approval and Promulgation of Implementation Plans. 45 *Federal Register* 52676 (August 7, 1980); proposed rules issued at 44 *Federal Register* 51924 (September 5, 1979).

¹⁶² These petitions for review were consolidated with challenges to the 1979 and 1980 revisions to the Emissions Offset Rule, *Chemical Mfrs. Ass'n v. EPA*, No. 79-112 (D.C. Cir. 1980). American Mining Congress also petitioned EPA for reconsideration of the 1980 PSD rules regarding the use of fugitive emissions in determining potential to emit. EPA agreed to revise the rules to establish that it intended to count fugitive emissions in determining whether the source is major or it is a significant increase only if the source is one of those listed in a rulemaking process. AMC later joined the *CMA* challenge on the issue.

¹⁶³ Requirements for Preparation, Adoption, and Submittal of Implementation Plans; Approval and Promulgation of Implementation Plans. 48 *Federal Register* 38742 (August 28, 1983).

¹⁶⁴ Requirements for the Preparation, Adoption, and Submittal of Implementation Plans; Approval and Promulgation of Implementation Plans, 54 *Federal Register* 27274 (June 28, 1989).

¹⁶⁵ *Chemical Mfrs. v. EPA*, No. 89-1514 (August 28, 1989).

¹⁶⁶ Order Deferring Briefing, *Chemical Mfrs. v. EPA*, No. 89-11514 (D.C. Cir. June 7, 1990).

¹⁶⁷ *Chemical Mfrs Ass'n v. EPA*, 70 F.3d 637 (D.C. Cir. Sept. 15, 1995) (*per curium*). The court cited its prior decision on July 21, 1995, in *National Mining Ass'n v. EPA*, 59 F3d 1351 (D.C. Cir. 1995). In that case, the court held that the CAA Amendments regarding the hazardous air pollutant program did not mandate a federal enforceability requirement for non-major source permit limitations. The court said EPA failed to consider effective state emission controls in determining potential to emit and whether the source would be classified as major. The D.C. Circuit court also vacated and remanded EPA's federal enforceability requirement in the definition of PTE for the Title V operating permit regulations. *Clean Air Implementation Project v. EPA*, No. 96-1224 (D.C. Cir. June 28, 1996) (*per curium*).

¹⁶⁸ 42 U.S.C. §7503(a)(5).

¹⁶⁹ “Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act,” January 25, 1995. The policy has been extended several times. See Memorandum, “Third Extension of January 25, 1995 Potential to Emit Transition Policy,” December 20, 1999, extending the policy to December 31, 2000.

¹⁷⁰ 46 *Federal Register* 50766 (October 14, 1981).

¹⁷¹ New Source Review Workshop Manual, Draft October 1990. The 322-page manual was developed to provide a training guide for permitting officials in implementing the NSR program. It has never been issued in final form.

¹⁷¹ 61 *Federal Register* at 38273. This “top-down” BACT methodology was proposed for codification in the regulations in EPA’s 1996 NSR Simplification Rule.

¹⁷² *Ibid.*

¹⁷³ The methodology was challenged by the American Paper Institute and the National Forest Products Association in *API v. Reilly*, No. 89-1428 (D.C. Cir. filed July 10, 1989), *API v. Reilly*, No. 89-2030 (D.C. Cir. Filed July 18, 1989) and *API v. Reilly*, No. 90-1364 (D.C. Cir. filed July 13, 1990). Those two industry groups have since merged into the American Forest and Paper Association. A consortium of utilities filed similar challenges against the BACT methodology in *Alabama Power Co. v. EPA*, No. 89-1439 (D.C. Cir. Filed July 11, 1989). The cases were consolidated in the Circuit Court.

¹⁷⁴ Letter to Christine T. Whitman, Administrator, U.S. EPA, from Russell J. Harding, Director, Michigan Department of Environmental Quality, March 12, 2001. (Recommending in a six-state workgroup report that the top-down BACT process go through the formal rulemaking process and that BACT is a state decision that should not be overridden by U.S. EPA).

¹⁷⁵ *Alaska v. EPA*, U.S. Supreme Court Docket No. 02-658 (petition for cert. granted, Feb. 24, 2003).

¹⁷⁶ *Ibid.*

¹⁷⁷ 893 F.2d 901 (7th Cir. 1990). This case is known as the *WEPCO* decision.

¹⁷⁸ The definition for modification is the same for NSPS and NSR, including the exemptions for routine maintenance. For NSR applicability, however, there must also be a “significant” net emissions increase, whereas for NSPS applicability, any emissions increase will trigger the requirements.

¹⁷⁹ The Seventh Circuit first looked at the legislative history in examining the definition of modification or physical change, affirming that the purpose of requiring NSPS and NSR when there is a modification “is to ensure that pollution control measures are undertaken when they can be most effective, at the time of new or modified construction. The development of emissions control systems is not furthered if operators could, without exposure to the standards of the 1977 Amendments, increase production (and pollution) through the extensive replacement of deteriorated generating systems.” 893 F.2d at 909-910. The court continued, “Our reading of the phrase ‘any physical change’ is also consistent with another of the basic goals of the 1977 Amendments: technology forcing.” *Ibid.*, 909.

¹⁸⁰ *Ibid.*, 917.

¹⁸¹ A 1989 First Circuit decision had supported the use of EPA’s actual-to-potential test in a case involving the conversion of a cement plant from a wet process to a more efficient dry process. *Puerto Rican Cement Co. v. EPA*, 889 F.2d 292 (1st Cir. 1989). The *WEPCO* court concluded that, unlike the major renovation before the *Puerto Rican Cement* court, the “like-kind replacement” in *WEPCO* was not sufficiently different to require the use of PTE when calculating future emissions.

¹⁸² Requirements for Preparation, Adoption and Submittal of Implementation Plans; Approval and Promulgation of Implementation Plans; Standards of Performance for New Stationary Sources, *57 Federal Register* 32314 (July 21, 1992).

¹⁸³ *1990 CRS Legislative History*, Vol. I, 789.

¹⁸⁴ 42 U.S.C. §7503(a).

¹⁸⁵ In introducing the final bill as reported out of conference, Senator Mitchell explained: “The conference committee deleted the so-called “WEPCO” provisions without prejudice....In 1970, the Clean Air Act required that new sources meet tight emission standards. At that time, it was assumed that electric utility units had an average lifetime of 30 years. But many utilities are now choosing to extend the life of their plants rather than meet the new source performance standards mandated under current law. This development has exacerbated our pollution problems and made national acid rain controls even more necessary. Some approaches to the WEPCO problem would again shield utilities from meeting new source standards—and postponing needed emission reductions—even though such utilities may in essence be rebuilding their units.... I urge EPA to propose clarifications on the matter of what kind of changes constitute a modification to an existing source that will continue to protect local air quality while responding to some of the issues raised in the WEPCO debate.” Senate Debate on the CAA Amendments of 1990 and Conference Report, *Legislative History of the Clean Air Act Amendments of 1990*, Committee Print No. 103-38, 103rd Congress, 1st Sess. (November 1993), 791-792. See Conference Comm., Joint Explanatory Statement of the Committee of the Conference to accompany S. 1630, Rep. 101-952, 101st Cong., 2nd Sess. (1990), 344-45; the Senate debate and vote are in the *1990 CRS Legislative History*, Vol. IV, 6948-6978.

¹⁸⁶ *57 Federal Register* 32314 (July 21, 1992).

¹⁸⁷ For the construction of a new electric generating unit or the replacement or reconstruction of an existing emission unit, however, EPA would still use the “actual-to-potential” test.

¹⁸⁸ *57 Federal Register* 32314 (July 21, 1992).

¹⁸⁹ *Ibid.*

¹⁹⁰ 42 U.S.C. §7411 (a)(4) (emphasis added).. In both the PSD and nonattainment sections of the Act, “modification” is defined to the same as in the NSPS provisions. See 42 U.S.C. §§7479(2)(C), 7501(4).

¹⁹¹ See *57 Federal Register* 32314, 32326 (July 21, 1992) (discussing the reason for a routine maintenance exemption in the WEPCO final rules).

¹⁹² *Ibid.*

¹⁹³ When EPA first established the PSD program in 1974, even before the 1977 Amendments, the PSD regulations stated “routine maintenance, repair, and replacement shall not be considered a physical change.” *39 Federal Register* 42410 (December 5, 1974). That exclusion for “routine maintenance” is the same as the one allowed for modifications under the NSPS. “Standards of Performance for New Stationary Sources,” *36 Federal Register* 24376 (December 23, 1971); “Standards of Performance for New Stationary Sources: Modification, Notification and Reconstruction,” *40 Federal Register* 58416 (December 16, 1975).

¹⁹⁴ Requirements for Preparation, Adoption, and Submittal of Implementation Plans; Approval and Promulgation of Implementation Plans, *45 Federal Register* 52676 (August 7, 1980).

¹⁹⁵ 636 F.2d 323, 400 (D.C. Cir. 1979).

¹⁹⁶ *Ibid.*

¹⁹⁷ Letter from EPA Administrator Lee M. Thomas to John Boston, Vice President, WEPCO (Oct. 14, 1988), adopting in toto the conclusions of the EPA Acting Assistant Administrator for Air and Radiation in a memorandum to David A. Kee, Director of Air and Radiation Division, Region V (Sept. 9, 1988).

¹⁹⁸ *WEPCO v. Reilly*, 893 F.2d 901, 910 (7th Cir. 1990).

¹⁹⁹ *Ibid.*, 912.

²⁰⁰ Senate Debate on the CAA Amendments, *1990 Conference Report*, Committee Print No. 103-38, 103rd Congress, 1st Sess. (November 1993), 791-792.

²⁰¹ See U.S. Department of Justice, *New Source Review: An Analysis of the Consistency of Enforcement Actions with the Clean Air Act and Implementing Regulations*, January 2002, 20-23. (*hereinafter*, DOJ 2002 Report). In the 1992 WEPCO rulemaking, EPA stated that it intended to issue guidance on what constituted “routine maintenance.” “EPA plans to issue guidance on this subject as part of a NSR regulatory update package which EPA presently intends to propose by early summer. In the meantime, EPA is today clarifying that the determination of whether the repair or replacement of a particular item of equipment is “routine” under the NSR regulations, while made on a case-by-case basis, must be based on the evaluation of whether that type of equipment has been repaired or replaced by sources within the relevant industrial category. This guidance was not issued. In June 2002, EPA published recommendations for the reform of the routine maintenance exclusion.

²⁰² EPA, *New Source Review Reform* (Preliminary Staff Draft, 1994), 106-109.

²⁰³ DOJ 2002 Report, 10.

²⁰⁴ Letter from William Bumpers to David Solomon, Chief, New Source Review Section, Office of Air Quality Planning and Standards, “Comments of the Class of ‘85 Regulatory Response Group on EPA’s Draft Revisions to the New Source Review Regulations” (September 9, 1994), 5. The 25-member coalition of electric utilities also stated that a formal definition of “routine maintenance” was not necessary because the industry generally has a “fairly good understanding” of what would be considered “routine” based on “existing legal opinions, such as in the WEPCO case, guidance from EPA on specific situations regarding routine activities, engineering requirements and vendor recommendations, a review of normal industry practice regarding maintenance, repair and replacement, and EPA’s general guidance on this issue.”

²⁰⁵ See DOJ 2002 Report, 21. See also, *e.g.*, Letter from Francis X. Lyons, EPA Regional Administrator, to Henry Nickel, Counsel for Detroit Edison Company (May 23, 2000). (At Detroit Edison’s request for an applicability determination for a proposed replacement and reconfiguration of steam turbines at one of its power plants, EPA determined that, although the proposed construction was a “nonroutine physical change to the facility,” it had no information that the modification would increase emission).

²⁰⁶ See endnote 204; *In re: Tennessee Valley Authority*, CAA Docket No. 00-6.

²⁰⁷ DOJ 2002 Report, 21-23.

²⁰⁸ *Ibid.*, iv-v.

²⁰⁹ *U.S. v. Southern Indiana Gas and Electric Co.* (SIGECO), Docket No. IP99-1692-C M/F (S.D.Ind Feb. 13, 2003 and Feb. 18, 2003).

²¹⁰ *Ibid.*, 31-50.

²¹¹ See Appendix A below: *Chronology of the Legislative, Regulatory and Enforcement History of the Clean Air Act’s New Source Review Program*.

²¹² *U.S. v. Louisiana-Pacific Corp.*, 682 F.Supp. 1141 (D.Colo. 1988).

²¹³ *Ibid.*

²¹⁴ *Ibid.*, 1149.

²¹⁵ *Ibid.*, 1155.

²¹⁶ Darren Samuelson, “Minnesota Plants Concede to Ethanol Industry’s First NSR Settlements,” *Energy and Environmental Daily* (Oct. 3, 2002); see also “Agra Resources Cooperative (EXOL) Ethanol CAA Settlement,” EPA Press Release (Oct. 2, 2002).

²¹⁷ In the late 1980s, EPA brought a few enforcement actions to halt construction of modifications that had been approved by state permitting agencies, claiming that the state-issued permit was deficient. The courts are divided as to whether EPA may go against a company in such a case, or only against the state in question. *U.S. v. Solar Turbines*, 732 F.Supp. 535 (M.D. Pa 1989). In 1988, EPA filed a court action to stop construction of a gas turbine cogeneration facility in York County, Pennsylvania, because EPA disagreed with the state agency’s BACT requirements imposed in the permit. The court held in favor of the company, finding that the company acted in accordance with a valid state permit, and that EPA’s only recourse was against the state. *U.S. v. AM General Corp.*, 808 F.Supp 1353 (N.D. Ind. 1992, aff’d 34 F3d 472(7th Cir. 1994). In 1987, EPA filed suit against AM General seeking an injunction to stop the operation of a vehicle manufacturing plant that had modified its paint drying unit pursuant to a local permit, claiming that the permit was inadequate for failing to require LAER and offsets. The court granted summary judgment for AM General, stating that the company had already modified its plant, and that EPA was not authorized to retroactively invalidate the permit, and then institute enforcement action against the permit holder. In 1997, a district court in California rejected the rationale of *Solar Turbines* and *AM General*, and allowed EPA to pursue action against a source for making modifications in violation of BACT and offset requirements, even though it held a state permit. *U.S. v. Campbell Soup Company*, Civ. S-95-1854 DFL (E.D. Cal. March 11, 1997), 1997 WL 258894. The Supreme Court has recently taken a case to decide whether EPA can lawfully block an NSR permit issued by a state government. *Alaska v. EPA*, U.S. Supreme Court Docket, No. 02-658 (petition for cert. granted, Feb. 24, 2003).

²¹⁸ 889 F.2d 292 (1st Cir. 1989).

²¹⁹ *Ibid.*, 293.

²²⁰ *Ibid.*

²²¹ 893 F.2d 901, 906 (7th Cir. 1990).

²²² *Ibid.*

²²³ *Ibid.*

²²⁴ See, e.g., *U.S. v. Louisiana-Pacific Corp.*, No. CV93-0869 (W.D.La May 24, 1993). Louisiana-Pacific agreed to pay \$11 million in civil penalties, install \$70 million in new pollution control equipment, and conduct audits at its wood products plants. Criminal charges were upheld against Louisiana-Pacific in *U.S. v. Louisiana-Pacific Corp.*, 42 ERC 1033 (D. Col. 1995). In *U.S. v. Georgia Pacific Corp.*, 960 F.Supp. 298 (N.D. Ga (Dec. 23, 1996). Georgia Pacific agreed to conduct audits at its plants, pay \$6 million in penalties, install \$25 million in pollution controls, and spend \$4.25 million for environmental projects. In *United States v. Willamette*, No. CV 00-1001 HA (D.Or. 2001), Willamette agreed to spend approximately \$90 million to reduce VOCs and other pollutants by 27,000 tons per year.

²²⁵ *Ibid.*

²²⁶ The Sector Notebooks may be obtained at <http://es.epa.gov/oeca/sector>. (retrieved January 12, 2003). EPA issued Sector Notebooks for oil refineries and wood products in 1995, and for electric utilities in 1997.

²²⁷ DOJ 2002 Report, 13.

²²⁸ *Ibid.* These information requests were made pursuant to powers granted under §114 of the Clean Air Act. 42 U.S.C. §7414.

²²⁹ “U.S. Sues Electric Utilities in Unprecedented Action to Enforce the Clean Air Act,” DOJ Press Release, (Nov. 3, 1999). See also, DOJ 2002 Report, 14-16. EPA subsequently filed a civil action against Duke Energy in North Carolina; DOJ 2002 Report, 15.

²³⁰ *In re: Tennessee Valley Authority*, CAA Docket No. 00-6.

²³¹ Notice of Violation issued by U.S. Environmental Protection Agency Region VIII to Xcel Energy, Inc. (June 27, 2002). Docket No. CAA-08-2002-06.

²³² “Spitzer Files Lawsuits Against Out-of-Town State Power Plants; Connecticut Joins New York in Landmark Legal Action to Reduce Acid Rain and Smog,” press release, Office of New York State Attorney General Eliot Spitzer (November 29, 1999). Because the attorneys general sued plants outside of their own states, they were required to file under the citizen suit provision of the federal Clean Air Act. 42 U.S.C. §7604.

²³³ “U.S. Settles Landmark Clean Air Act Case Against Electric Utility,” EPA Press Release (February 29, 2000).

²³⁴ “United States and New Jersey Announce Clean Air Act Coal-Fired Power Plant Settlement with PSEG Fossil LLC,” DOJ Press Release (January 24, 2002).

²³⁵ The two electric companies were Cinergy and Dominion Virginia Power.

²³⁶ *DOJ 2002 Report*, 20.

²³⁷ Testimony of Eliot Spitzer, Attorney General of New York, before the Committee on Environment and Public Works and Committee on the Judiciary (July 16, 2002), 14 -18.

²³⁸ Letter from Eric V. Schaeffer, Director, Office of Regulatory Enforcement, to Christine Whitman, Administrator, U.S. Environmental Protection Agency (February 27, 2002).

²³⁹ *Tennessee Valley Authority v. EPA*, No. 00-12310-E (11th Cir. Brief submitted Sept. 1, 2000). On January 8, 2002, the court denied DOJ’s motion to dismiss TVA’s petition for review. *Tennessee Valley Authority v. EPA*, No. 00-12310, 2002 WL 21785 (11th Cir. 2002).

²⁴⁰ EPA settled with British Petroleum and Koch Petroleum Group on July 25, 2000, with Motiva Enterprises, Equilon Enterprises and Deer Park Refining Limited Partnership on March 21, 2001; with Premcor Refining Group, Inc on July 12, 2001; with Marathon Ashland Petroleum LLC in May 2001; and with Conoco, Inc., Navajo Refining Co., and Montana Refining Co. in December 2001. See DOJ 2002 Report, 17-19, Appendix II (Table of Additional New Source Review Enforcement Actions), summarizing NSR enforcement activity.

²⁴¹ “Murphy Oil Required to Spend Over \$12 million to Reduce Pollution and Pay \$5.5 Million in Civil Penalties,” DOJ Press Release (January 24, 2002).

²⁴² *Ibid.*

CHAPTER FOUR

NSR REFORM EFFORTS AND THE CURRENT CONTROVERSY

4.A Summary of NSR Reform Efforts and Their Current Status

Recognizing the need for revisions in the NSR program and realizing that Congress had not adopted statutory changes, EPA began an expansive effort to reform NSR in August 1992, particularly focusing on how NSR applies to changes at existing facilities. Industry officials contended that the pre-construction review and the installation of costly upgrades for modifications were time-consuming and thus a barrier to improving reliability, efficiency, and safety. At facilities where operational changes must be made quickly, sources claimed that the time and cost associated with triggering NSR impeded good business decisions; and many stakeholders agreed that the NSR program was unnecessarily complicated.

In August 1992 and March 1993, EPA held NSR simplification workshops with all stakeholders to identify the problems with the program, and to suggest creative solutions. In 1993, EPA formalized these efforts by creating a subcommittee on NSR reform pursuant to the Federal Advisory Committee Act “to provide independent advice and counsel to EPA on policy and technical issues associated with reforming the NSR rules.”¹ Several stakeholder meetings were held over the next few years, culminating on July 23, 1996, when EPA launched a new rulemaking, the NSR Simplification Proposal.²

4.A-1 1996 Simplification Proposal

The 1996 proposed rules represented the first comprehensive overhaul of the NSR program since the 1980 regulations, addressing many of the concerns EPA had heard in the stakeholders meetings. The agency proposed to streamline the permitting process, relieve regulatory burdens, and provide states with flexibility in implementing NSR.³ EPA addressed the knotty issue of when NSR applies to changes at existing facilities by proposing some exclusions and flexibility for calculating how emission increases would trigger NSR. These proposed changes included:

- A “clean unit” exclusion from NSR for existing units that have installed BACT or LAER within the last ten years;
- A new baseline calculation for determining significant net emission increases, allowing sources to use any twelve consecutive months in the past ten years to establish their pre-change emission levels;
- An exclusion for pollution control projects;
- A voluntary Plantwide Applicability Limit (PAL) approach under which facilities could accept federally enforceable plantwide emission limits to keep their overall emissions at a low level, and thus avoid the application of NSR for proposed changes as long as plantwide emissions stayed within the limit; and

- An extension to all sources of the “actual-to-future-actual” method (the “WEPCO” rule currently applicable only to power plants) for determining whether a modification produces a significant increase in emissions and thus triggers NSR.⁴

However, the 1996 simplification proposal did not contain any revisions to the routine maintenance exclusion because industry had rejected EPA's draft proposals and because there was no consensus on how the exclusion should be clarified.

4.A-2 1998 Solicitation for Comment on NSR Alternatives

EPA received several hundred comments on its 1996 reforms. After reviewing them, EPA solicited additional comment in July 1998 on two separate issues related to NSR applicability.⁵

First, EPA asked for further comment on its proposal to extend the actual-to-future-actual test for determining significant emission increases to all categories of sources, so long as facilities agreed to an enforceable ten-year emission limit to assure the future actual emissions were projected accurately. Under the actual-to-future-actual proposal, sources would be required to monitor and report their emissions for ten years into the future to make sure there was no increase. EPA reasoned that, if a ten-year “look back” was a “fair and representative time period for encompassing a source's normal business cycle,” as industry commenters claimed, the same rationale would apply to tracking actual emissions after a change.⁶

Second, EPA proposed to eliminate an exclusion allowing future emission increases caused by growth in market demand. EPA stated that it had been dissatisfied with that aspect of the WEPCO rule because it was too difficult to determine which emissions came purely from market demand and which increases directly resulted from equipment changes.⁷ Under the WEPCO rule, power plants had total discretion to deduct emission increases believed to be attributable to demand growth, making the exclusion self-implementing and self-policing. Decisions about how much increased emissions could be deducted as attributable to demand growth varied “from source to source, as well as from what a permitting agency would accept as appropriate.”⁸ EPA found that those variations inevitably led to “enforcement problems.”⁹

EPA also sought comments on when and how permitting authorities should revise the emission levels set under a plantwide applicability limit (PAL) for any given source. Specifically, EPA offered several options for periodic reviews and downward adjustments of emission limits if that capacity remained unused for a period of at least ten years.¹⁰

4.A-3 Industry Proposals

Discussion on how to reform the NSR rules continued. Following a February 1999 stakeholder meeting, industry groups submitted to EPA a number of reform proposals that suggested exclusions or “off-ramps” from the NSR program for various industry sectors. One utility group suggested a framework for reducing emissions from existing sources to specific levels over a period of time, rather than using the NSR for changes.¹¹ A second utility proposal would have allowed power plants to choose a voluntary off-ramp if they agreed to meet “presumptive

BACT/LAER limits” for SO₂ and NO_x that would be locked in for a ten-year period.¹² Another proposal focused on using PALs to avoid NSR by committing facilities to a plantwide emissions cap, but allowing them flexibility to make changes at individual units within the facility as long as emissions would not exceed unit-specific limits. The Complex Manufacturing Group suggested, among other things, the use of an air quality impact test for NSR, so that the program would not apply unless a change would increase a maximum hourly achievable rate, as opposed to increasing actual emissions.

4.A-4 January 2000 Stakeholders Meeting

EPA convened another stakeholder meeting in January 2000 to obtain feedback on developing an emissions cap for utilities as an alternative to NSR. EPA believed that a separate mechanism to control emissions from power plants as an alternative to NSR could produce significant environmental benefits. For the utilities, the issue of NSR reform became even more urgent after EPA began its NSR enforcement initiative, and as they sought ways to avoid future enforcement actions or to defend ongoing cases.

This stakeholders’ meeting covered a number of issues, including which pollutants should be covered by the emission caps, timeframes and targets for emission reductions, and whether to allow emissions trading.¹³ There was, however, no agreement among stakeholders -- even within industrial sectors -- on these issues. Some utility representatives believed strongly that CO₂ and mercury emissions should be regulated, so that the industry could plan future equipment upgrades and controls with certainty and minimum costs.¹⁴ Other utility groups believed that facilities would not be willing to participate in a cap on these emissions,, so only SO₂ and NO_x should be covered by the cap.¹⁵

4.A-5 Change in Administration

Despite numerous additional public meetings and stakeholder discussions on NSR reforms, EPA did not develop final rules by the time the new administration took office in 2001. Upon leaving the agency in January 2001, EPA’s Assistant Administrator for Air and Radiation, Robert Perciasepe, issued a memorandum to NSR stakeholders on the status of the NSR reform efforts. He summarized the concepts that EPA had developed over the past few years to improve NSR and that he believed could be finalized as regulatory actions, including:¹⁶

- A voluntary alternative NSR program for utilities, which would allow power plants to commit to specific, verifiable emission reductions across all their electric generating units over a defined period of time and, in most instances, would avoid the need to apply for an NSR permit when making changes at their facilities;
- Plantwide Applicability Limits (PALs), which would allow source owners who commit to install best controls over time to make changes at their facilities without obtaining an NSR permit, provided their total emissions did not exceed the plantwide cap;

- Clarification of roles, responsibilities, and time frames for reviewing PSD permits in Class I Areas, delineating the role of the federal land managers in reviewing these permits;
- A Clean Unit Exemption, which would allow an owner of emission units that meet certain minimum criteria to make most changes to these units without triggering NSR for a specified period of time, such as ten years;
- An Innovative Control Technologies Waiver, which would provide more flexibility for owners of sources who try installing innovative technologies that have not yet been proven effective;
- A Pollution Control Projects Exclusion, which would codify existing policy that owners of facilities making changes to their plants that primarily reduce one or more targeted air pollutants (but which collaterally increase other pollutants) are excluded from NSR provided certain conditions are met; and
- Control Technology Review Requirements to improve and expedite the process for determining which cleaner technology is required for a permit.

Perciaspe thought these reforms would provide certainty and flexibility for industry without sacrificing environmental benefits. He stated that EPA was unable to implement the reforms, however, “[d]ue to the array of policy and legal issues that arose on the vast number of areas we attempted to tackle in one very large rulemaking.”¹⁷ He concluded that “it would be difficult, if not impossible, to improve NSR in one large rulemaking.”¹⁸

4.A-6 Current Multi-Pollutant Legislation

The drive to address concerns over high emissions from electric utilities, as well as the dissatisfaction of the industry over NSR requirements, has produced various multi-pollutant proposals and bills that would cap emissions and allow trading. The proposals vary in the number of pollutants covered and in timeframes and targets for emission reductions, as well as in how they relate to the NSR program. The following discussion summarizes some of the proposals.

A bill introduced by Senator James Jeffords and 19 co-sponsors, known as the Clean Power Act of 2003 (S. 366) establishes caps for four pollutants — SO₂, NO_x, CO₂, and mercury — with a 2008 deadline for achieving the identified caps on emissions. The bill incorporates a trading program with an allocation scheme for SO₂, NO_x and CO₂. The bill also contains a “birthday provision” that requires existing power plants to comply with NSR and NSPS requirements 30 years from either the date the plant began operation or 10 years after passage of the bill, whichever is later.

The Bush administration’s bill, the Clear Skies Act of 2003 (H.R. 999 and S. 485) was re-introduced in both the House and Senate in February 2003. That bill would establish a cap-and-trade program covering emissions of SO₂, NO_x, and mercury from electric utilities, with a

declining cap and various target dates of 2008, 2010, and 2018 for achieving the caps. The bill would also allow for gradually phasing-in an auction of emission credits. About one percent of the credits would be auctioned starting in 2008 (for SO₂ and NO_x) and 2010 (for mercury), increasing yearly thereafter to full auctions in 2059 (for NO_x) and 2061 (for SO₂ and mercury). Additionally, the bill would exempt all changes at existing sources from NSR, and would require that new sources meet NSPS emission standards rather than BACT or LAER.

Industry has also proposed multi-pollutant strategies for power plants. The Clean Energy Group (CEG), a coalition of electric generating and distribution companies, has proposed strategies for power plants that include the regulation of CO₂ and mercury and rely on a cap and trade program to reach targeted reductions. CEG further recommends making changes to the current NSR regulations regarding modifications and BACT determinations, and keeping the requirement that brand new sources under the cap be subject to NSR.¹⁹ The Panel has not included in this report the many other multi-pollutant proposals that have been presented recently.

Over the past two years, five states have adopted multi-pollutant legislation to force reductions in power plants.²⁰ While the state requirements vary as to target dates and amount of reductions required, many are more stringent than the Clear Skies bill. In April 2002, New Hampshire became the first state to pass a law including a cap on CO₂ and mercury emissions.²¹ Many other states are now considering multi-pollutant legislation, which could subject industries to varying requirements around the country. Appendix D provides a summary of some state multi-pollutant laws.

4.A-7 National Energy Policy Development Group

In May 2001, in response to the California energy crisis, the National Energy Policy Development Group led by Vice-President Cheney asked EPA to investigate the impact of the NSR program on new investment for power plants and refineries, on energy efficiency, and on environmental protection.²² EPA conducted a broad-based review of the NSR program, including holding public meetings around the country and with various stakeholder groups. EPA issued its report in June 2002, along with recommendations for regulatory changes to NSR.²³

EPA concluded that the NSR program has resulted in significant environmental and public health benefits, and that the NSR requirements have not significantly impeded investments in new power plants or refineries. It also found, however, that NSR has hindered or caused the cancellation of some changes to maintain and improve reliability, efficiency and safety at existing power plants and refineries. Additionally, EPA concluded that, for existing refineries and other industries, NSR has discouraged some projects that would have increased production capacity or efficiency without increasing air pollution.²⁴ EPA pointed out that the evidence about NSR's adverse effects on some industry projects was anecdotal, but believed that these examples were sufficient to support its conclusion.²⁵

4.B 2002 EPA Reforms

On December 31, 2002, shortly before the Panel finalized this report, EPA issued final NSR reform rules and a proposed rule on the routine maintenance exclusion.²⁶ EPA took final action on five changes to the NSR program that create alternative methods for determining whether NSR permits are required. The final rules will apply to projects that begin actual construction after the rules became effective on March 3, 2003.²⁷ A detailed analysis of both sets of rules is beyond the scope of the Panel's responsibility and the Academy's contract with EPA. However, the following section briefly describes the new final and proposed reforms.

4B-1 Final Rules

Method for Determining Baseline Actual Emissions

The final rule changes the method for determining the pre-change "baseline actual emissions" for existing sources (other than electric utilities). EPA will allow a source to calculate its baseline using the average emissions from any consecutive 24-month period during ten years prior to the change. The previous rule required a source to use its average emissions from only two years prior to the change. The new baseline calculation will be used in: 1) determining whether there is a significant emissions increase from a major modification; 2) netting calculations; and 3) establishing the cap for the plantwide applicability limits.

For electric utilities, the final rule codifies EPA's current policy for calculating baseline emissions by taking the average rate, in tons per year, at which the unit actually emitted the pollutant for the two-year period (consecutive 24-months) during the five years immediately preceding construction. For utilities only, the rule also retains the option to use a different time period if the reviewing authority deems it more representative of actual emissions.

Actual-to-Projected-Actual Applicability Test

The final rule allows existing sources to use an actual-to-projected-actual test for determining if a physical or operational change will increase emissions, but new sources must still use the actual-to-potential methodology. Under the rule's new methodology, a source will compare its baseline actual emissions (described above) to the projected maximum annual rate of emissions from the changed units during any of the five years following the change (or ten years if the change increases the source's design capacity or potential to emit). If the difference is a significant increase, the source may need an NSR permit.

In making its calculation, a source can exclude any future emissions that the unit could have accommodated before the change and that are unrelated to the project. The source can also exclude emissions resulting from increased utilization due to growth in market demand that the unit could have accommodated before the change.

If a source uses this methodology and determines that there will not be a significant emission increase but there is a reasonable possibility of such an increase, the source must track and maintain records on post-change annual emissions for the next five years (or ten years if the

project increases the unit's design capacity or potential to emit). At the end of each year, if post-change annual emissions exceed the baseline by a significant amount and differ from the source's projections, it must report this information to the permitting authority within 60 days after the end of the year. If the source maintains these emissions data, they must be available for examination upon request by the permitting authority and the general public.

Under the final rules, reporting requirements for electric utilities are slightly different. First, utilities that project post-change emissions will have to submit a copy of their projections to their permitting authority before construction starts, although they are not required to obtain any approval prior to construction. Second, utilities must send a copy of their emission reports to the permitting authority at the end of each year, whether or not their emissions have increased by a significant amount or have exceeded projections. However, an existing facility, including an electric utility, is only required to maintain records and report emissions if there is a "reasonable possibility" that the project might result in a significant emissions increase.

Plantwide Applicability Limits (PALs)

The final rule provides a voluntary option to limit plantwide emissions. If a facility keeps its emissions below the PAL cap, it can avoid NSR requirements when making any changes. The baseline for the PAL cap would be the average emissions from any consecutive 24-month period during ten years prior to establishing the PAL. A PAL facility must monitor emissions from all emission units under the cap, and all units operating under a PAL must have sufficient monitoring to determine accurately the plantwide emissions for a 12-month rolling total. Permitting authorities, usually the states, can approve a PAL only after public review that affords citizens an opportunity to comment on the proposed PAL.

Clean Unit Applicability Test

Under the final rule, facilities that qualify as "clean units" can make any physical or operational changes without triggering NSR. Any source automatically qualifies as a clean unit if it has obtained an NSR permit and is complying with BACT or LAER. An entire facility may also qualify for clean unit status if it obtains a SIP-approved permit, including a public review to determine whether it meets the criteria for a clean unit. Clean unit status expires ten years after either the date the equipment went into service, the effective date of clean unit approval, or any time the source owner fails to comply with clean unit requirements.

Pollution Control and Prevention Projects

The final rules also provide a new list of environmentally beneficial technologies that qualify as pollution control and prevention projects for all types of sources. The listed projects automatically qualify for an exclusion from NSR, as long as they do not cause or contribute to a violation of the national ambient air quality standards or PSD increments or adversely affect air quality. Facilities that undertake these listed projects will be free to do so upon submission to their permitting authority of a notice, rather than having to wait for approval of an NSR permit.

4.B-2 Proposed Exclusion for Routine Maintenance, Repairs, and Replacements

This proposed rule would change the method for determining whether a physical or operational change that significantly increases emissions can qualify for exclusion from NSR as routine maintenance, repairs, and replacements (RMRR). The rule would replace EPA's current case-by-case determinations of RMRR, using factors such as the nature, extent, and purpose of a change, along with the frequency of changes and the cost of the work.

Under EPA's proposed RMRR exclusion, a yearly allowance for the cost of maintenance, repairs, and replacements would be established for each source. This allowance would be calculated as a percentage of each source's replacement costs, and would be determined by specific rules for various categories of sources. EPA would determine the percentages from IRS regulations, standard engineering reference manuals, and actual industry data.

If the total cost of RMRR at a source is within the allowance, NSR would not apply -- even if emissions increase as a result of the RMRR. When total yearly costs for all RMRR activities at a source exceed the annual allowance, the source owner would first subtract its RMRR activities from the yearly total, starting with the most expensive activity, to bring the total cost under the allowance. Then, the source would evaluate on a case-by-case basis those activities that cost more than the allowance to determine whether they would qualify for the RMRR exclusion. If a source is uncertain, it can ask its permitting authority to determine whether NSR applies.

EPA would exclude certain activities from the allowance: construction of a new "process unit,"²⁸ replacement of an entire process unit, any change that would increase in the source's maximum achievable hourly emission rate, or any change that would produce emissions of any regulated NSR pollutant not previously emitted by the stationary source. Owners who elect to use the annual allowance for the RMRR exclusion would be required to submit an annual report to the appropriate permitting authority within 60 days after the end of the year over which the RMRR costs have been accumulated.

EPA is also seeking comment on a proposed equipment replacement approach to RMRR. It would provide that most projects involving the replacement of existing equipment with functionally equivalent new equipment would qualify for the RMRR exclusion. A source would compare the cost of the components being replaced with the cost of replacing an entire production unit at the plant. If the cost of the replaced components is below a specified threshold, the replacements would qualify as RMRR.

4C The Controversy Continues

The latest EPA final and proposed rules for reforming NSR have met strong criticism from many state and local officials, environmental organizations, members of Congress, and state legislators. Some state attorneys general have challenged the final rules in federal appeals court. They argue that those reforms significantly broaden the exclusions from NSR, reduce the number of modifications subject to NSR, and allow emissions to increase without requiring equipment upgrades. Other critics claim the proposals address the concerns of industry but fail to obtain

any environmental benefits. EPA responds that the reforms are intended to provide greater regulatory certainty, administrative flexibility, and permit streamlining, while ensuring that the current level of environmental protection and benefit derived from the program is maintained, and, in certain respects, increased. Clearly, there is no consensus on the best way to reform NSR while maintaining the program's goals and benefits.

4.D Concerns of the Stakeholders

The stakeholders in the NSR debate bring to the table a variety of concerns and positions. This section summarizes the views of the many parties involved in NSR: various industry groups, environmental organizations, environmental justice groups, and state and local governments.

4.D-1 General Concerns of Industry

Industry as a whole has advocated significant changes in NSR for existing sources, while generally supporting NSR as it applies to new sources. Although no monolithic view exists, industry's arguments for reform are generally based on the view that the program imposes economic and competitive costs on existing facilities. They argue that, in some cases, NSR imposes costs and creates incentives that produce outcomes directly contrary to NSR's goals for reducing pollution and encouraging equipment upgrades. The following discussion first presents industry concerns in general, followed by the specific concerns of various industry sectors. However, this section only *describes* the concerns and claims of industry, while the Panel *evaluates* these concerns and claims in Chapter 5: Industrial Economic Performance.

In general, industry has four reasons for opposing NSR:²⁹

- Unfairly takes production capacity and compliance margins

Although it was abandoned for existing sources in the final 2002 NSR forms, the actual-to-potential test (see Sections 3.B and 4B-1 above) has been the focus of industry complaints about NSR.³⁰ Many industry stakeholders argue that this test had the effect of “taking” away production capacity and/or emission margins when facilities undertook major investments, upgraded equipment, or increased emissions from a debottlenecked project.³¹ Industry argues that this effect occurs as follows. Because the test requires that *potential* emissions after a proposed change be compared to current *actual* emissions, NSR is triggered if the difference between potential and actual emissions is significant. Potential emissions are calculated as emissions resulting from full utilization of the plant, *i.e.*, permitted emission rates multiplied by 24/7 utilization, whereas actual emissions are usually defined as the annual average of emissions over the past two years.

At many facilities, actual emissions are always less than potential emissions, both because full utilization is rare and because facilities maintain a “compliance margin” between their actual and permitted emissions. Under the actual-to-potential test, the compliance margin is effectively counted as an emission increase, and there was thus a substantial chance that *any* change would trigger NSR. In such a situation, a facility has the choice of obtaining an NSR permit and making a likely BACT upgrade, reducing emissions elsewhere in the plant to offset the potential

emissions increase by netting out of NSR, or accepting a binding emission limit in its permit that was lower than the level triggering NSR.

In the first case, industry argues that the NSR permitting process introduces substantial uncertainty and delay, and may require substantial additional capital investments to upgrade equipment. If a facility agrees to a binding emission limit, industry argues that it must sacrifice its compliance margin -- and the future ability to operate at full utilization. For most industries, rate of return is very sensitive to capacity utilization. Thus, industry argues that NSR creates a significant barrier to any proposed investment. Many industry managers hold the view that previously permitted emission levels constitute a right to emit, so they argue the actual to potential test confiscates their pre-existing emission rights.

Industry also argues that NSR creates environmentally perverse incentives to maintain emissions as close to permitted levels as possible. Doing so maintains “emission rights” and minimizes any takings due to the actual-to-potential test by maintaining a higher past baseline of actual emissions.

- Increases transaction costs for routine maintenance and continuous plant optimization

Industry generally argues that there is a fundamental contradiction between narrow exclusions for routine maintenance, repairs and replacements -- particularly as the issue has arisen during recent enforcement actions -- and the reality that everyday operations at a plant inevitably require changes to products and processes that may not qualify for exemption from NSR.

As a consequence, industry complains that NSR compliance necessitates heavy involvement of high-level management and corporate counsel for decisions about everyday maintenance and optimization of plants. The Panel’s research team was told, for example, that most large companies have decision trees for NSR compliance. Almost all such documents are attorney-client confidential, and the most typical result is an instruction that a corporate official call legal counsel.

Industry further claims that consistent and efficient compliance with NSR is significantly hampered by a high degree of variation in NSR determinations across states, and by the difficulty good actors face in obtaining reliable regulatory advice from state agencies. Thus, similar projects undertaken at the same types of plants in different states may necessitate an entirely new internal deliberation about whether NSR applies.

The result, industry argues, is a substantial increase in the costs of routine maintenance and plant optimization — as well as an increased reluctance to take such actions. In turn, such barriers adversely affect flexibility, plant reliability, and competitiveness.

- Increases costs, uncertainty, and lead-time

Industry generally endorses NSR for newly constructed sources. But in the case of capital projects at existing plants -- such as modernization, life extension, expansions, process changes for new products, or greater efficiency in producing existing products -- many industry

stakeholders argue that NSR's lengthy and technically complex NSR permitting process substantially increases the pre-construction costs for new investment, and increases lead times for making those changes. Because BACT determinations and other outcomes are uncertain,³² the NSR permitting process also arguably increases investment risk; and strict emission control requirements increase the capital costs of modernizing plants. Industry maintains that all those factors have the effect of deterring capital investments at existing plants.

- Serves as a disincentive to modification, replacement, and modernization, including pollution prevention and energy efficiency projects

Industry representatives argue that NSR's three effects described above combine to create substantial disincentives to facility modification, replacement, and modernization. They do not believe that NSR accelerates the deployment of new technologies. Instead, they claim, it prejudices the economics of production in favor of grandfathered plants and older technology, producing harmful effects on the economic and environmental performance of their facilities.

Industry stakeholders, for example, frequently mention their reluctance to undertake efficiency projects, which usually consist of a relatively minor changes to a facility or process, like changes to ducting, addition of better process controls, or substitution of a water-based process for a solvent-based one. Such changes are economically beneficial and have concurrent environmental benefits, such as improving energy efficiency or reducing the pollution-intensity of a particular process. Yet often these projects may qualify as a physical or operational change that triggers NSR under the actual-to-potential test because they show a potential *increase* in emissions, even though the actual post-project emissions would *decrease*.

Industry further argues that faced with the time, cost, and capacity/compliance margin penalties of obtaining an NSR permit, a facility will frequently choose not to undertake a project. Thus, they say, equipment and processes that are less efficient, both environmentally and economically, continue to be used.

4.D-2 Specific Concerns of Industry Segments

Beyond those general industry positions, specific industry groups regulated by NSR have particular concerns. In broadest terms, the groups are:

- *Short product cycle/large-scale batch production industries* -- Industries characterized by large-scale batch production, and/or those for which the time to bring a new production process on-line is particularly critical, including semiconductor manufacturers and pharmaceutical companies.
- *Basic industries* -- Large-scale, capital-intensive, process-oriented industries producing widely used intermediate goods from raw or minimally processed inputs,³³ including steel, basic chemicals, petroleum refining, pulp and paper, and electric utilities.³⁴

In nonattainment areas, small or medium-sized enterprises may also be subject to NSR. For example, in certain ozone nonattainment areas, total potential emissions of 10 tons per year of ozone precursors would require that a new source obtain an NSR permit. In these areas, some small or medium-sized entities subject to NSR may be from non-traditional sectors, such as VOC emissions from bakeries, and they face an unfamiliar, complex regulatory regime that will be both difficult and expensive to follow.

Concerns of Short Product Cycle/Large Scale Batch Production Industries

For such industries, the primary complaint regarding NSR is its incompatibility with frequent changes to production processes and rapid product cycles. Such cycles may range from six months in pharmaceuticals to the 20-month cycle increasingly used by the auto industry.

The central argument advanced by firms in these sectors is that they simply do not have the luxury of planning engineering changes sufficiently in advance to accommodate the typical NSR permitting process, and the problem has worsened as product cycle times have compressed. For example, auto industry representatives claim that NSR permitting has become a critical milestone for achieving a 20-month design-to-production time for the new model year. Any delay in opening a new production line can significantly affect the value of capital investments. Moreover, NSR is harder to implement and apply in situations where emissions change significantly as a result of batch production because it is difficult to determine the emissions baseline and predict future emissions. Those problems translate into increased uncertainty and cost for such industries.

Industries in such sectors have long been highly frustrated with NSR. One industry representative called NSR “the regulatory equivalent of the gerbil wheel,” characterizing NSR compliance as a never-ending process in an industry that is continuously changing its plants. Many managers in these industries believe their facilities -- as opposed to basic industries and utilities -- have borne more than their fair share of emissions reductions under NSR and, more generally, the Clean Air Act.

Concerns of Basic Industries

Although basic industries share in some degree the concerns enumerated above, they rarely make the rapid process and equipment changes characteristic of pharmaceutical, semiconductor, and similar high tech facilities.

Primarily, these industries’ current concerns and grievances about NSR derive from their view that EPA changed its interpretations of the routine maintenance exemption when launching the current round of enforcement actions (see Sections 3.E and 4.B). Those cases focus primarily on utilities, refineries, and the pulp and paper industry, which argue that they now face unexpected costs of compliance, as well as substantial and retroactive penalties for behavior they thought was legal due to the lack of earlier NSR enforcement actions against existing facilities.

In the utility industry’s view, a requirement to impose BACT emission controls on all older plants -- particularly coal-fired ones -- represents a very substantial cost that has substantial

implications for the competitiveness of older coal-fired plants and for the financial performance of utilities owning those plants, especially in deregulated power markets.

By contrast, owners or prospective developers of gas-fired power plants view NSR, with its exemption for older facilities, as perversely discriminating against intrinsically cleaner technology. NSR has been interpreted to require new gas-fired plants to add expensive selective catalytic reduction technology for controlling NO_x, although gas plants without such controls are many times cleaner than oil- or coal-fired alternatives.

Particularly as political issues about energy supplies have gained prominence, the refinery and utility sectors have expressed concern regarding NSR's constraints on their ability to expand capacity and, in the case of the refining sector, to meet specialty fuel requirements in a timely way.

4.D-3 Concerns of Environmental Organizations

Environmental organizations see NSR as an important tool for protecting the country's air quality, and they have strongly supported EPA's NSR enforcement cases.

David Hawkins of the Natural Resources Defense Council (NRDC) has stated that the dual track adopted by Congress in 1970 -- relying on both ambient air quality standards and technology standards -- is essential to assuring continued improvement in the nation's air quality.³⁵ He asserts that information systems are still not adequate to develop the kinds of ambient standards necessary for an approach relying solely on environmental outcome measures, that those inadequacies lead to significant controversy and delays in setting ambient standards, and that the scope of the changes in industrial operations that would be required to meet truly strong ambient standards would result in such opposition that the standards would never be adopted.³⁶ As a result, he argues that the technology upgrades required by NSR for new and modified facilities are essential to maintaining and improving air quality.³⁷

NRDC believes that NSR has two basic purposes: "To assure that new investments do not degrade air quality and to assure that, when new investments are made, emissions are minimized by requiring sources to meet performance standards that reflect modern emission prevention capabilities."³⁸ Still, NRDC recognizes that NSR has not worked as expected: "While a great deal of attention has been paid to the complexity of the NSR permitting process, the larger environmental failure of the NSR program is that the program has not brought down emissions as Congress intended. Citizens, pollution control agencies, and members of Congress are increasingly aware of the fact that grandfathered air pollution sources are more and more the central impediment to clean air progress."³⁹

NRDC believes that the failure of NSR has occurred for two reasons:

"First, the rules themselves contain too many loopholes that allow sources to avoid NSR even though they continue to make significant investments year after year. Second, as recent enforcement actions have alleged, there are many

instances of firms escaping the requirements of the rules by misclassifying projects in an unlawful manner.”⁴⁰

NRDC has further suggested that:

“NSR reform should address its failure to produce pollution reduction from old grandfathered sources as a priority issue as well as explore ways to simplify the NSR process. A genuine reform of the program should aim to make two basic changes: the program should apply to more industrial projects than it now does, and the review process should be more streamlined to enable decisions to be made quickly while protecting the public’s right to participate.”⁴¹

Other environmental organizations have expressed strong concerns about adopting additional exclusions or exemptions to NSR, arguing that such changes could seriously further erode the effectiveness of NSR.⁴² Last year, a coalition of 15 national environmental organizations sent a letter to President Bush asserting: “The New Source Review (NSR) program is one of our most important tools for achieving clean air.” The organizations objected to the administration’s proposal for NSR reforms, arguing that the changes “would all but eliminate the NSR program for existing sources.” They also observed that they “take little comfort” in proposals to place emissions caps on certain pollutants from power plants because:

These caps would not require any emission reductions from refineries or other industrial facilities, approximately 17,000 of which could increase emissions as a result of changes to NSR.

These caps would not include carbon dioxide, the leading cause of global warming. Multi-pollutant legislation without a strong carbon cap would require hundreds of millions of dollars in pollution control investment that could become stranded by the inevitable later obligation to reduce carbon.

Static pollution caps do not adequately protect human health from pollution increases in local communities. A strong NSR program is needed as a backstop to ensure that local air quality, public health, and the national parks are protected.⁴³

4.D-4 Concerns of Environmental Justice Organizations

Numerous studies have demonstrated that older, more polluting facilities tend to be concentrated in communities of color or low income.⁴⁴ Furthermore, a *National Law Journal* analysis found that penalties for environmental law violations were lower in minority areas than those imposed for violations in largely white areas, suggesting enforcement efforts may be less vigorous in such communities.⁴⁵

EPA defines “environmental justice” as the:

Fair treatment and meaningful involvement of all people regardless of race, color, national origin, culture, education or income, with respect to the development,

implementation, and enforcement of environmental laws, regulations and policies. *Fair treatment* means that no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, or tribal environmental programs and policies. *Meaningful involvement* means that: (1) potentially affected community residents have an opportunity to participate in decisions about a proposed activity that will affect their environment and/or health; (2) the public's contribution can influence the regulatory agency's decision; (3) the concerns of all participants involved will be considered in the decision-making process; and (4) the decision-makers seek out and facilitate the involvement of those potentially affected.⁴⁶

Some facilities may not otherwise be required to reduce their emissions unless they make changes that are covered by NSR.

The NSR process raises four critical issues for environmental justice advocates:

- Preserving NSR to ensure that emissions are reduced when a facility in an environmental justice community is modified;
- Utilizing the provision for nonattainment areas that requires permit applicants to perform an analysis of alternative sites, processes, and controls and to obtain offsetting reductions in emissions;⁴⁷
- Providing meaningful public involvement in the permitting procedures involving facilities in these communities, including the NSR process; and
- Ensuring that NSR is adequately enforced for facilities near environmental justice communities.

Environmental justice advocates maintain that NSR is an important regulatory program for protecting air quality in their neighborhoods. They oppose expansion of NSR exemptions and exclusions, which they see as loopholes; and they want vigorous enforcement of NSR, believing that otherwise facilities may not take actions to reduce their emissions.⁴⁸ Additionally, people-of-color and low-income communities are often located near older industrial facilities and have significant concerns that their residents suffer increased health risks from both routine emissions and from accidents.⁴⁹

Environmental justice and community organizations further believe that, if NSR is reformed to allow emissions trading and banking, there must be credible accounting for emissions, comprehensive monitoring data, and a requirement that participating facilities meet all other legal obligations.⁵⁰

4.D-5 Concerns of State and Local Governments

State and local governments have expressed positions on NSR from several different quarters, including the National Governors' Association (NGA), the Environmental Council of the States (ECOS), the State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials (STAPPA/ALAPCO), individual state and local environmental air permitting agencies, and state attorneys general. The views of those entities are summarized below.

The National Governors' Association, as part of its position on a comprehensive national energy policy, advocates: "New Source Review requirements should be reformed to achieve improvements that enhance the environment and increase energy production capacity, while encouraging energy efficiency, fuel diversity, and the use of renewable resources."⁵¹

The Environmental Council of the States (ECOS) has adopted the NGA position. Further, in August 2001, ECOS adopted Resolution 01-12, concluding: "The current [NSR] regulations have developed into a complex program based upon hundreds of pages of Federal Regulations and thousands of pages of USEPA guidance" and "the current [NSR] program is not readily comprehended by those impacted, namely the public, companies and regulators."⁵² Based on those conclusions, ECOS "encourages the USEPA to reform the New Source Review Regulations into a workable regulation that is easily understood and effectively implemented."⁵³

ECOS has also addressed multi-pollutant strategies, requesting EPA and Congress to support research and incentives to allow use of innovative multi-pollutant strategies. ECOS has further asked EPA to work with states to develop a cost-effective, efficient, and environmentally protective approach to implementing a multi-pollutant strategy for the power industry.⁵⁴ On April 25, 2002, ECOS Resolution 02-1 stressed the importance of any multi-pollutant proposal for working "with future rules and guidance for SIP implementation."⁵⁵

The National Conference of State Legislatures has issued a resolution urging Congress and EPA not to weaken NSR, not to allow major modifications that increase emissions, and to establish "credible baseline[s]" such as the "average of emissions from the facility in the year prior to the proposed new investment."⁵⁶

STAPPA/ALAPCO presented testimony on July 10, 2001, as part of EPA's 90-day NSR review process:

The NSR requirements under the Clean Air Act are an essential tool, critical to state and local air pollution control agencies' ability to attain and maintain the health and welfare standards mandated in the [Clean Air] Act. Quite simply, NSR provides state and local permitting agencies an opportunity to review new and modified stationary sources to ensure that they install the best control technology available to minimize their impacts on ambient air quality. In addition, we strongly believe that the current NSR process in no way impedes the ability of sources to expand capacity or improve efficiency. In fact, our experiences have demonstrated that where the NSR process functions as it was originally designed -

- where sources notify permitting agencies of the construction of new sources, and supply us with a well-prepared, complete permit application that commits to the installation of best control technology -- the NSR process is both timely and efficient.⁵⁷

STAPPA/ALAPCO has supported a number of NSR reforms, including sector-based approaches to NSR and emission trading programs. STAPPA/ALAPCO prefers sector-based programs with mandatory participation, believing that approach will ensure all sources in the same category are subject to the same standards and will make emission trading more feasible.⁵⁸ STAPPA/ALAPCO has also supported the concept of PALs, provided the PAL cap declines over time “to a level reflecting installation of best available controls and requires all significant new sources constructing under a PAL to install the best available controls.” Further, it has supported a clean unit exemption for sources that install the best control technologies, so long as the exemption period is appropriately limited.⁵⁹ STAPPA/ALAPCO has, however, expressed strong reservations about EPA’s new NSR reforms.⁶⁰

Some individual states have sought broader reform of NSR. In March 2002, the states of Alabama, Michigan, North Carolina, South Carolina, Virginia, and West Virginia submitted a white paper to EPA, urging the agency to:

- Use a potential-to-potential emissions test rather than the actual-to-future-potential test for certain PSD determinations;
- Place the responsibility on the NSR applicant to notify affected parties, including the neighboring community, as early as possible when applying for a pre-construction permit;
- Recognize the BACT determination is a state decision that should not be second-guessed by EPA; and
- Make significant changes to the NSR program only through notice-and-comment rulemaking, rather than the current practice of issuing guidance documents that are not subject to public notice and comment⁶¹

As noted above, several state attorneys general have been involved in NSR enforcement actions as intervenors or co-plaintiffs with EPA. Those states believe that the defendant companies circumvented NSR requirements by not seeking permits at the time their facilities were modified. They also believe that the enforcement cases are very important to protecting air quality -- especially in the Northeast, which is downwind from older, polluting facilities in the Midwest whose emissions contribute to acid rain damage in northeastern forests. Those attorneys general generally see EPA’s new NSR rules as undercutting enforcement actions by encouraging companies to wait for NSR reforms rather than settle their cases and by influencing trial judges as they balance the equities of any decision on remedy.⁶² Other attorneys general see the EPA enforcement cases as interfering with the states’ primary responsibility to enforce their environmental laws.⁶³ Such differences may, in part, be explained by regional interests. States in the Northeast believe that they are the victims of excess air emissions produced by power

plants in the Midwest and the South, while Attorneys General from the higher emitting states object to EPA involvement in enforcement.

ENDNOTES

¹ Letter from John S. Seitz, Director, OAQPS to Michael H. Shapiro, Acting Administrator for Air and Radiation, U.S.EPA, (June 22, 1993).

² Prevention of Significant Deterioration and Nonattainment New Source Review; Proposed Rules, 61 *Federal Register* 38249 (July 23, 1996).

³ *Ibid.*, 38251.

⁴ Other miscellaneous changes were proposed, including: the BACT/RACT/LAER control technology determinations allowing states more flexibility to make case-specific determinations; defining and clarifying the adverse impact analysis, the role of the federal land manager, and public review of PSD applications for Class I Areas; pre-construction monitoring requirements for PSD permits; and the changes mandated by the 1990 Amendments. Prevention of Significant Deterioration and Nonattainment New Source Review; Proposed Rules, 61 *Federal Register* 38249 (July 23, 1996).

⁵ Notice of Availability; Alternatives for New Source Review (NSR) Applicability for Major Modifications; Solicitation of Comment, 63 *Federal Register* 39857 (July 24, 1998).

⁶ *Ibid.*, 39860.

⁷ *Ibid.*, 39860-61.

⁸ *Ibid.*, 39861.

⁹ *Ibid.*

¹⁰ *Ibid.* at 39864-66.

¹¹ The Utility Air Regulatory Group (UARG) presented this proposal.

¹² “EPA Stakeholders Meeting on NSR Approach for the Electric Industry,” *Environmental Energy Insights*, (January 2000), 9. This proposal came from the Class of i85 Regulatory Response Group, a coalition of 25 electric utilities, but was removed from consideration at EPA’s January 2000 stakeholders meeting.

¹³ *Ibid.*

¹⁴ These groups included the Clean Energy Group, TVA, WEPCO, and Cinergy. *Ibid.*

¹⁵ These groups included UARG, the Class of ’85 Group, and the Edison Electric Institute. *Ibid.*

¹⁶ Memorandum from Robert Perciasepe to New Source Review Stakeholders (January 19, 2001).

¹⁷ *Ibid.*

¹⁸ *Ibid.*

¹⁹ See Integrated Air Quality Planning Act. <http://www.mjbradley.com/CEG.htm> (retrieved March 25, 2003).

²⁰ Those states are New Hampshire, Massachusetts, Illinois, Connecticut, and North Carolina. Eric Pianin, “North Carolina Imposes Strict Anti-Pollution Standards,” *Washington Post* (June 21, 2002), A2.

²¹ *Ibid.*

²² National Energy Policy Development (NEPD) Group, *National Energy Policy Report* (May 2001), 7-14.

²³ U.S. Environmental Protection Agency, *New Source Review: Report to the President* (June 2002).

²⁴ *Ibid.*, 1.

²⁵ *Ibid.*, 11.

²⁶ Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR): Final Rule and Proposed Rule, *67 Federal Register* 80186 (December 31, 2002). The proposed rule on the routine maintenance exclusion begins at *67 Federal Register* 80290.

²⁷ *67 Federal Register* 80240-80241. The changes in the NSR program take effect on March 3, 2003, and apply on that date to twelve states (Washington, Nevada, South Dakota, Minnesota, Hawaii, Illinois, Indiana, Michigan, New York, New Hampshire, Massachusetts, and New Jersey) for which EPA has delegated its authority to issue permits, plus several local California air districts, and Washington, D.C.

²⁸ A “process unit” is “a collection of structures and/or equipment that uses material inputs to produce or store a completed product.” *67 Federal Register*, 80294.

²⁹ This section is synthesized from a large amount of testimony, correspondence and documentation. Comprehensive point-by-point documentation is thus not possible. Testimonies given by Bob Slaughter, President, National Petrochemical and Refiners Association; Stephen Harper, Director, Environmental Health, Safety and Energy Policy, Intel Corporation; and E. Donald Elliott, Co-chair, Environmental Practice Group, Paul, Hastings, Janofsky and Walker LLP, before a joint session of the Senate Judiciary Committee and the Environment and Public Works Committee (July 16, 2002). http://senate.gov/~epw/stm1_htm#&-16-02 has a wide-ranging introduction to industry perspectives (retrieved March 25, 2003). In addition, EPA’s NSR Report summarizes many industry comments on NSR.

³⁰ The actual-to-potential test did not apply to the electric power generation sector, which uses an actual-to-future-actual test instead. Prior to the 2002 regulatory changes, the baseline for determining “actual” emissions was the average of the previous two years, unless the source could show that period was not representative. 40 U.S.C. §52.21 (6) (7). Under the 2002 regulatory changes, an “actual-to-future-actual” test is adopted for all facilities. “Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR); Final Rule and Proposed Rule,” *67 Federal Register* 80186 (December 31, 2002).

³¹ A “bottleneck” refers to a situation in which a key piece of process equipment is preventing the plant as a whole, or a particular line or unit, from performing at its rated capacity. “Debottlenecking” improves or replaces the unit in question to increase overall production capacity. A successful debottlenecking project would make it possible for all units to produce at capacity and emit at their permitted rates.

³² Many industry stakeholders argue for presumptive BACT as one means of streamlining the program. But most stakeholders also wish to reserve the option for a case-specific determination to accommodate unique aspects of particular projects or locations.

³³ In the sense used here, refined forms of energy such as gasoline or electricity are intermediate goods. That is, they are consumed in the process of producing a final-demand good or service.

³⁴ In comments to EPA, the American Petroleum Institute (API) asserted that “[r]efiners are required by law to make adjustments to fuel specifications from one season to another, produce fuels meeting multiple specifications in various regions of the country, and reconfigure to refine cleaner-burning low sulfur diesel and gasoline, all while being able to supply fuels to meet constantly changing customer demand.” *New Source Review: Report to the President*, 28. In terms of the analysis presented in this report, API argued that environmental regulation of fuel characteristics were causing the industry to take on attributes typical of the short product cycle industries. To the

extent basic industries take on these characteristics, they can be expected to share the concern of the short product cycle/large scale batch production industries.

³⁵ Testimony of David Hawkins, Director, Air & Energy Programs, Natural Resources Defense Council, before the Senate Subcommittee on Clean Air, Wetlands, Private Property, and Nuclear Safety (February 28, 2000), 1-3.

³⁶ *Ibid.*, 3-4.

³⁷ *Ibid.*, 4.

³⁸ *Ibid.*, 5.

³⁹ *Ibid.*

⁴⁰ *Ibid.*

⁴¹ *Ibid.*, 5-6.

⁴² See, for example, testimony of John D. Walke, Director, Clean Air Program, Natural Resources Defense Council, before the Committee on Environment and Public Works and the Committee on the Judiciary, U.S. Senate (July 16, 2002), 15-20.

⁴³ Letter from American Lung Association, American Public Health Association, Clean Air Task Force, Clean Water Action, Earthjustice Legal Defense Fund, Environmental Defense, Izaak Walton League of America, League of Conservation Voters, National Environmental Trust, National Parks and Conservation Association, National Wildlife Federation, Natural Resources Defense Council, Physicians for Social Responsibility, Sierra Club, and U.S.S Public Interest Research Group to President George W. Bush (February 1, 2002), available at www.savethecleanairact.org/public/news/letter.asp (retrieved December 17, 2002).

⁴⁴ See, for example, Communities for a Better Environment, *Holding Our Breath: Environmental Injustice Exposed in Southeast Los Angeles* (July 1998); Florida Environmental Equity Commission, *Final Report* (undated); Indianapolis Urban League Environmental Coalition, *Race, Income and Toxic Air Releases in Indianapolis, Indiana* (May 2000); U.S. Environmental Protection Agency, *Environmental Equity: Reducing Risk to All Communities* (1992), Volume 1 and Supporting Document; Black Leadership Forum, Clear the Air, Georgia Coalition for the Peoples Agenda and the Southern Organizing Committee for Economic and Social Justice, *Air Injustice: African Americans and Power Plant Pollution* (October 2002).

⁴⁵ “Unequal Protection: The Racial Divide in Environmental Law, A Special Investigation,” *National Law Journal*, (September 21, 1992) S2-S4.

⁴⁶ U.S.EPA, Office of Environmental Justice, *Guidance for Assessing and Addressing Allegations of Environmental Injustice: Working Draft* (January 10, 2001), 7; Black Leadership Forum, *et al.*, *op. cit.*

⁴⁷ Eileen Gauna, “Major Sources of Criteria Pollutants in Nonattainment Areas: Balancing the Goals of Clean Air, Environmental Justice, and Industrial Development,” *Hastings West-Northwest Journal of Environmental Law and Policy* (Spring 1996), 11.

⁴⁸ “New Source Review - In the Shadow of Refineries: Communities Fighting for Clean Air,” and “New Source Review: A Public Health Law,” www.earthjustice.org (retrieved March 25, 2003); Communities for a Better Environment, Press Release on Cenco Refinery, www.cbecal.org/alerts/alerts_112102a.htm (retrieved December 14, 2002).

⁴⁹ “New Source Review: In the Shadow of Refineries: Communities Fighting for Clean Air,” *op.cit.*

⁵⁰ Louisiana Environmental Action Network, www.leanweb.org/news/audipet.pdf. (retrieved December 14, 2002)

⁵¹ National Governors Association, Natural Resources Resolution 18, 18.6 (Regulatory and Environmental Issues).

⁵² Environmental Council of the States, Resolution Number 01-12 (August 28, 2001).

⁵³ *Ibid.*

⁵⁴ Environmental Council of the States, Resolution Number 01-2 (February 27, 2001).

⁵⁵ Environmental Council of the States, Resolution Number 02-1 (April 25, 2002).

⁵⁶ Letter from the National Conference of State Legislatures to Christine Todd Whitman, Administrator, U.S. Environmental Protection Agency (August 30, 2002).

⁵⁷ Testimony of John A. Paul on behalf of the State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials on the U.S. Environmental Protection Agency's 90-Day NSR Review Process (July 10, 2001), available at www.cleanairworld.com.

⁵⁸ Letter from STAPPA and ALAPCO's NSR Subcommittee to Bill Harnett and Karen Blanchard (May 5, 2000), available at www.cleanairworld.com.

⁵⁹ Letter from Lloyd Eagan, President, STAPPA, and Arthur Williams, President, ALAPCO, to the Honorable Christine Todd Whitman (January 23, 2002), available at www.cleanairworld.com (retrieved January 14, 2003).

⁶⁰ Statement from the presidents of STAPPA and ALAPCO (June 13, 2002), available at www.cleanairworld.com. (retrieved December 14, 2002).

⁶¹ Letter from Russell Harding, Director, Michigan Department of Environmental Quality, to Christine T. Whitman (March 12, 2001).

⁶² Testimony of William Sorrell, Attorney General of Vermont, and Eliot Spitzer, Attorney General of New York, before the Senate Committee on Environment and Public Works and the Senate Committee on the Judiciary (July 16, 2002).

⁶³ *Ibid.*; and Testimony of Bill Pryor, Attorney General of Arkansas.

CHAPTER FIVE

IMPACTS ON ENVIRONMENT, HEALTH, AND INDUSTRIAL PERFORMANCE

This chapter assesses the impacts of NSR on environmental quality, public health, and industrial economic performance, the latter including industrial competitiveness, capital investment, and technological innovation. This analysis responds to three major elements of the Congressional charge to the Academy. Because data on NSR's effects are scarce, the analysis in all three areas is often more indicative than definitive.

5.A Impacts of NSR on Environmental Quality

This section begins by surveying the industry sectors frequently regulated by NSR. This regulated universe is mostly comprised of facilities and sectors that have high levels of emissions, and their actions are very important to achieving and maintaining better air quality.

Next, this section describes what is known about NSR's direct environmental results -- emissions prevented by NSR permits. Unfortunately, the program's impacts on ambient air quality -- the most direct and desirable measure of the program's environmental performance -- are not quantifiable. Because direct environmental outcome data are not available, the Panel's analysis looks instead at three less direct measures or indicators of NSR performance:

- Permit activity,
- Emissions differences by vintage among electric utilities, and
- NSR's likely impacts on innovation and diffusion of technology for pollution prevention and control.

This analysis shows that NSR's key regulatory mechanism -- the NSR pre-construction permit -- is applied infrequently, given the size of the regulated universe. The very high emission rates that characterize older power plants indicate a serious failure in program implementation or compliance. Thus NSR's impacts on innovation and diffusion of environmental technologies are mixed.

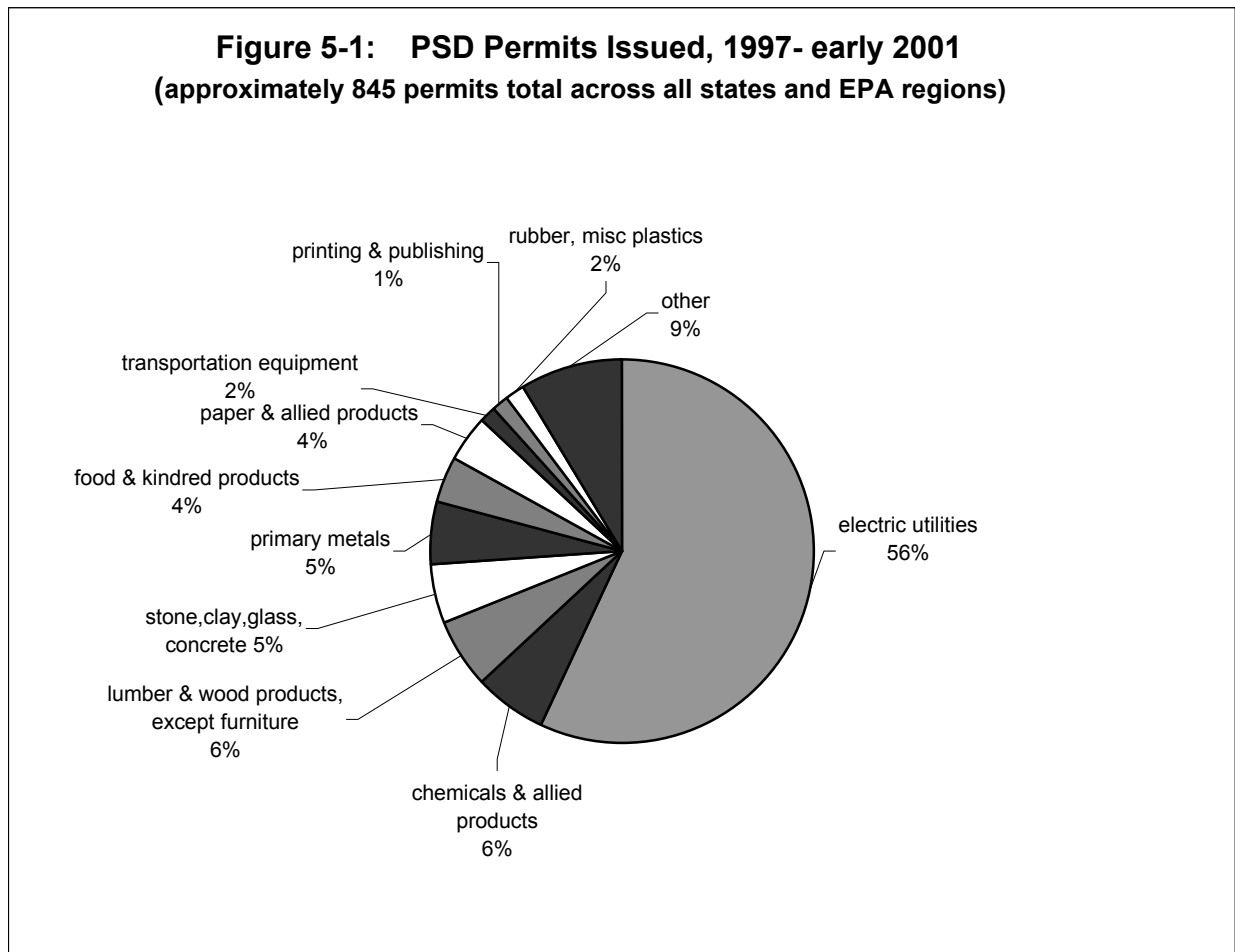
Finally, this section attempts to characterize the public health impacts of avoided and "excess" emissions. Far more information is available regarding the adverse consequences of excess emissions from utilities (i.e., emissions from older units in excess of standards that apply to new units) than for NSR's protective benefits. Yet the health consequences of excess emissions are severe: thousands of premature deaths per year, and the health of many thousands more individuals affected in significant ways.

5.A-1 The NSR Universe and Its Environmental Significance

As noted previously, the major industrial facilities to which NSR applies fall into two broad industry groups: basic industries and fast-to-market industries.

- **Basic industries** are large-scale, capital-intensive, process-oriented industries producing widely used intermediate goods from raw or minimally processed inputs. Examples of such industries are steel, basic chemicals, petroleum refining, pulp and paper, and electric power plants.
- **Fast-to-market industries** are those for which time-to-market is critical, product cycle times are short, and production is often by large-scale batches. The group includes, for example, pharmaceutical and semiconductor manufacturers.

EPA's data for PSD permits in attainment areas indicate (Figure 5-1) that those permits are heavily weighted toward basic industries.¹



Source: K.L. Blanchard, "Results of the Prevention of Significant Deterioration (PSD) Program Review," EPA internal memorandum (December 20, 2001).

Table 5-1 gives emission figures for the sectors depicted in Figure 5-1. In general, it is clear that this group of industries produces very significant environmental impacts. That is not surprising because essentially the entire material throughput of the U.S. economy passes through the basic industry sectors. Their significant environmental emissions reflect the sheer volume of material and energy mobilized by the industries in those sectors.

Table 5-1: Emissions From Sectors Most Frequently Subject to NSR

	Emissions as Percentage of Total National Emissions				
	NO _x	SO ₂	VOCs	TRI Air Emissions	Greenhouse Gas Emissions
Chemicals & Allied Products	0.52%	1.39%	2.18%	14.57%	5.51%
Electric Utilities	22.51%	66.77%	0.31%	41.37%	40.52%
Agriculture, Food & Kindred Products	0.02%	0.03%	0.61%	3.14%	1.45%
Wood, Pulp & Paper*	0.37%	0.58%	0.92%	11.42%	2.00%
Petroleum Refining	0.56%	1.81%	2.34%	2.45%	5.53%
Metals Processing*	0.35%	2.13%	0.42%	4.94%	4.30%
Printing & Publishing	N/A	N/A	N/A	0.98%	—
Rubber; Misc. Plastics*	0.00%	0.01%	0.29%	4.65%	—
Stone, Clay, Glass & Concrete	N/A	N/A	N/A	1.70%	0.71%
Transportation Equipment	0.00%	0.00%	0.02%	4.36%	—
National total (millions of short tons)	5.393	18.867	18.145	952.2	1583.3**

*These emission categories are defined somewhat differently for TRI emissions: “Wood, Pulp & Paper” corresponds to the TRI emission categories of “lumber” and “paper”; Metals processing corresponds to the TRI emissions category of “primary metals”; Rubber & Misc. Plastics corresponds to the TRI emission category of “plastics.”

**Millions of metric tons of carbon equivalent.

Sources:

SO₂, NO_x and VOC emissions: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emissions Monitoring and Analysis Division, Air Quality Trends Analysis Group. National Air Quality And Emissions Trends Report (1999) Research Triangle Park, North Carolina: (March 2001). EPA 454/R-01-004 Appendix A (does not include storage & transportation emissions).

TRI emissions: U.S. Environmental Protection Agency, Office of Environmental Information. 2000 Toxics Release Inventory (TRI) Public Data Release. Accessed through TRI Explorer, <http://www.epa.gov/triexplorer>, (retrieved July 15, 2002).

Greenhouse gas emissions: U.S. Department of Energy, Energy Information Administration, Office of Integrated Analysis and Forecasting. Emissions of Greenhouse Gases in the United States 2000. Washington, DC. (November 2001), 19-28; industry sectors, 24; concrete production, Table 12, 32; electric utilities, 25; total, Table 4, 28.

5.A-2 Direct Environmental Results: Emissions Prevented by NSR

Because NSR is intended to improve air quality in nonattainment areas, and prevent deterioration of air quality in attainment areas, a true assessment of NSR's environmental results would be based on the program's impacts on ambient air quality. Even with excellent data, such an evaluation would be difficult. However, data regarding the NSR program are, in fact, exceptionally poor. EPA has no central database of NSR permits, and the NSR permits themselves do not compare allowable emission levels to applicable New Source Performance Standards; nor do they provide any indication of a source's likely impacts on air quality. Thus, EPA has not been able to assess the impacts of NSR on ambient air quality.

Avoided Emissions Estimates for PSD Permits

Beginning in 1999, EPA undertook a labor-intensive effort to identify and assemble information regarding NSR permits issued in NAAQS attainment areas (PSD permits). The Agency was able to obtain statistics on the distribution of PSD permits by sector (Figure 5-1) and to compare the emissions standards imposed by those permits to New Source Performance Standards.² That effort formed the basis of the avoided emissions information in EPA's *NSR 90 Day Review Background Paper*.³ EPA estimated that PSD permits issued between 1997 and 1999 prevented an average of 1.4 million tons per year of criteria pollutant emissions, or about four percent of total estimated national emissions.⁴

Table 5-2: Estimate of Emissions Avoided Due to PSD (1997–1999)

Pollutant	Avoided emissions (thousands of short tons)
Particulates (PM/PM10)	255
Sulfur Dioxide (SO ₂)	820
Nitrogen Oxides (NO _x)	2500
Carbon Monoxide (CO)	5
Volatile Organic Compounds (VOCs)	5
TOTAL	3585
Annual average	1200

Source: US EPA *NSR 90-Day Review Background Paper* (June 2001)
Docket A-2001019, Document II-A-01.

These avoided emissions are significant, but actual avoided emissions are likely to be even greater, for at least two reasons. First, permits issued in nonattainment areas are not included because the data, to the extent they are kept at all, are held primarily by states; EPA has not required states to submit the data. Second, they do not account for emissions prevented when facilities take action to avoid NSR by netting or accepting unit-specific caps. The Panel's discussions with industry indicate that netting and unit-specific caps may be far more common actions than applying for NSR permits.

NSR's Avoided Emissions Compared to Other Programs

NSR is only one regulatory element of the Clean Air Act, and the emissions it prevents should be viewed in context. In its 2002 *Report to the President on NSR*, EPA noted that:

For particular industry sectors the benefits currently attributed to NSR could be achieved much more efficiently and at much lower cost through the implementation of a multi-pollutant national cap and trade program. In particular the President's Clear Skies initiative is a much more certain and effective way of achieving emissions reductions from the power generation sector.⁵

EPA mentions that the Title IV cap-and-trade program for SO₂, the NO_x SIP Call, the Tier II motor vehicle emissions standards, and gasoline sulfur control requirements are all examples of other programs, which will "altogether achieve emissions reductions that far exceed those attributable to the NSR program. Moreover, most of the other programs are much more efficient, streamlined and simple than NSR because they do not entail the same resource-intensive, case-by-case review that is required under NSR."⁶

However, NSR fulfills purposes different and distinct from those other programs. It provides a mechanism for continuous improvement in emission controls and facility performance for the most significant sources of air pollution. Consequently, the Panel -- and Congress -- view NSR as a core regulatory program for attaining and maintaining health-based ambient air quality standards under the Clean Air Act. Furthermore, the relative environmental benefit of the Clear Skies proposal is a matter of great debate. EPA's enforcement actions against the utility and refining sectors are starting to impose current BACT on significant portions of those sectors, and the emission reductions achieved by NSR compliance may very well exceed those claimed for Clear Skies.

5.A-3 Other Indicators of NSR's Environmental Impacts

Despite the lack of rigorous data showing NSR's direct impacts on ambient air quality, the Panel found some indications of NSR's environmental effectiveness through examining the mechanisms for implementing the program. Congress intended that NSR would enable successive generations of industrial facilities to become progressively cleaner by requiring the adoption of new, less polluting technologies when plants are newly built or upgraded. And NSR's pre-construction permit was the legal mechanism for imposing that requirement.

Thus, one possible indicator of NSR's effectiveness is *permit activity*. For NSR to function as Congress intended, pre-construction permits must successfully require progressively stricter emission limits over time, and must tie environmental improvements to capital investments.

Another indicator is a comparison of the emissions from older versus newer plants. Congress specifically intended for NSR to ensure that existing plants would become cleaner over time, narrowing the emissions disparity with newer facilities. Thus, the persistence of such disparities would indicate that NSR has not effectively produced cleaner facilities.⁷

Permit Activity

In its 2001–2002 review of the PSD program, EPA was able to identify approximately 850 PSD permits issued nationwide between 1997–1999, a figure that may slightly understate the actual total. Figure 5-1 above shows the distribution of those permits by industry sector. Raw permit numbers, of course, indicate relatively little. As noted, NSR was intended to promote improved environmental performance along with other capital investments. Thus, permit activity should be compared both to the size of the relevant regulatory universe and to capital investments by that universe.

Table 5-3 provides size and investment data for the sectors most frequently subject to PSD permitting, as identified in Figure 5-1. Absolute numbers of PSD permits are generally very low compared to total numbers of facilities in each sector, particularly because the capital investment data show that those industries have been actively investing in their plants. That disparity is evident even for the most heavily regulated facilities and if differences between the definitions of economic establishment and environmental facility are taken into account.⁸

Those differences suggest either or both of two possibilities: Widespread failure by industrial facilities to obtain required NSR permits; and/or netting to avoid NSR is the dominant method of compliance in some sectors. The second case suggests that NSR permit conditions, and the permit application process, create barriers in time and cost that motivate facilities to control emissions through netting or stricter permit limits.

However, the fact remains that Congress designed NSR's pre-construction permit to be the program's primary mechanism for achieving emission reductions. Thus, in either case, NSR's basic regulatory mechanism -- the pre-construction permit -- is not reducing emissions from existing sources as Congress intended.

In addition to the number of NSR permits issued, it is important to examine the stringency of the emission limitations imposed by the permits. Through BACT and LAER requirements, Congress intended that NSR would force progressive improvement in emissions performance for any given process or type of facility. For specific facilities, such improvements would be episodic. But for entire industry sectors, the average emission rates should decline over time, and environmental performance should improve continuously.

NSR's performance in that regard is more encouraging. In EPA's 2001–2002 evaluation of the PSD program,⁹ only 16 PSD permits (out of the 845 issued between 1997 and early 2001) allowed BACT emission levels that were the same as the NSPS or SIP requirements for the relevant class of source. Thus, the very large majority of PSD permits match or exceed the NSPS in stringency. That result is desirable, because NSPS standards are often many years old,¹⁰ and as a rule, BACT standards will be significantly more stringent.

EPA was able to document significantly increased stringency in PSD permits for power plants, but lacked sufficient data to document the stringency of permits for other categories of sources. Both findings are indications that, when it is utilized, the NSR permitting process does succeed

Table 5-3: Size and Investments for Sectors with High Numbers of PSD Permits

Sector	1997 Number of establishments*	1997 Value added	1997 Capital investments	PSD permits issued, 1997–early 2001***
Food manufacturing	26,302	\$163.6 B	\$10.8 B	33
Lumber and wood products (primary facilities subject to NSR are sawmills, wood preservation operations, and engineered wood product manufacturers)	36,735 (of which sawmills, wood preservation operations and engineered wood product manufacturers constitute 6682)	\$88.4 B \$47.9 B	\$2.90 B \$1.92 B	48
Paper and allied products (primary facilities subject to NSR are pulp, paper and paperboard mills)	5,868 (of which pulp, paper and paperboard mills constitute 546)	\$70.3 B \$35.2 B	\$8.6 B \$5.7 B	32
Chemicals	9,626 (of which pharmaceuticals constitute 1761)	\$224.7 B \$64.1 B	\$21.7 B \$4.8 B	52
Primary metals (primary facilities subject to NSR are large mills and foundries)	5,059 (of which iron & steel mills constitute 273)	\$68.7 B \$24.9 B	6.5 B 2.6 B	45
Transportation equipment (primary facilities subject to NSR are large assembly plants)	12887 (of which automobile and light truck manufacture constitute 304)	\$227.5 B \$68.3 B	\$19.25 B \$5.3 B	13
Electric utilities	1009		\$33.885 B**	481
Petroleum refining	242	\$30.9 B	4.2 B	Not available

*Where possible, classes of establishments that are major and almost certainly subject to NSR are identified as a subset. In some cases, however, there is no ready way of identifying what portion of the establishments in a particular industry are likely to be subject to NSR.

**1999 data. Includes distribution and transmission

***Category definitions are not identical in all cases. See endnote 8.

Source: 1997 Census of Manufacturers, Bureau of the Census, US Department of Commerce

In tightening emission control standards over time, and can drive a moving frontier for improving technology to prevent or control emissions.

In sum, NSR has not been very successful in linking environmental improvements to on-going capital investments by the industrial sectors responsible for the largest amounts of air pollution. While BACT has evolved over time, thus reflecting advances in pollution control technology, NSR has not been used very frequently to apply BACT at existing facilities in many critical sectors.

Emissions Differences by Vintage

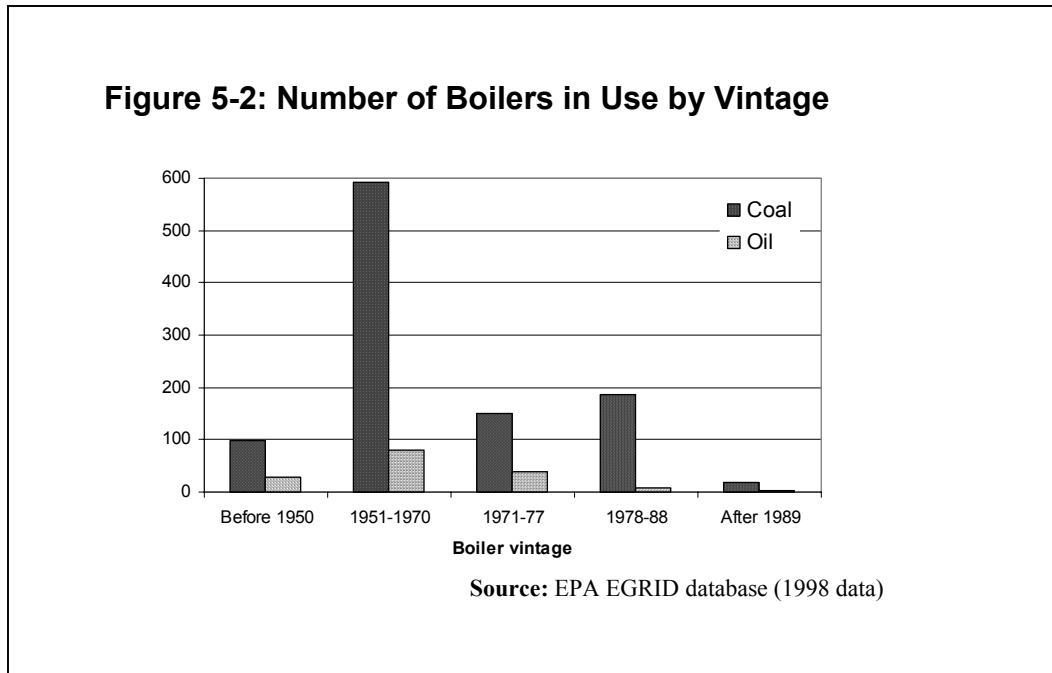
Although EPA has exempted routine maintenance, repair, and replacement activities from NSR, Congress' expectation and intent for NSR was that facilities would, as a matter of course,

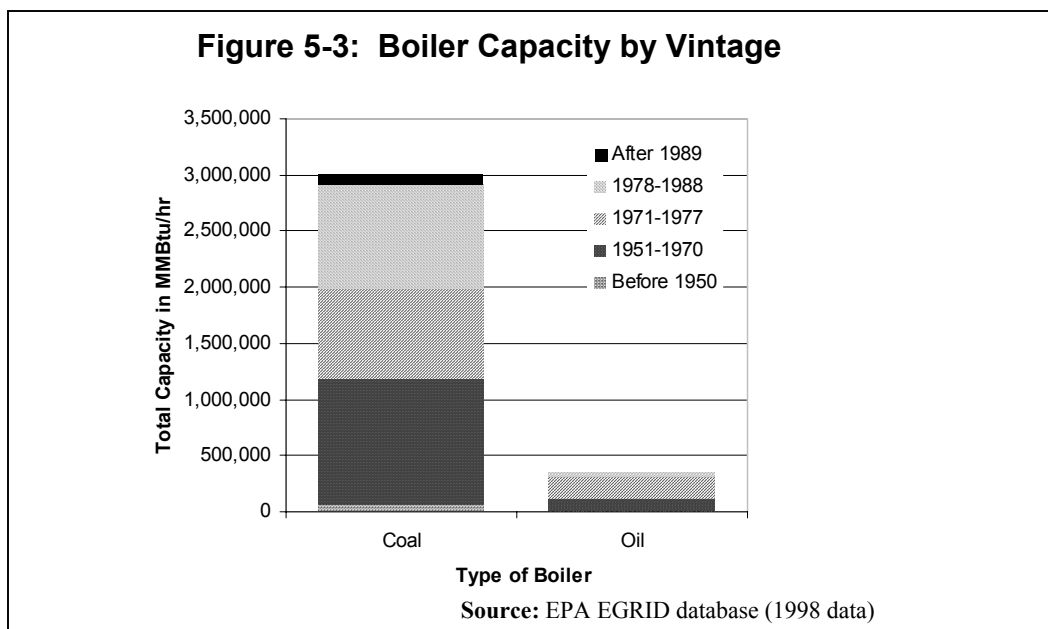
undergo significant investment and upgrades. Thus, existing facilities would not, and should not, indefinitely postpone emission reductions over their lifetimes.¹¹

If NSR were working as Congress intended, eventually similar plants of all vintages across a sector's inventory of plants should emit relatively similar amounts of pollution. Significant differences in emissions performance by plants of different vintage thus suggest either faulty implementation of NSR, or widespread noncompliance. Due to the scarcity of data, however, emission rates by plant vintage are only available for electric utilities.¹²

There are two functional elements of a power plant: the boiler(s) and the turbine/generator assembly. The former burns fuel to produce steam; and the latter converts steam into mechanical, and then electrical, energy. While the age of a boiler is easy to determine, plants may contain multiple boilers, sometimes of different ages; and the vintage of a boiler does not necessarily indicate the age or efficiency of turbines and generators.

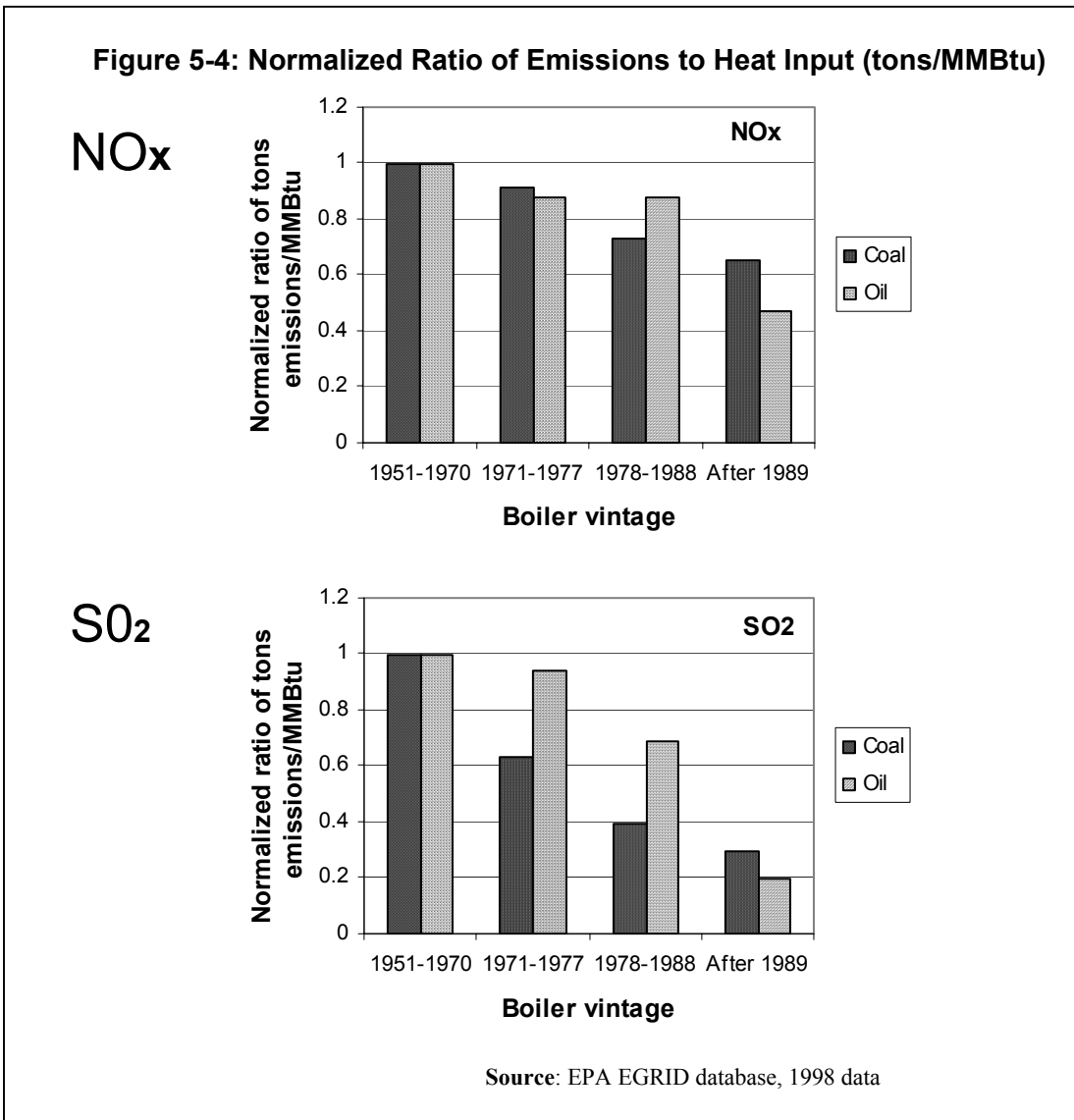
Figure 5-2 and Figure 5-3 depict the vintage and capacity of coal and oil-fired boilers currently used by this country's utilities. As demonstrated, pre-Clean Air Act boilers constitute the largest portion of those currently in use.





Boiler emissions per unit of fuel input are depicted in Figure 5-4, and reflect any reductions due to emission controls. The data show that older boilers generally produce higher emissions per unit of fuel burned. Moreover, older boilers tend to drive older turbines or generators, which require more heat per unit of power produced, so the relative emissions performance of older boilers is likely even worse when emission are compared per unit of electricity produced.

Those higher emission levels from older boilers reflect both less sophisticated boiler design and combustion control, as well as less effective end-of-pipe emission controls. In part, the data reflect the very high emission levels characteristic of grandfathered power plants that were built before the Clean Air Act and have avoided NSR requirements.

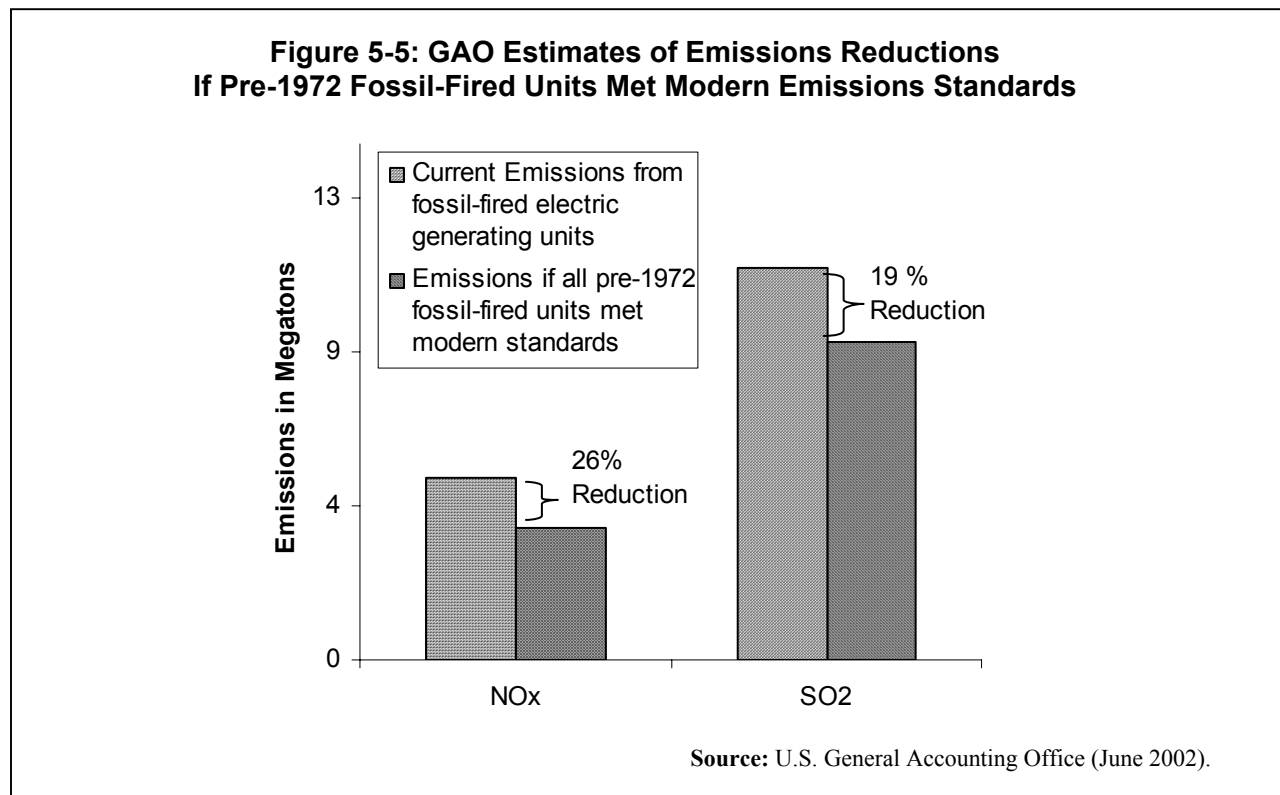


However, the environmental significance of vintage-dependent emission rates rests ultimately not on the *relative, normalized* performance of plants by vintage, but on the *total* excess or additional emissions caused by older plants. Such excess emissions are what older plants produce beyond the emissions that would be produced if all power plants were upgraded to meet the BACT performance standard.

Calculation of excess emissions is unfortunately the most problematic element of the Panel’s analysis, because EPA data provide only hours connected to load, not actual electricity generated. Using a more sophisticated set of data available from a private vendor that integrates air emission data with generation and unit age data from the Energy Information Administration, the U.S General Accounting Office (GAO) estimated additional emissions in its June 2002 report, *Air Pollution: Emissions from Older Electricity Generating Units*.¹³ GAO defined “older units” as those that began operation before 1972, which comprise 57 percent of the active fossil-

fuel power plants in this country. GAO then defined additional emissions as emissions in excess of the NSPS applicable to each particular type of power plant.

In 2000, power plants accounted for approximately 63 percent of estimated national SO₂ emissions and 21 percent of estimated national NO_x emissions.¹⁴ Using the definitions described above, GAO found that additional SO₂ emissions from older plants were 2.13 megatons (MT), and additional NO_x emissions were 1.41 MT. These figures correspond to 11.7 percent and 5.7 percent of the 2000 national emissions inventory, respectively. Figure 5-5 depicts GAO's estimate of additional emissions.



But, GAO's additional emissions are calculated only for pre-1972 plants. They did not include the additional emissions from post-1972 plants that still exceed the performance of upgraded (post-1989) plants depicted in Figure 5-4. Furthermore, BACT is intended to be a more aggressive standard than NSPS. Thus GAO's analysis probably understates the emission reductions that would be obtained if the entire generating fleet upgraded its equipment to BACT.¹⁵

Even GAO's conservative estimate of additional emissions clearly demonstrates that the excess or additional emissions attributable to older power plants are significant. Yet emission vintaging -- or grandfathering -- is clearly contrary to the goals of NSR and to Congressional intent. Moreover, grandfathering has clearly persisted much longer than Congress envisioned or intended.

There are two possible explanations -- or perhaps a combination -- for this situation:

- The structure of NSR is flawed because it creates incentives that discourage upgrades through modifications and replacements; or
- Alternatively, EPA's implementation of NSR is flawed because the program is susceptible to gaming and because facility noncompliance is widespread.

Emission vintaging in other basic industries may reflect similar trends but, without adequate data, such an evaluation was beyond the resources available for the Academy's study. On the other hand, it is unlikely that grandfathering has played such a significant role in industries characterized by rapid product cycles because plant designs in those industries cannot remain static for 25 years.

5.A-4 Effects of NSR on Technological Innovation for Pollution Prevention and Pollution Control

The extent of NSR's success in promoting innovation in, and diffusion of, environmental technology offers a final indirect, process-based measure of NSR's effectiveness. Congress expected that NSR would establish a mechanism whereby innovations in environmental technology would be applied concurrently with new construction and upgrades of existing plants to produce progressively cleaner generations of industrial facilities.¹⁶ At the heart of this mechanism are performance standards in the NSR permit, which require installation of the best available controls or other improvements that would produce the lowest possible emission rates. In short, NSR should both utilize and drive a moving frontier in pollution control and prevention technology.

Technological innovation and diffusion for pollution prevention and control can be produced by both fundamental and incremental changes. Fundamental technology change for the environment involves the turnover of physical plants and production technologies. Incremental changes, by contrast, do little to affect core industrial processes. With incremental changes, pollution prevention is usually achieved by making relatively minor modifications to existing processes and equipment, while pollution control is usually achieved by installing upgrades or end-of-pipe controls for basic process equipment.

NSR's record in driving *incremental* technological change is mixed. In its study of PSD permits, EPA was able to document the degree to which BACT determinations were at least as stringent as the NSPS, as well as increasing stringency over time in PSD permits for power plants.¹⁷ Both findings indicate that, when industry complies with NSR, the pre-construction permitting process has succeeded in promoting the development and installation of technologies that improve environmental performance and reduce air pollution. The power of BACT to reduce emissions is clearly demonstrated by EPA's enforcement actions, whose settlements achieve significant emissions reductions in large part by application of current BACT (see Appendix B). Finally, the Panel is persuaded by the opinions of a number of state and EPA regulators, who have

asserted that NSR has been instrumental in driving the refinement and deployment of superior pollution control technologies.

However, as documented earlier in this chapter, the number of NSR permits issued each year is strikingly low relative to the number of regulated facilities. The low number of NSR permits applied for and issued necessarily limits the program's effectiveness in promoting cleaner technologies.

Industry stakeholders have consistently made another argument about NSR's ineffectiveness in promoting incremental environmental technology innovation and diffusion. They claim that NSR frequently impedes efficiency and other changes that would reduce pollution. For plants other than utilities, industry has most often made this argument when a reduction in actual emissions would still trigger NSR under the actual-to-potential test. The actual-to-potential test has been abandoned for existing sources under EPA's 2002 NSR regulatory changes. See discussion of the effects of the actual-to-potential test in Chapter Four.¹⁸

In its NSR review, and again on the basis of anecdotal evidence, EPA has concluded that there are some situations when such efficiency projects have been impeded:¹⁹

With respect to energy efficiency, the EPA recognizes that the NSR program applies to certain projects that have the effect of increasing efficiency (e.g., projects that increase electricity output for a given fuel input). The ordinary costs and permitting times associated with NSR may, in the EPA's judgment, result in the delay or cancellation of certain projects that could improve energy efficiency. EPA encourages energy efficiency improvements wherever feasible. However, the EPA notes that some changes that improve energy efficiency also can result in significant emissions increases that have adverse air quality impacts that must be reviewed, even though the proposed project could reduce regional or national emissions. Thus, of the universe of possible efficiency improvements, the appropriate focus of the NSR program is on those that are non-routine, and that significantly increase emissions. At non-utility source categories, the "actual to potential" emissions test can discourage efficiency improvement projects even where there would not be an increase in actual emissions. It is clear that some of these efficiency improvements can still go forward (by going through NSR or taking steps to avoid NSR); however, it also is clear that others are in fact cancelled due to the costs and delays associated with NSR.²⁰

Indeed, EPA's regulations for NSR may produce such outcomes. There is no reason to doubt that industry has accurately reported some maintenance and efficiency projects rendered uneconomic in substantial part due to NSR; but, unfortunately, the Panel found no data to evaluate the situations in which NSR has obstructed these projects. To the extent that well-controlled sources perceive obstacles to improving their efficiency and maintaining their equipment, NSR may indeed be producing illogical outcomes. However, where the affected facilities are producing very high levels of emissions or have never upgraded their pollution controls -- as is the case of many grandfathered facilities -- the Panel's research compels a different conclusion.

Again, in the Panel's view, the continued operation of these highly polluting sources is clear evidence of either widespread noncompliance with NSR or flaws in its implementation. Marginal efficiency improvements are no substitute for installation of modern pollution controls, and NSR embodies that principle in both its intent and its explicit language. Twenty-five years later, entities operating with very poor emission controls -- or none at all -- have little basis or entitlement to complain that the prospect of complying with NSR, and reducing their levels of pollution, may adversely affect the efficiency of their operations.

Indeed, because they have not incurred the capital investments or operating costs of controlling emissions, such entities have already derived substantial economic benefits from their grandfathered status for more than 25 years. This competitive advantage fundamentally contradicts the Panel's findings on the intent of Congress. Congress clearly intended NSR's grandfather provision to reduce the program's negative economic impacts in the short or medium term, but did not intend to confer economic advantage of unlimited duration on highly polluting facilities.²¹

Thus, the Panel finds the validity of industry arguments that NSR impedes pollution-reducing investment depends substantially on whether the source in question is well controlled or poorly controlled. Because NSR's requirements do not distinguish between well controlled and poorly controlled sources, it has produced industry actions that are inconsistent with Congress' goal of encouraging *incremental* technology improvements and pollution reduction at well controlled sources.

These issues of incremental innovation must be distinguished, however, from NSR's performance in promoting *fundamental* technological innovation and diffusion in the broader sense. In the long run, research on and experience with technological innovation and the environment strongly suggests that the turnover of basic production technologies and plants -- not end-of-pipe retrofitting or adjustments of existing installations -- is most likely to deliver fundamentally cleaner plants that better balance environmental and economic requirements.

Although Congress did not intend NSR to accelerate such turnover, it most certainly did not intend that NSR would slow or stifle markets for fundamentally cleaner technologies. However, the Panel is persuaded that, as implemented by EPA, NSR has created economic incentives to extend the economic life of older, dirtier equipment, particularly at coal-fired power plants and other grandfathered facilities. As previously discussed, the problem may be attributable to widespread noncompliance, to structural flaws in EPA's implementation of the program, or to a combination of both.

5.B Impacts of NSR on Public Health

NSR is first and foremost a program intended to protect public health, and its performance in preventing and reducing emissions should ultimately be evaluated on that basis. Because EPA has never collected data to document NSR's protective benefits in terms of ambient air quality, however, characterizing the program's protective effects on public health is difficult. This section presents the little information that is available regarding those benefits.

The Panel's analysis attempts to characterize NSR's public health impacts based on both avoided and excess emissions. Far more information is available regarding the adverse consequences of excess emissions from power plants, i.e., emissions from older units that exceed performance standards applicable to upgraded units, than for NSR's protective benefits. Clearly, the health consequences of excess emissions are severe: thousands of premature deaths per year, and many thousand additional illnesses and chronic diseases are caused by air pollution as documented below.

5.B-1 Benefits of Avoided Emissions

NSR focuses principally on regulating emissions of the criteria pollutants covered by the Clean Air Act. As detailed above, all such pollutants have health-based ambient standards, the National Ambient Air Quality Standards (NAAQS). Those standards protect against the known adverse health effects from exposure to air pollutants, including premature mortality, numerous chronic and acute respiratory conditions, cancer, and cardiac stress.²² Ecosystem impacts of air pollution are also significant, including acidification, reduced visibility, and ground-level ozone damage to crops, timber, and other vegetation. Economic costs include lost work time and productivity losses associated with health impacts, as well as reduced productivity of crops and lost recreational values.

As explained in Section 5.A-2 above, simply compiling basic information about PSD permits was an extremely labor-intensive exercise for EPA. The agency was not able to compile information about nonattainment NSR permits, nor about the binding emissions limits that facilities accept to avoid NSR, much less the impacts of NSR on ambient air quality. The only figures EPA could compile were very rough avoided emission figures for the PSD portion of NSR. The lack of data severely restricted the ability of the Panel, or any other party, to evaluate the health and environmental significance of NSR.

EPA's review of NSR concludes that the agency's "inability to make exact estimates of [NSR's environmental and health benefits] does not mean that these benefits are insignificant or non-existent."²³ Regarding NSR's contribution to achieving ambient air quality, EPA simply notes "the NSR program plays a role in attainment and maintenance of the NAAQS, particularly with regard to new sources."²⁴

EPA's very rough analysis of NSR's health benefits focused only on the avoided mortality benefits of reduced PM_{2.5} exposure that can be attributed to PSD permits.²⁵ Using avoided emission figures very similar to those presented here in Table 5-2, EPA estimated that NSR prevents 586 incidents of premature mortality per annum, largely attributable to reduced power plant emissions. EPA data did not account for nonattainment NSR permits or for other health, ecosystem protection, visibility, crop, or aesthetic benefits.

Despite the lack of specific data, there is actually little debate about the public health significance of NSR's avoided emissions. The health effects of criteria pollutants and the protective benefits of NAAQS are well established. Rather, the debate is over the cost-

effectiveness of the environmental and health benefits of NSR, and whether alternative or reformed approaches would yield superior environmental results at lower cost.

5.B-2 Adverse Public Health Impacts of Excess Emissions

Many of the health impact analyses cited in the current debate over NSR focus on the excess or additional power plant emissions discussed above, and most of those studies have focused on the health effects of particulates. While some particulates are emitted directly by power plants, many are formed by secondary reactions when SO_x and NO_x react with ammonia and water in the atmosphere.

As discussed above, the continuation of these excess or additional emissions is the most visible problem with NSR. Regardless of their cause, Congress specifically intended that NSR would prevent the indefinite operation of older, more polluting equipment and the indefinite persistence of emission disparities between older and newer facilities.²⁶

If these excess emissions are caused, in the largest part, by widespread noncompliance with NSR, then elimination of their health impacts would provide an indication of the program's actual benefits under full compliance with NSR. If, instead, these emissions demonstrate that NSR has not achieved its intended goals, then their health impacts represent part of the potential public health benefits to be gained by NSR reform.

Regardless of the precise estimate used, it seems apparent that these excess emissions each year produce thousands of premature deaths and substantial disease nationwide. A number of recent studies have analyzed the health impacts of individual power plants or small subsets of plants. Rough aggregation of these individual estimates quickly reveals significant premature mortality caused by grandfathered power plants.

The findings of a recent study by Levy and Spengler of nine older power plants in and upwind of Chicago are illustrative. In the 500 mile-by-500 mile study area, with a population of 33 million, the plants in question were responsible for about 3.5 percent of total ambient PM_{2.5} levels. Four hundred premature exposure deaths per year were attributed to these plants as they currently operate. The authors estimated that application of BACT would reduce premature mortality from particulate exposure by 300 deaths per year. The application of BACT would also result in 2,000 fewer emergency room visits, 10,000 fewer asthma attacks, and 400,000 fewer incidents of daily upper respiratory symptoms.²⁷

Two other recent studies presented more formal and rigorous estimates of the *national* impacts of excess emissions. In October 2000, Abt Associates produced a report evaluating the health effects of reducing total power plant emissions of SO₂ and NO_x by 75 percent from their 1997 levels.²⁸ While not a specific evaluation of excess emissions from older plants, that scenario is roughly equivalent to the estimates by Biewald *et al.*²⁹ for emission reductions that would be produced if all coal-fired generating facilities had to meet the emission standards for new plants. Abt estimated that such reductions would lead to 11,000 fewer premature deaths per year nationwide, corresponding to about 0.5 percent of annual morbidity in the 30-and-over population.

The Clean Air Task Force also used data from the Abt study to estimate health impacts attributable to excess emissions from the 51 power plants that are the targets of NSR enforcement actions.³⁰ The Task Force estimated that 4,300 to 7,000 premature deaths and 80,000 to 120,000 asthma attacks occur due to these excess power plant emissions.³¹

5.C Economic Impacts

In examining the effects of NSR on industrial competitiveness, capital investment, and technological innovation, the Panel has been mindful that, under the Clean Air Act, protection of public health is a primary purpose,³² and health-based ambient air quality standards are not subject to cost-benefit analysis.³³ While costs must be taken into account for many sections of the Act, health considerations are a primary concern.³⁴

It is, however, in the national interest for the Act to function as cost-effectively as possible, both for public agencies and the private sector and for the burdens of compliance to be equitably distributed.³⁵ These considerations dictated that the Panel's assessment of NSR's impacts on the private sector would focus not only on compliance costs -- which are implicit in any pollution control scheme -- but also on the potential for imposing disproportionate burdens on a certain sectors of the regulated community.

The views and concerns expressed by industry regarding NSR suggest the *potential* economic impacts of NSR, especially for existing facilities. By contrast, industry has expressed general support for applying NSR to newly built sources.³⁶

In addition to the lack of data and other methodological concerns, an evaluation of NSR's economic impacts is complicated for two reasons. First, the concepts themselves are interrelated. For example, capital investment and technological innovation are generally understood as important long-term determinants of competitiveness. Second, the impacts of individual elements of NSR on existing facilities, such as the actual-to-potential test or lead times for processing permit applications, are synergistic and thus cannot be separated from one another. For these reasons, the Panel's analysis combines NSR's impacts on competitiveness, investment, and technological innovation. While each is discussed separately to the extent possible, they must be understood in relation to one another.

The Panel's analysis of NSR's economic impacts is generally not statistical or quantitative because such data simply do not exist, and generating them was beyond the scope of this study. In most cases, the Panel has had to assess whether repeated anecdotal evidence offered by industry regarding NSR's economic impacts is consistent with the structural incentives that NSR creates, and with common knowledge about factors that determine competitiveness and industry's economic decisions.³⁷

The Panel's analysis separates industrial competitiveness into two aspects: the competitiveness of national industrial sectors against foreign competitors, and the relative competitiveness within various domestic industry sectors.

5.C-1 Competition with Foreign Industry

In general, regulatory impacts on the competitiveness of an entire national sector are an extreme manifestation of a regulatory burden. They likely occur when very high regulatory costs reduce the ability of American industrial sectors to sell products abroad and compete domestically with foreign manufacturers. The *potential* effects of NSR on competitiveness derive primarily from three characteristics of the program, all of which have been alleged by industry to be fundamental or structural obstacles to the basic requirements and functioning of their facilities. More details on each are discussed in Chapter Four.

- Permit Lead-Times vs. Short Product Cycles

Industries with short product cycles and large-scale batch production argue that it is difficult to plan engineering changes sufficiently in advance to accommodate the typical NSR pre-construction permitting process, and that this problem has worsened as product cycle times have shortened. But, EPA and the states report that NSR permits are usually issued within six to seven months, with a range of three to 12 months,³⁸ and that permit times are significantly reduced when applications are well-executed and complete. Industry replies that those statistics do not include application preparation time or pre-submission negotiations that may double the time needed for permits, and that even a seven-month permit period may be too long for some facilities.

- Constrained Operational Flexibility

Industry argues that NSR constrains operational flexibility -- the ability to optimize continually a plant's operations -- because physical or operational changes will result in added costs and/or lost time due to the NSR permitting process, or in a limit on production capacity (see below). Such flexibility is far more important when a facility is frequently changing its process lines and products.

- Limiting Production Capacity

Industry has also opposed EPA's historical test for determining when a facility must obtain an NSR permit if it changes its physical equipment or operations. Under the "actual-to-potential test" -- which EPA has abandoned for existing sources with the 2002 rule changes -- NSR was triggered if a plant's potential emissions after a change (generally calculated on the basis of full-time operations) would significantly exceed actual emissions before the change.³⁹ Industry argued that the test impermissibly confiscated a facility's "right" to emit pollution, constrained production capacity, and/or discouraged investments.

Notably, industry rarely mentions the *operating* costs of pollution control equipment this factor as one of NSR's adverse impacts on international competitiveness, so the Panel has not addressed either.

The Academy Panel has not found any studies that quantify the impacts of permit lead-times and operational flexibility issues on the costs or economic decision-making of sectors with short product cycles.⁴⁰ In support of its arguments, industry offers what is best described as persistent

anecdotal evidence. On the whole, this evidence reinforces the Panel's findings on the NSR program's structure and implementation. NSR -- in concept and in execution -- is far more compatible with approval of large engineering projects with significant lead-times than with frequent, smaller changes to plants and processes. Facilities with short product cycles or large-scale batch production are poorly accommodated by NSR, both with respect to product cycle and operational flexibility and because significantly adverse economic results are almost certain in some cases.

In general, the competitiveness impacts described above are likely to be less pronounced for basic industry sectors, simply because these industries tend to make less frequent physical and operation changes. However, to the extent that basic industries engage in rapid or frequent process changes, these impacts may also apply to them.⁴¹

Industry's arguments about capacity "takings" are more problematic because the term conflates a value-based criticism of NSR with a judgment regarding its economic impacts. To the former point, the takings argument implicitly rests on the assumption of a pre-existing right to emit. However, no such right is established by the Clean Air Act, and the Panel rejects the assertion that any facility has a pre-existing right to emit pollution. Indeed, from an environmental perspective, the BACT upgrade requirement triggered by the actual-to-potential test is, in principle, a powerful tool for avoiding overall emission increases in the context of economic growth.

Nevertheless, the costs resulting from the actual-to-potential test -- whether they are incurred with a BACT upgrade or a binding emission limit to avoid NSR -- have been real and significant in many cases. Congress used NSR to link equipment upgrades with plant investments in order to promote periodic advances in cleaner technologies. But, under this approach, if the actual-to-potential test were repeatedly applied to a facility in the absence of significant improvements in technologies, a large, unintended emission limit would be placed on the facility.⁴² This is one principal way that EPA's past regulations for the NSR program have tended to place a disproportionate burden for reducing emissions on short product cycle/large-scale batch production industries.

5.C-2 Competition within Industry Sectors

The second aspect of industrial competitiveness is the potential effects of NSR on the relative competitiveness of various segments within a particular industry. This issue has received the most attention in the utility sector.⁴³ The issue for utilities is the effect of NSR on the economic life of power generation equipment, particularly older coal-fired units. These mostly grandfathered units have operated much longer than Congress expected, and their longevity seems in part attributable to the economic advantage conferred by their high volumes of grandfathered emissions under NSR. In other words, these older plants can remain economically competitive in part because they do not bear the capital or operating costs of controlling emissions or upgrading their equipment.⁴⁴

In its enforcement cases, EPA has argued that many of these plants have avoided such upgrades because they have not complied with NSR and that, in most cases, they are no longer entitled to

grandfathered status. Much of the environmental community agrees with that assessment. Regardless of the legalities, imposing pollution control upgrades on older power plants would have some impacts on the competitiveness of this industry segment. Specifically, some portion of the current coal-fired power plants would become uneconomic to operate, and electricity from coal, in general, would become more expensive.

In their 1998 study, Biewald *et al.* estimated that imposing an NSPS standard on all coal-fired plants would make six percent of those uneconomic, increasing the cost of coal-fired electricity by 40 percent and overall electricity retail prices by four percent.⁴⁵ A 2000 Energy Information Administration study similarly estimated that imposing NSPS on all coal plants would result in an additional seven percent reduction in U.S. coal-fired capacity by 2010, and a four percent rise in overall electricity prices.⁴⁶

Clearly, changes in NSR applicability through enforcement or new regulations will have an impact on the relative competitiveness of the coal-fired power plants. However, similar statements can be made of the status quo. To the extent that NSR has created privileges for grandfathered facilities and older technologies, the program has created entry barriers for technologies and new power plants.

5.C-3 Impacts on Capital Investment

Most of the effect on competitiveness for short product cycle/large-scale batch production industries derive from the changes in capital investment decisions. For example, permit delays for process equipment changes reduce the attractiveness of investments to upgrade a production line.

Thus, the effects of NSR on capital investment in these industries are similar to its effects on competitiveness. In concept and in execution, NSR poorly accommodates short product cycle/large-scale batch production facilities. In some cases, otherwise profitable investments are not doubt foregone. In other cases, the value of investments that are made is diminished. The Panel found no data, however, to support estimating the magnitude of these economic effects.

NSR's impact on investment decisions among utilities and refineries raises concerns not only about the economic performance of these sectors, but also about the adequacy and reliability of the nation's energy supplies. Capital investments by these sectors are necessary not only for capacity expansion, but also to maintain the reliability of existing energy supplies.

For these industries, somewhat more information is available regarding NSR's impacts on capital investment. As part of its 90-day review of NSR, EPA commissioned a study of NSR's impacts on capacity and reliability/availability of power plants and refineries.⁴⁷ While costs and other data were taken "as is" from multiple sources, the study provides the most comprehensive synthesis available. Some key findings are:

- NSR permitting time and costs are significant factors in project development for both sectors, and permitting time can delay bringing a plant on-line, leading to foregone revenues.⁴⁸

- Long-term trends towards industry consolidation (refineries) and changes in the ownership of capacity (power plants) bear little relation to NSR in particular or environmental regulation in general.
- Reduction in reserve capacity for electricity supplies is attributable far more to utility deregulation and improved demand forecasts than to NSR or environmental regulation.
- The capital and operating costs of pollution control equipment are significant for both sectors. For utilities, the costs vary significantly by type of project -- ranging from nearly one-third of total costs for a new coal-steam unit to less than five percent for a re-powered combined-cycle unit -- while they represent 15 to 20 percent of the annualized total costs of a typical refinery.⁴⁹

Based on those findings, as well as industry comments, EPA concluded that:

[T]he NSR program has not significantly impeded investment in new power plants or refineries. For the utility industry, this is evidenced by significant recent and future planned investment in new power plants. Lack of construction of new greenfield refineries is generally attributed to economic reasons and environmental restrictions unrelated to NSR.⁵⁰

However, for *existing* power plants and refineries, EPA concluded that:

[T]he NSR program has impeded or resulted in the cancellation of projects which would maintain and improve reliability, efficiency, and safety of existing energy capacity. Such discouragement results in lost capacity, as well as lost opportunities to improve energy efficiency and reduce air pollution.⁵¹

EPA's findings for existing facilities generally conform to industry views, but are directly opposite those of most environmental groups and many state regulators. As described in Chapter Four, those groups believe that NSR makes maintenance and efficiency projects uneconomic only when routine maintenance is stretched far beyond its intended limits -- and in many cases, stretched into deliberate noncompliance. Thus the costs of compliance with NSR are expected to be high precisely because existing pollution controls at those facilities are very poor or non-existent.

Each view has legitimacy, depending on whether the source in question is well controlled or poorly-controlled (see Section 5.A-4). To the extent that well-controlled sources perceive obstacles to improving their efficiency and maintaining their equipment, NSR may, in fact, be producing illogical outcomes.

However, where the affected facilities are producing very high levels of emissions or have never upgraded their pollution controls, like many grandfathered facilities, the Panel reaches an altogether different conclusion. Entities operating with very poor emissions controls -- or none at all -- a full generation after NSR was introduced have little basis or entitlement to complain that the prospect of complying with NSR and reducing their levels of pollution may adversely affect the efficiency of their operations. Indeed, because they have not incurred capital

investments or operating costs to control emissions, such entities have already derived substantial economic benefits from their grandfathered status for more than 25 years.⁵²

Unfortunately, the Panel found no data to evaluate situations when NSR has obstructed maintenance and optimization projects. It is also unfortunate that EPA's analysis fails to acknowledge or account for this critical distinction between sources that are well controlled or and poorly controlled.

5.C-4 Impacts on Technological Innovation

This section addresses technological innovation in products or processes to achieve economic advantage. The effects of NSR on innovation and diffusion of environmental technology were discussed in Section 5.A as part of the evaluation of NSR's environmental effectiveness. The Panel's analysis here focuses on process innovation because NSR regulates processes, not products, and process innovation is generally accepted to be a long-run determinant of competitiveness.

Consistent with prior research in this field, the Panel again distinguishes between incremental innovation and fundamental or radical innovation. Incremental innovation consists of relatively small adjustments and changes to existing equipment and processes. Incremental innovation is a source of efficiency gains and is extremely important to maintaining competitiveness in the short and medium term.

Fundamental process innovation is rather different. Radical innovations are an altogether new process—a different means of making a product or a new means of making an altogether new product. As might be expected, basic industries—capital-intensive, process-oriented industries producing widely used intermediate goods from raw or minimally processed inputs—exhibit very slow rates of change in their fundamental production processes.⁵³

EPA's conclusions from the 90-day review of NSR, as well as the summary of industry comments on that review, suggest that most of the concerns from heavy or basic industry center on incremental innovations. This focus is to be expected because, almost by definition, incumbent industries with established production processes dominate both the nation's economy and the industry stakeholders for NSR.

The effect of NSR on incremental innovation is discussed immediately above in Section 5.C-3 under NSR's impacts on capital investment and, with respect to innovation and diffusion of environmental technology, in Section 5.A-4. Again, the Panel finds that NSR may impede some economically and environmentally sound maintenance and efficiency projects that almost always involve or center around incremental innovations. When NSR fails to distinguish between well controlled and poorly controlled sources and impedes such projects at *well controlled sources*, the outcome is clearly illogical.

However, the long-term national economic interest probably does not depend on incumbent technologies. History demonstrates that industrial competitiveness and economic growth depend

in the long term on the emergence of new technologies. New technologies are also fundamentally desirable for achieving environmental improvements, as Congress recognized when adopting NSR.

Under the question of innovation, then, the most disturbing aspect of NSR is the deference created by the grandfathering of older facilities, particularly power plants, and the incentives created by EPA's regulations for keeping those older plants in service. EPA's failure to adopt a clear definition of routine maintenance or to ensure that major modifications go through the NSR process has surely not been in the long-term national economic interest, as expressed in the Clean Air Act.

For short product cycle/large-scale batch production industries, the same factors that affect competitiveness and capital investment generally might also affect willingness to experiment with fundamentally new technologies. However, it should be noted that deployment of such new technologies would almost always occur when NSR is applied to a *newly* built source, but not for modification of an existing source. As the Panel has already noted, there is general agreement by industry that NSR functions relatively well for new construction.

ENDNOTES

¹ EPA does not have any data regarding nonattainment NSR permits. The weighting of EPA's data may reflect three factors: (1) relative numbers of establishments in each category (see Table 5-3); (2) the fact that certain industry sectors characterized by short product cycles and large-scale batch production may be concentrated in nonattainment areas, and thus largely are not reflected in PSD permit data (e.g., the concentration of semiconductor manufacturing facilities in California's Silicon Valley, which would far more often be subject to nonattainment NSR); and (3) those fast-to-market sectors may, to a larger extent than basic industry sectors, "net out" of NSR for a single change or set of concurrent changes—or, alternatively, may take a binding emissions limitation in their operating permits, and therefore become synthetic minors. Because facilities that net out of NSR are not required to file any documentation with EPA or state agencies, it is impossible to determine the extent of the practice. Qualitative and anecdotal evidence from industry organizations suggests that netting out is quite common, and may be the most prevalent form of NSR compliance. Comprehensive data on synthetic minors is likewise unavailable.

² The effort was undertaken in response to two memoranda EPA received in 1998, both raising concerns regarding national implementation of the NSR program. The first was from the chief of the Iowa Air Quality Bureau; the second, from an official of the National Park Service. Gathering the information began with a contractor effort in EPA Regions I and II; and headquarters staff visited the remaining eight regions. The effort likely did not include all PSD permits, as some region files were not complete. Blanchard, K.L., EPA Internal Memorandum, "Results of the Prevention of Significant Deterioration Program Review" (December 21, 2001).

³ U.S. EPA, *NSR 90-Day Review Background Paper* (June 2001) Docket A-2001019, Document II-A-01.

⁴ "Prevented emissions" are calculated as the difference between BACT (permitted emission levels under the PSD permit) and the emission levels that would apply in the absence of BACT (that is, NSPS).

⁵ *New Source Review: Report to the President*, 2.

⁶ *Ibid.*, 41.

⁷ *Wisconsin Electric Power Company v. Reilly*, 893 F.2d 901,912 (7th Cir. 1990); *Alabama Power Co. v. Costle*, 636 F.2d 323, 400 (D.C. Cir. 1979).

⁸ There are several differences in definition. EPA permit activity data reflect SIC classifications; official United States economic data now use the North American Industrial Classification System. An "establishment" as defined in economic data is not identical to a regulated facility.

⁹ Blanchard, *op.cit.*

¹⁰ See, e.g., 40 CFR Part 60, subparts D, Da, Db, and Dc for NSPS governing electric utilities and steam generating units.

¹¹ Facilities constructed prior to the enactment of the Clean Air Act's New Source Performance Standards that engage only in routine maintenance, repair and replacement activities are usually referred to as being "grandfathered," *i.e.*, altogether exempt from requirements to install pollution controls unless they trigger NSR. For a discussion of Congressional intent with regard to the grandfathering provision, refuting the proposition that the provision allows perpetual indemnity from pollution control upgrades, see Chapter 2 above. See also *Wisconsin Electric Power Company v. Reilly*, 893 F.2d 901,12 (7th Cir. 1990); and *Alabama Power Co. v. Costle*, 636 F.2d 323, 400 (D.C. Cir. 1979).

¹² However, a detailed state-level analysis covering all industrial sectors has been performed for Texas. *Grandfathered Air Pollution: The Dirty Secret of Texas Industries*. Galveston-Houston Association for Smog Prevention, Sierra Club Loan Star Chapter, and Texas Campaign for the Environment (April 1998).

¹³ U.S. General Accounting Office, *Air Pollution: Emissions from Older Electricity Generating Unit*. (June 2002). GAO-02-709.

¹⁴ U.S. EPA, *National Emission Inventory*.

¹⁵ Another estimate of additional or excess emissions, using a similar integrated data set, was made by Biewald *et al.* for a 1998 study, *Grandfathering and Environmental Comparability*. Using 1996 data, they estimated that applying new-plant standards to the existing coal-fired generation fleet would reduce SO₂ by 7.3 million tons, and NO_x by 3.3 million tons, or about 40 percent of total national SO₂ emissions and 15 percent of total national NO_x emissions in their baseline year. Their estimates of excess emissions are significantly greater than GAO's estimates, reflecting in substantial part their less conservative assumptions regarding the definition of such emissions. B. Biewald, D. White, T. Woolf (Synapse Energy Economics) and F. Ackerman and W. Moomaw (Global Development and Environment Institute), *Grandfathering and Environmental Comparability: An Economic Analysis of Air Emission Regulation and Electricity Market Distortion* (July 1998).

¹⁶ See Chapter 2 above. Also, Senate Committee on Environment and Public Works, Report No. 95-127, 95th Congress, 1st Sess. Clean Air Act Amendments of 1977 (May 10, 1977), 18: “[T]his approach [best available control technology] should lead to the rapid adoption of improvements in technology as new sources are built, not the stagnation that occurs when everyone works against a single national standard for new sources.”

¹⁷ Blanchard, *op. cit.*

¹⁸ Prior to the 2002 NSR regulatory changes, NSR provided an exclusion for new pollution control projects, but it applied only to projects whose primary purpose is pollution control and required an advance determination from EPA. John Seitz, Internal EPA memorandum, “Pollution Control Projects and New Source Review” (July 1, 1994). EPA's 2002 final NSR rules have broadened that exemption, removing the “primary purpose” requirement and requiring only notification of, rather than pre-approval by, the permitting authority.

¹⁹ *New Source Review: Report to the President*. Industry also argues that NSR does not result in the most efficient investments in pollution control. For example, an expensive BACT upgrade at one facility may result in very minor environmental gains, while significantly less investment in another facility might eliminate far greater amounts of pollution. There are undoubtedly instances where this is true. It should be noted, however, that NSR was neither designed nor intended to produce a least-cost distribution of pollution control investments.

²⁰ *NSR Report to the President*, 31.

²¹ See endnote 11 above.

²² The extensive scientific literature regarding those effects and their relationship to the NAAQS cannot be fully cited here. Recent summaries of the air pollution health impacts literature include: H. Suh, *et al.*, “Criteria Air Pollutants and Toxic Air Pollutants,” *Environmental Health Perspectives: Supplements*, vol. 108, supp. 4 (August 2000), 625-633; M. Lippmann, and R. Schlesinger, “Technological Bases for the Setting of Health-Related Air Pollution Standards,” *Annual Review of Public Health*, vol. 21 (2000), 309-333; and J. H. Dickey, “Part VII. Air Pollution: Overview of Sources and Health Effects,” *Disease-a-Month*, vol. 46, no. 9 (Sept. 2000), 566-589. In addition, a summary of scientific evidence considered by EPA in establishing the 1997 particulate and ozone standards can be found in the notices setting out the revised rules: “National Ambient Air Quality Standards for Ozone: Final Rule,” *Federal Register*, vol. 62, no. 138 (July 18, 1997); and “National Ambient Air Quality Standards for Particulate Matter: Final Rule,” *Federal Register* vol. 62, no. 138 (July 18, 1997). However, two “meta-analyses” (analyses based on a broad survey of existing studies) of ozone and particulate effects provide some indication of the health effects of criteria pollutants: H. Ozkaynak, J. Spengler, *et al.* estimate that for each 50 ppb increase in peak ozone levels, hospitalization rates increase six percent to ten percent for asthma, pneumonia, and chronic pulmonary heart disease. H. Ozkaynak, J. Spengler, *et al.*, *Ambient Ozone Exposure and Emergency Hospital Admissions and Emergency Room Visits for Respiratory Problems in Thirteen US Cities* (1996). For PM₁₀, G.D.Thurston, K. Ito, *et al.* estimate that a 10 µg/m³ increase in PM₁₀, results in the following increases in mortalities and morbidities: mortality rate, 1 percent; cardiovascular mortality rate, 1.4 percent; respiratory mortality

rate, 3.4 percent; respiratory-related hospitalizations, 0.8 percent; asthma-related hospitalizations 1.9 percent; asthma-related emergency room visits 3.4 percent; and asthma exacerbations, 3 percent. G.D. Thurston, K. Ito, P. Kinney, and M. Lippman, "A Multi-Year Study of Air Pollution and Respiratory Hospital Admissions in Three New York State Metropolitan Areas: Results for 1988 and 1989 Summers," *Journal of Exposure Analysis and Environmental Epidemiology*, vol. 2 (1999) 429-450.

²³ *New Source Review: Report to the President*, 26.

²⁴ *Ibid.*, 30.

²⁵ Bryan Hubbell (Senior Economist, Innovative Strategies and Economics Group, Air Quality Strategies and Standards Division, Office of Air and Radiation, U.S. EPA), "Benefits Associated with Electricity Generating Emissions Reductions Realized Under the NSR Program," Internal EPA memorandum (1999).

²⁶ *Wisconsin Electric Power Company v. Reilly*, 893 F.2d 901, 912 (7th Cir. 1990); *Alabama Power Co. v. Costle*, 636 F.2d 323, 400 (D.C. Cir. 1979).

²⁷ J. Levy and J. Spengler, "Health Benefits of Emissions Reductions from Older Power Plants." *Risk in Perspective*, Harvard Center for Risk Analysis, vol. 9, no. 2 (April 2001). See also, J. Levy, J. Spengler, D. Hlinka, and D. Sullivan, *Estimated Public Health Impacts of Criteria Pollutant Air Emissions for the Salem Harbor and Brayton Point Power Plants* (May 2000); and J. Samet, D. Jodrey, J. Xu, and K. Wings, *An Assessment of the Health Risks Due to Air Emissions or the Centralia Power Plant* (August 1997).

²⁸ Davidson *et al.*, *The Particulate-Related health Benefits of Reducing Power Plant Emissions*, Abt Associates (October 2000).

²⁹ Bruce Biewald, *et al.*, *op. cit.*

³⁰ C. Schneider, *Power to Kill: Death and Disease from Power Plants Charged with Violating the Clean Air Act*, Clean Air Task Force: Boston, MA. (July 2001).

³¹ In 2001, Abt Associates produced an additional report examining the impacts of particulate emissions from eight electric utilities, all of which had been charged with violations under the NSR. As with the 2000 report, the report estimates total impacts, not those attributable to excess emissions. Abt's central estimate was that 5,900 premature deaths per annum were attributable to emissions from those systems, which included more than 80 power plants, concentrated in the southeastern and Midwestern states. L. Deck, *et al.*, *Particulate-Related Health Impacts of Eight Electric Utility Systems* (April 2002).

³² Joint Explanatory Statement of the Committee of Conference, Report No. 95-564, 95th Congress, 1st Sess; 1977 *CRS Legislative History*, 537.

³³ For a discussion of the matter, see the 2001 Supreme Court decision affirming the constitutionality of EPA's interpretation of the Clean Air Act in establishing the 1997 ambient particulate and ozone standards. *Whitman v. American Trucking Assn., Inc.*, 531 U.S. 457 (2001) (Docket 99-1257).

³⁴ Joint Exploratory Statement of the Committee of Conference, Report No. 95-564, 95th Congress 1st Sess; 1977 *CRS Legislative History*, 537.

³⁵ It should be noted, however, that Congress neither designed nor intended NSR to produce a least-cost distribution of investments for preventing or controlling air pollution.

³⁶ That view is echoed by the current administration: "NSR, as it applies to new facilities, works quite well and has provided substantial environmental benefits." Jeffrey Holmstead, Assistant Administrator for Air and Radiation, U.S. EPA, Testimony before a Joint Hearing of the Senate Judiciary Committee and the Senate Committee on Environment and Public Works (July 16, 2002).

³⁷ EPA's cites "credible" and "consistent" anecdotal evidence as the basis in part for the findings of its NSR assessment. For example, "In light of the volume of anecdotal evidence presented, EPA concludes that concern about the scope of the routine maintenance exclusion is having an adverse impact on projects that affect availability, reliability, efficiency and safety [of the electricity supply from existing sources]." *New Source Review: Report to the President*, 11. Similar quotes appear several places throughout the document. The reliance on anecdotal evidence has earned strong criticism from the environmental community: "EPA concedes that industry has offered little more than undocumented anecdotes and sketchy hypotheticals to support its critique of NSR. The Agency nonetheless takes the position that such material can substitute for verifiable data if industry shovels enough of it into the administrative record." John Walke, Director, Clean Air Programs, Natural Resources Defense Council, Testimony before a Joint Hearing of the Senate Judiciary Committee and the Senate Committee on Environment and Public Works (July 16, 2002), www.senate.gov/~epw/Walke_071602.htm. However, in the absence of broad-based, comparable quantitative data, any NSR assessment necessarily has an element of "first principles" analysis. That is, can the program of its structure and nature create incentives perverse to its environmental goals? If so, is there evidence that it happens with regularity?

³⁸ EPA reports that in 1997–98, average time to issue a PSD permit was 8–9 months, with a range of 1.5–35 months. From 1999 to early 2001, the average was 6–7 months and the range was 3–12 months. US EPA, *NSR 90-Day Review Background Paper* (June 2001), Docket A-2001019, Document II-A-01, 7. Industry argues that those statistics do not, however, "include the time spent prior to submittal of a complete application. If such time is included, the length of the NSR permitting process in the experience of refinery commenters is at least seven to 22 months, excluding any post-issuance appeals and challenges." *New Source Review: Report to the President*, 20.

³⁹ The actual-to-potential test did not apply to the electric power generation sector, which uses an actual-to-future - actual test instead. Prior to EPA's 2002 regulatory changes, the baseline for determining "actual" emissions was the average of the previous two years, unless the source could show this period was not representative. 40 U.S.C. §2.21 (6) and (7). With the 2002 regulatory changes, an actual-to-projected-actual test has been adopted for all facilities. Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR), Final Rule and Proposed Rule, 67 *Federal Register* 80186 (December 31, 2002).

⁴⁰ However, an evaluation commissioned by EPA of impacts on the utility and refining sectors is discussed below.

⁴¹ For example, in comments to EPA, the American Petroleum Institute (API) asserted that "[r]efiners are required by law to make adjustments to fuel specifications from one season to another, produce fuels meeting multiple specifications in various regions of the country, and reconfigure to refine cleaner-burning low sulfur diesel and gasoline, all while being able to supply fuels to meet constantly changing customer demand" (as quoted in *New Source Review: Report to the President*, 18). API was arguing that environmental regulation of fuel characteristics was causing the industry to take on attributes typical of the short product cycle industries. To the extent that basic industries take on these characteristics, they can be expected to share the concern of short product cycle/large scale batch production industries.

⁴² How often this situation actually occurs is a matter of dispute. A senior state regulator told Academy researchers that, once equipment is upgraded with pollution prevention and control, further modification of that equipment is generally not an issue because emissions are already being minimized. It is only when the equipment is old, and emissions are no longer being minimized consistent with currently available measures, that the actual-to-potential test results in more stringent requirements being applied.

⁴³ The product of this sector -- electricity -- is distributed over regional scales. However, entities that own generation facilities in a number of regions will, in effect, be subject to national competition based on the aggregate performance of a number of purely regional assets.

⁴⁴ Biewald, *et al.*, *op. cit.*: The "life" of a power plant has three aspects; technological, economic depreciation, and regulatory; and "each one of these lifetimes contributes to the actual useful life of the power plant, but it is the latter whose significance has been most under-appreciated."

⁴⁵ *Ibid.*

⁴⁶ U.S. Energy Information Administration, Office of Integrated Analysis and Forecasting, *Analysis of Strategies for Reducing Multiple Emissions from Power Plants: Sulfur Dioxide, Nitrogen Oxides and Carbon Dioxide*, SR/OIA/2000-05 (December 2000). Biewald *et al.*, *op.cit.*, estimate an upper-bound cost of about \$9.2 billion. EIA estimates a required investment of \$73 billion. The difference is in part attributable to the fact that Biewald *et al.* assume a trading scheme, which does not require each individual plant to attain NSPS standards, but requires simply the industry as a whole to do so. EIA assumed NSPS would be imposed on each plant individually.

⁴⁷ ICF Consulting, *NSR 90-Day Review Background Paper* (June 2001). Docket A-2001019, Document II-A-01.

⁴⁸ See discussion of PSD permit times in Section 5A-3. Data are not available for nonattainment NSR permits, but times could be longer owing to the greater complexity of the permits.

⁴⁹ All figures exclude the purchase of offsets, which are mandatory in nonattainment areas.

⁵⁰ *NSR Report to the President*, 1.

⁵¹ *Ibid.*

⁵² This distinction between well-controlled and poorly controlled sources figures is also central to the Panel's analysis of NSR's impacts on incremental innovation in environmental technology. See also, Section 5A-4.

⁵³For a discussion of factors affecting the lifecycle of production technology in Basic Industry, see M. Stoughton, *Dynamics of Technology Adoption in Basic Industry: Implications for Cleaner Production Policy*, PhD. Thesis, Massachusetts Institute of Technology (2000).

CHAPTER SIX

FINDINGS

The Academy Panel believes that Congress intended the New Source Review program to be an important tool for EPA, states, and localities to reduce air pollution and protect public health, as businesses made significant modifications in their facilities over time. By requiring large industrial sources to install modern, less polluting equipment when they are built or modified, Congress believed that the NSR program would be key to achieving and maintaining the health-based ambient air quality standards, and would encourage industry to develop and utilize new, cleaner technologies for preventing or controlling air pollution.

Furthermore, the Panel sees NSR as fundamentally two programs: One for newly built sources; the other for existing sources making modifications that significantly increase emissions. The problems and concerns with the NSR program stem almost entirely from the application of NSR to existing sources, and the Panel's findings reflect that focus.

NSR works well for new sources.

Finding I. When NSR is applied to new sources, the program essentially works as intended. The application of NSR requirements to newly constructed sources has also generated little controversy and relatively few complaints. The program has resulted in installation and utilization of pollution prevention and control technologies of increasing efficacy in various industry sectors throughout the country, and these cleaner facilities have helped to protect air quality. There are also strong indications that NSR has helped to drive the development and refinement of new technologies.

The Panel finds wide support for the application of NSR to new sources in the extensive commentary offered by industry stakeholders on NSR reform. This success appears to be attributable, in significant part, to the relatively straightforward determinations about whether a newly constructed source is subject to NSR and to the fact that, in the mid-1980s, EPA initiated a few key actions to enforce NSR's requirement for pre-construction permits at newly built sources. It is clear, for instance, that if a new source has the potential to emit more than the allowable threshold amount in the area where it is locating, it must obtain an NSR permit before construction begins. In those circumstances, a new source knows that it must apply for a permit and can incorporate the permitting process into its planning. Unlike NSR applicability determinations for existing sources, there is no confusion over whether a modification has taken place, or what emission baseline should be used to determine increases.

Industry representatives generally agree that state-of-the-art technologies should be required on major new sources.¹ The installation of control equipment is most economic and efficient when it is incorporated into a major new investment. Importantly, in its recent review of the NSR program, EPA found that NSR requirements do not have a significant adverse impact on investments in new power plants or refineries.²

Industry has expressed some concerns to the Panel about over the application of NSR to new sources, particularly regarding the determination of best available control technology³ and the requirement that there be no construction prior to permit issuance.⁴ Despite those concerns, the Panel finds that the NSR permitting process for newly built sources generally has worked well and has accomplished the intent of Congress.

Existing sources have continued to operate without reducing emissions.

Finding 2. For existing sources, in clear contradiction of Congress' intent NSR, a number of large and extraordinarily polluting facilities have continued to operate for more than 25 years without reducing their emissions. Those excess emissions have produced thousands of premature deaths and substantial disease, plus adverse economic and ecosystem impacts.

The Panel finds that, while NSR has partially succeeded in imposing tighter emission standards over time, EPA's implementation of NSR has failed to fulfill Congressional intent by:

- Allowing the persistence of old, polluting equipment and production technology;
- Creating incentives for older facilities to continue operating and breaking the link between capital investments and equipment upgrades;
- Failing to accommodate adequately industries with short product cycles or large-scale batch production, affecting them in ways that may reduce competitiveness;
- Producing a mixed record of promoting cleaner technologies;
- Placing heavy administrative burdens on regulators by requiring complicated applicability determinations, by allowing facilities to self-police their compliance with NSR, and by making enforcement difficult; and
- Creating uneven and unfair burdens on newer facilities with upgraded equipment, on states that are downwind of older facilities with excess emissions, and on communities of color or low-income that are often located near older, more polluting facilities.⁵

The power sector exemplifies NSR ineffectiveness in reducing emissions.

Finding 3. NSR's ineffectiveness in reducing emissions as Congress intended is best illustrated by the continuing high levels of air pollution from older electric utilities. In this sector, many older coal-fired power plants emit far greater amounts of air pollution per unit of electricity produced than do more modern plants. Because these plants were operating prior to 1977, EPA has not required them to install less-polluting equipment so long as they engage only in routine maintenance, repairs, or replacements, and their modifications do not significantly increase emissions.

Yet Congress specifically intended that NSR would prevent the indefinite operation of older, more-polluting equipment and the indefinite persistence of emission disparities between older and newer facilities.⁶ That has clearly not been the case in the utility sector.

There are significant impacts from the “excess” emissions produced by older power plants, which are the difference between their actual emissions and the lower amounts they would emit if they were operating with modern equipment or pollution controls. The U.S. General Accounting Office estimates that additional SO₂ emissions from pre-1972 fossil-fired power plants constituted about 11 percent of the national emissions inventory, and additional NO_x emissions about seven percent of the national inventory.⁷ Others have used alternative criteria and methodologies to produce estimates that are somewhat higher or lower.⁸ Regardless of the precise number, however, those excess emissions produce thousands of premature deaths and substantial disease nationwide.⁹ They also have significant, adverse economic and ecosystem impacts, including their contributions to acid rain, impaired visibility, and reduced productivity of crops and timber.

NSR’s basic regulatory mechanism does work well when it is followed.

Finding 4. When facilities comply with NSR, its pre-construction permitting process has succeeded in promoting the development and installation of technologies that improve environmental performance and reduce air pollution. EPA has been able to document that the vast majority of NSR permits reduce emissions more than the basic New Source Performance Standards, and that power plant permits specifically have required increasingly stricter emission limits over time.¹⁰

NSR’s intended link between capital investments and upgrading facilities to prevent or control pollution is broken.

Finding 5. The basic regulatory mechanism for NSR -- the pre-construction permit -- is not reducing emissions from existing sources as Congress intended. In EPA’s review of NSR, the agency was able to identify approximately 850 NSR permits issued from 1997 to 1999 for facilities located in areas that already meet air quality standards.¹¹ That figure is strikingly low when compared to both the number of facilities covered by NSR -- approximately 17,000 -- and the rate of capital investment at these facilities. In the mid-1990s, EPA’s investigations of certain industry sectors discovered that facility owners were making major capital investments in their old facilities without seeking NSR permits. Those facts suggest either one, or both, of two possibilities:

- That noncompliance is widespread, *i.e.*, existing facilities frequently fail to obtain NSR permits when required; and
- That facilities commonly take steps to avoid obtaining an NSR permit in one of two legal ways: by netting out their emission increases or by accepting a permit condition that requires emissions to remain below NSR’s threshold of significance.

Regulated entities that have avoided NSR through netting or permit limits argue that they have done so because NSR's permit conditions and application process are both time-consuming and costly. Even if true, the fact remains that Congress intended pre-construction permits to be the program's basic regulatory mechanism for achieving emission reductions. Avoidance of NSR by accepting permit limits -- becoming a synthetic minor source -- does reduce emission and should be encouraged. However, this approach may produce other problems, such as limiting even further public hearings if a general permit is used or if emission data are not made available to the public.

NSR does not adequately accommodate fast-to-market sectors.

Finding 6. NSR does not adequately accommodate short product cycles or large-scale batch production industries, such as electronics, pharmaceuticals, and specialty chemicals, thus potentially reducing their competitiveness. In some cases, the economic impacts on this fast-to-market industries are adverse.

The potential effects of NSR on competitiveness derive primarily from three characteristics of the program, all of which have been highlighted by industry as fundamental or structural obstacles to the basic requirements and operations of their facilities:

- Permit lead-times vs. short product cycles

Industries with short product cycles or large-scale batch production argue that they find it difficult to plan engineering changes sufficiently in advance to accommodate the typical NSR pre-construction permitting process, and that this problem has worsened as product cycle times have compressed. EPA and the states report that NSR permits are usually issued within six to seven months, with a range of three to 12 months,¹² and that permit times are significantly reduced when applications are well-executed and complete. Industry argues, however, that those statistics do not include application preparation time or pre-submission negotiations that may double the time needed for permits, and that even a seven-month permit period may be too long for some industries.

- Constrained operational flexibility

Industry argues that NSR constrains operational flexibility -- the ability to optimize a plant's operations continually -- because such activities can possibly constitute a modification covered by NSR. If so, such a physical or operational change will result in added costs and/or lost time during the NSR permit process, or a limit on production capacity (see below). Such flexibility is far more important when a facility is frequently changing its process lines and products.

- Limiting production capacity

Industry also opposes EPA's test for determining when a facility must obtain an NSR permit for changes in its physical equipment or operations. Under the actual-to-potential test -- which was abandoned for existing sources with EPA's 2002 regulatory changes -- NSR is triggered if a plant's potential emissions after a change (generally calculated on the basis of full-time operations) would significantly exceed actual emissions before the change.¹³

Industry argued that the test impermissibly confiscated a facility's "right" to emit pollution, constrained production capacity, and/or discouraged investments. Although the test may have imposed real costs and delays on fast-to-market industry sectors, the Panel rejects the notion that any facility has a pre-existing right to emit pollution.

The Panel's research has not identified any studies that quantify the impacts of NSR's permit lead-times, operational flexibility, or the actual-to-potential test on costs or economic decision-making across a range of sectors.¹⁴ In support of its arguments, industry has offered persistent but anecdotal evidence. On the whole, that evidence reinforces the results of the Panel's research on NSR's structure and implementation. In concept and as applied to existing facilities, NSR works better for large, new engineering projects that have significant lead-times than for frequent, smaller changes to existing equipment and processes.

By contrast, NSR's impacts on the competitiveness of basic industries are likely to be less pronounced, simply because these industries make less frequent physical and operational changes. However, to the extent that some facilities making basic products occasionally engage in rapid or frequent process changes, NSR may affect basic industries in ways that are similar to its impacts on the fast-to-market sectors.¹⁵

NSR has a mixed record of promoting cleaner technologies.

Finding 7. NSR's record in driving incremental technological change is mixed. Congress expected that NSR would establish a mechanism whereby innovations in environmental technology would be applied concurrently with new construction and plant upgrades to produce progressively cleaner generations of industrial facilities.¹⁶ The heart of that mechanism was the performance standards applied by an NSR permit, which require pollution prevention, best available controls, or other technologies that achieve the lowest emission rates. For Congress, that public policy goal was particularly important for protecting public health because the facilities regulated by NSR are very significant sources of air pollution.

Congress expected NSR would both utilize and drive the development of better technology to prevent or control pollution.¹⁷ Each NSR permit would require performance at levels equivalent to the best available control technology or the lowest achievable emissions rate. Thus Congress believed that NSR would propagate innovations in environmental technology and reduce air pollution progressively. That mechanism would operate both when building new facilities and when upgrading existing plants.

EPA has documented that most NSR permits reduce emission rates -- as they should -- far beyond the requirements of the often outdated New Source Performance Standards, and that NSR permits for the utility industry have reflected increasingly stringent emission limits over time.¹⁸ Both findings indicate that, when industry complies with NSR, the pre-construction permitting process has succeeded in promoting development and installation of technologies that improve environmental performance and reduce air pollution. State and EPA regulators have confirmed that NSR has been instrumental in driving the refinement and deployment of superior pollution control technologies.¹⁹

But the number of NSR permits issued each year is, in fact, strikingly low; and industry's failure to apply for NSR permits necessarily limits the program's effectiveness in promoting cleaner technologies. Furthermore, industry has consistently claimed that NSR may impede projects that would reduce pollution. In its NSR review, and again on the basis of anecdotal evidence, EPA has recently concluded that there are some situations when such efficiency projects have been impeded.²⁰ Indeed, EPA's regulations for NSR may produce such outcomes; and there is no reason to doubt industry's assertion that some maintenance and efficiency projects are rendered economically undesirable due to NSR.

Unfortunately, lacking any data on these situations, the Panel is not able to determine how frequently NSR has obstructed such projects. To the extent that well-controlled sources perceive obstacles to improving their efficiency and maintaining their equipment, NSR may in fact be producing illogical outcomes. However, where the affected facilities have very high emissions or have never upgraded their pollution controls, the Panel's research compels a different conclusion.

The continued operation of such highly polluting sources is clear evidence of either widespread noncompliance with NSR or flaws in its implementation. Marginal efficiency improvements are no substitute for installing modern pollution controls, and NSR embodies that principle in both its intent and its explicit language. Twenty-five years after the program's inception, entities operating with very poor emission controls -- or none at all -- have little basis or entitlement to complain that the prospect of complying with NSR and reducing their levels of pollution may adversely affect the efficiency of their operations.

Indeed, because they have not incurred the capital investments or operating costs of controlling emissions, these entities have already derived substantial economic benefits from their grandfathered status for more than 25 years. Congress clearly intended NSR's grandfather provision to reduce the program's negative economic impacts in the short or medium term, but not to confer economic advantage of unlimited duration for highly polluting facilities.

Thus, NSR's inability to distinguish between well controlled and poorly controlled sources is inconsistent with the goal of Congress to encourage incremental technology improvements and pollution reduction at well controlled sources. That problem must be distinguished from NSR's ability to promote fundamental technological innovation and diffusion in the broader sense. In the long run, research on, and experience with, technological innovation for environmental protection strongly suggest that the turnover of basic production technologies and plants -- not end-of-pipe retrofitting or adjustments of existing installations -- is most likely to deliver fundamentally cleaner facilities that better balance environmental and economic requirements.

Although Congress did not intend NSR to accelerate such turnover, it most certainly intended that NSR would not slow or stifle markets for cleaner technologies. The Panel is persuaded that facility owners have extended the economic life of older, dirtier plants and equipment, particularly at coal-fired power plants and other grandfathered facilities, to avoid the costs of preventing or controlling pollution through the NSR process. This problem may be attributable to widespread noncompliance, or to flaws in EPA's implementation of NSR, or to a combination of the two.

NSR's burdens and environmental impacts are unfairly distributed.

Finding 8. Implementation of the NSR program has produced an uneven distribution of NSR's regulatory burdens across sectors and facilities, and an uneven distribution of adverse environmental impacts across regions and communities.

Unfair Distribution of Compliance Burdens

NSR's basic structure tends to impose disproportionate compliance costs on facilities, firms, and industry sectors that make frequent physical and process changes. Distributional inequities are compounded by NSR's failure to achieve emission reductions from grandfathered facilities.

The continued operation of older, more-polluting equipment at such facilities has compounded NSR's unfair compliance burdens in several ways:

- Facilities that have complied with NSR by installing upgraded equipment, or by investing the capital and operating costs to prevent or control pollution, have an unfair disadvantage in competing with grandfathered facilities that have escaped those costs;
- High emission levels from such controlled facilities perpetuate nonattainment status in many areas, creating barriers to entry for new businesses and expansion of existing businesses, which must obtain expensive and often scarce emission offsets. This problem was precisely the reason that Northeast states initially pressured EPA to pursue large polluters in the Midwest; and
- To the extent that emissions from grandfathered facilities are not controlled, other sources must limit their emissions even more, particularly in nonattainment areas where states are required to meet NAAQS by specific deadlines. Because those areas have already made most of the easy, cost-effective emission reductions, the burden for additional future reductions now falls mainly on small businesses, which often cannot afford the costs.

In addition, by failing to bring enforcement actions against improper changes at existing facilities during the early years of NSR, EPA has created an uneven playing field for facilities that have already complied with NSR. Settlements of EPA's recent enforcement actions demonstrate the costs, as well as the environmental benefits, of requiring older facilities to meet modern air pollution standards. Because many other facilities have not been subjected to enforcement actions nor required to meet NSR, the early compliers have suffered a competitive disadvantage compared to facilities in the same industry sectors that have never complied with NSR.

Uneven Regional Impacts

The best example of uneven regional impacts are those attributable to excess emissions from older power plants. The U.S. General Accounting Office recently estimated that power plants in the Mid-Atlantic, Midwest, and Southeast emit 91 percent of the nation's additional SO₂ and 78

percent of additional NO_x.²¹ Because those air pollutants can be carried hundreds of miles downwind, people living in downwind areas -- especially in the urban corridors of the Northeast -- suffer many of the health and environmental impacts of these emissions. Northeastern states and industrial facilities there also suffer the economic costs of finding offsets from additional, local reductions of air pollution by smaller stationary sources or motor vehicles, because pollution from other areas is preventing these states from meeting the air quality standards.

Lack of Fairness for Communities

Grassroots groups and environmental justice advocates assert that the NSR program has imposed unfair burdens on their communities. Many older, polluting facilities are concentrated in urban areas, especially near communities of color or low-income, and NSR's requirements have rarely been applied to reduce emissions from these plants when they have been modified.²² Many organizations believe that EPA and state enforcement of NSR has been less than vigorous in their communities, and that the failure to enforce NSR has thus aggravated the exposures of nearby residents to environmentally harmful emissions.²³

Residents of communities of color or low-income also have serious concerns about injuries, illnesses, and possible losses of life due to accidents at older more polluting facilities that have not upgraded their equipment.²⁴ Because those facilities have not applied for NSR permits, residents of surrounding communities have never had an opportunity to comment on the permit applications, nor to participate in decisions about whether the plants can prevent or decrease pollution and operate more safely.

Current implementation of NSR places excessive burdens on regulatory agencies.

Finding 9. EPA's current approach to implementing NSR places unnecessary administrative burdens on regulators. When facilities ask EPA or state or local air agencies for an NSR applicability determination or to review a pre-construction permit application, agency staff must perform these reviews on a case-by-case basis. Much of the necessary information is held by the facility and may not be readily available to permit writers. Furthermore, permit writers may need significant technical and industry-specific expertise to analyze and prepare appropriate permit conditions.

Complete and well-prepared permit applications from facilities can facilitate the issuance of timely and appropriate NSR permits.²⁵ Even then, however, permit writers must spend considerable time making relatively complicated case-by case decisions related to facilities' internal operations. These impacts are felt most keenly by the state and local air agencies that have limited staff and technical resources.

Moreover, EPA's regulations do not require facilities to notify regulators when they decide that their activities qualify for an exclusion from NSR. Nor do they require facilities to report when they have netted their emissions to avoid NSR requirements.²⁶ Because of that self-policing, many facilities apparently have made life-extending modifications that increase their emissions without ever coming to the attention of air agencies.

The lack of reporting and the complexity of the NSR determinations also contribute to the agencies' high costs for enforcing NSR. Tremendous investigation time, expertise, and expense have been devoted to tracking down industry's past failures to comply with NSR. The recent EPA and state enforcement cases against several coal-fired power plants demonstrate the levels of effort required to investigate NSR violations.²⁷

Thus, EPA's current regulations for the NSR program place unnecessary burdens on its own staff and on state and local air agencies in several ways. They require complicated case-by-case determinations on permit applications, allow facilities to self-police their compliance with NSR, and require time-consuming and expensive efforts to bring enforcement cases.

Several factors contribute to NSR's ineffectiveness at existing facilities.

Finding 10. A combination of factors has contributed to NSR's inability to reduce air pollution from existing sources, including the program's:

- Regulatory structure -- because NSR applies only to new or modified facilities, relies on industry self-determinations of applicability, and offers broad regulatory loopholes;
- Lack of early enforcement against existing facilities that did not obtain NSR permits for modifications -- which would have clarified requirements for complying with NSR and deterred further violations;
- Pervasive data gaps and no requirement to report emissions -- which have handicapped EPA, as well as state and local air agencies, in monitoring the performance of regulated facilities and analyzing whether NSR is reducing air pollution; and
- Insufficient focus on performance-based approaches to achieve desired environmental results.

The interaction among those factors is perhaps best illustrated by the persistence of grandfathered facilities. As noted earlier, the gravest and most troubling problem with NSR is that it has allowed -- in clear conflict with the intent of Congress -- a number of large and extraordinarily polluting facilities to operate more than 25 years without reducing their emissions, which has caused damage to public health and the environment. Together, those factors have allowed existing facilities, especially grandfathered ones, to remain in production, and to continue emitting high levels of pollution without upgrading to new, cleaner equipment.

NSR's structure and loopholes let existing facilities avoid reducing emissions.

Finding 11. The NSR program is too lenient toward existing sources of air pollution. That bias was a concession to allow existing facilities to upgrade their equipment gradually. However, Congress did not intend to confer a permanent exemption that would give economic advantages to facilities that were already emitting high levels of pollution.²⁸ Nonetheless, many facility owners have extended the life of existing facilities while avoiding the costs of complying with NSR. That result has been enabled and fostered by a combination of flaws in EPA's

implementation of NSR and its lack of enforcement. The program contains broad loopholes, such as netting, and relies entirely on self-reporting of proposed modifications, which regulated entities can claim without prior approval by regulators.

Netting to Avoid NSR

EPA's regulations require an NSR permit only if a facility will have a significant net increase of emissions.²⁹ The regulations allow a source to show that it has achieved a contemporaneous (i.e., within the last five years) decrease in emissions by retiring equipment or making other changes when it makes a modification that would increase its emissions elsewhere up to the same amount.³⁰ That calculation -- known as netting -- allows facilities whose overall emissions do not increase significantly to avoid NSR requirements.³¹ In essence, netting functions like a cap on the facility, allowing a plant manager flexibility to find the places and processes within a plant where reductions can most cheaply be achieved.

At older facilities that have never upgraded to newer technologies or installed cleaner equipment, emissions -- and consequently that cap -- remain very high. Netting then allows them to extend the life of existing units, or essentially to rebuild units without installing cleaner technologies, and to continue emitting the same high levels of pollution. While overall emissions do not increase, netting still thwarts Congress' intent because it allows facilities to make significant modifications without installing upgraded and less polluting equipment. Those modifications can extend the useful life of a facility for many years, while allowing the source to avoid upgrading equipment, thus continuing its high levels of pollution far into the future.

This loophole for netting has allowed many grandfathered facilities to avoid NSR altogether and to continue emitting large amounts of pollution. Netting also gives grandfathered facilities a perverse incentive to continue emitting pollution at the same high levels as prior to adoption of NSR, so they can use their high emission levels as an offset when they make changes or rebuild. EPA, states, and local air agencies are unable to assess the environmental and public health impacts of netting. Nor can they assure compliance or determine how many facilities have used netting, because plants are not required to notify agencies when operators decide on their own to employ netting and avoid NSR.³²

The Panel recognizes the courts have found that the Clean Air Act allows netting.³³ Yet, as a matter of public policy, the Panel believes that netting as EPA currently allows at very old facilities -- without oversight to prevent abuses -- has interfered with the goal of NSR for cleaner technologies to be installed as sources are modified or replaced.

Exclusion for Routine Maintenance, Repairs, and Replacements

The Clean Air Act broadly defines modification to mean “*any* physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of an air pollutant not previously emitted [emphasis added].”³⁴

However, EPA's regulations have created an exemption from NSR by further defining the term modification as not covering those physical changes that are routine maintenance, repair and

replacement activities.³⁵ EPA believed the exclusion was simply a matter of common sense, allowing existing facilities to make routine repairs without triggering NSR even if some changes would increase emissions.³⁶

But, EPA has never adopted a clear definition of what activities properly qualify as routine maintenance, repairs, and replacements. Instead, since 1988, EPA has applied a set of five factors³⁷ to make case-by-case determinations of NSR applicability in those rare instances when industry requests assistance.

Still, EPA does not require reporting or any other prior notice by facilities planning to make modifications that might qualify for the routine maintenance exclusion, thus giving facility owners unfettered discretion to decide whether their physical changes at a plant would be exempt. Although facilities can ask EPA or a state or local air agency for applicability determinations, they have done so quite rarely. As a result, industry has used a “don’t ask, don’t tell” approach to avoid triggering NSR. EPA took very few enforcement actions against existing facilities during the early years of NSR, in part because facilities were not required to notify EPA of their plans. Early enforcement might have deterred facilities from mischaracterizing large construction projects as routine maintenance, repairs, or replacements.

This exemption has motivated facilities in many industry sectors to claim that even substantial, life-extending projects are routine maintenance, repairs, or replacements and thus exempt from NSR. In fact, the current enforcement actions by EPA indicate that there were many large renovation projects subject to NSR requirements undertaken by various industries without applying for pre-construction permits.³⁸

For example, one construction project at issue in a recent EPA enforcement action involved the replacement of several boiler components, including a reheater that was already 30 years old in 1990 and approaching the end of its productive life.³⁹ In 1992, the company built a monorail train system through the boiler to remove 540 reheater elements and install a re-designed replacement reheater.⁴⁰ At the time, the facility owners did not notify regulators of the planned \$10.78 million construction project and decided for themselves that it could be excluded from NSR because it was routine maintenance.⁴¹

That example illustrates how older facilities have used the routine maintenance exemption over the years to avoid installing cleaner equipment and have not upgraded with new technologies as Congress envisioned. When facilities use this exclusion in such a fashion, as many have done, it yields an unfair competitive advantage and eliminates opportunities to reduce excess air pollution.

Lack of enforcement has led industry to apply NSR exemptions too broadly.

Finding 12. Until the mid-1990s, EPA’s failure to enforce NSR aggressively against major modifications at existing facilities allowed companies to interpret the routine maintenance exemption far too broadly. As the EPA enforcement cases over the last few years have demonstrated, that over-broad reading of the routine maintenance exemption has resulted in

thousands of tons of excess emissions, thus aggravating the resulting health and environmental problems.

Furthermore, the absence of aggressive enforcement allows companies that adopt a broad view of the routine maintenance exemption to gain an unfair competitive advantage over firms that have complied with NSR and have installed pollution prevention or control technology when they modify their facilities. Finally, aggressive enforcement is important to minimize emissions in communities of color and low-income where older, more polluting facilities are often concentrated.

Lack of data inhibits accountability, evaluation, and enforcement of the NSR program.

Finding 13. One of the most striking aspects of the Panel's research on NSR has been the lack of key data on the program, especially as applied to existing facilities. Instead, air agencies, Congress, and the public must rely mostly on anecdotal reports from industry about NSR's economic and environmental impacts. EPA has never collected comparable, accurate, and complete data on the most basic aspects of the NSR program.

The Panel finds the lack of crucial information most troubling. NSR is a complicated program that applies to thousands of different types of facilities whose operations vary dramatically. More than 50 states and territories, plus more than 160 local air agencies, are responsible for implementing NSR. Yet application of the program, which involves a number of complex determinations such as netting or whether a change qualifies as routine maintenance, is left almost entirely to industry discretion without any requirement for consultation with regulatory agencies or reporting emissions to the public. There is, in essence, no consistently collected and reported information on the basic functioning of the NSR program, and therefore virtually no accountability by regulated facilities.

The absence of good data related to NSR decisions and the implementation of NSR is also a significant problem in evaluating the program's effectiveness and in ensuring effective public participation. For example, quantifying the program's protective value through its impact on ambient air quality, which is the basic goal of any environmental assessment of the program, is impossible; and EPA's lack of centralized record-keeping has prevented the agency from quantifying NSR's protective effects.⁴²

As a result, Congressional goals for protecting public health and the environment, ensuring full and fair enforcement of NSR, evaluating the effect of NSR on innovation and competitiveness, and developing consensus on reforms of NSR cannot be met; and progress toward them cannot be measured.

Several factors contribute to the dearth of good data:

- No environmental monitoring and public reporting for the NSR program;
- Complex and multiple industrial operations potentially covered by NSR;

- Lack of specific reporting requirements for determinations on the applicability of NSR exclusions and for netting calculations, and the resulting “don’t ask, don’t tell” culture that has developed among regulated facilities otherwise subject to NSR;
- EPA’s failure to compile reliable, comprehensive data on the environmental or economic impacts of NSR;
- Limited analysis or evaluation by EPA on the operation of NSR over the years; and
- A voluntary clearinghouse for BACT and LAER technologies, with only spotty reporting by state and local permitting agencies.

EPA itself recognizes that it cannot effectively evaluate NSR without significant improvements in the information it collects from both facilities and air agencies.⁴³ The Panel finds that, throughout the NSR program, a lack of information -- due to the self-policing aspects of the program or because of inadequate reporting requirements and other factors -- has led to many of the problems with EPA’s implementation of the program.

NSR fails to apply performance-based approaches to achieve environmental results.

Finding 14. The Academy has long advocated that environmental and other regulatory programs need to set specific performance requirements for regulated facilities in order to be effective in achieving public policy goals, including protection of public health and the environment: “At the heart of many innovations designed to improve both the effectiveness and efficiency of regulatory systems is a degree of flexibility not present in many regulations today. Such flexibility allows individual firms to find their own best ways to meet an environmental requirement, and thus encourages technology innovation and experimentation.”⁴⁴ Of course, such flexibility must be accompanied by increased monitoring and reporting of emissions to ensure public accountability and to assure that the standards can be enforced.⁴⁵

A recent study involving the sulfur dioxide (SO₂) and nitrogen oxide (NO_x) standards in the Title IV Acid Rain provisions of the Clean Air Act reinforces the Panel’s conclusion. The study contrasted the results of the SO₂ cap-and-trade system with the more traditional approach used for regulating NO_x, which mandates that many fossil fuel-fired electric generating facilities must install new burners:

Overall, the two Title IV standards embody fundamentally different methods of establishing objective and fair regulatory regimes, reflecting fundamental choices in environmental law. The NO_x regulatory program, like most environmental regulation today, is rate-based and embodies an “equal effort” philosophy that accepts any base technology, but requires firms to achieve reasonable or best controls for that given technology. Title IV’s SO₂ and the OTC [Ozone Transport Commission] NO_x cap-and-trade programs are two of the first major pieces of environmental regulation to impose an “equal cost per ton” approach to pollution, in which all firms face a similar cost for an additional ton of pollution.

These different approaches were found to have very different effects on firm behavior and the functioning of the regulatory system....

Overall, the rate-based or equal effort approach...creates few incentives for firms to choose cleaner base technologies, eliminating what is possibly the principle driver towards environmental quality. Second, it creates incentives for the business to achieve emissions reductions at only one point in time, and not continuously. Third, rate standards are inflexible, driving up costs and limiting compliance technologies and potential innovation. ...

The cap-and-trade programs performed far better, creating significant environmental and economic benefits by imposing a mandatory environmental standard while allowing firms to minimize their compliance costs. Important features of these programs were the elimination of the distinction between new and old firms and between different technologies, allowing greater efficiency in creating pollution reductions. Overall, this approach was considerably less intrusive to business and dramatically lowered compliance costs, without compromising environmental integrity.⁴⁶

The study determined that the cap-and-trade approach:

- Transformed the industry/government relationship from reviewing and permitting every action of a company (with the associated high transactions costs) to one of assuring high quality monitoring and compliance, and
- Created a continuous incentive to innovate (money could be made or saved by doing so), whereas the rate standard provided firms no incentive to innovate.⁴⁷

In keeping with a performance-based approach, the Clean Air Act's requirement for best available control technologies (BACT) provides that:

The term "best available control technology" means an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under this chapter emitted from or which results from any major emitting facility, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility *through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques* for control of each such pollutant. In no event shall application of "best available control technology" result in emissions of any pollutants which will exceed the emissions allowed by any applicable standard established pursuant to section 7411 or 7412 of this title (emphasis added).⁴⁸

By its explicit terms, BACT is clearly a performance standard because it requires facilities to reduce their emissions to the lowest level that can be achieved by applying any number of

approaches, not just end-of-pipe controls. Congress thus intended that NSR would cover pollution prevention and process changes. It also anticipated that older facilities would either be substantially rebuilt by installing upgraded equipment that reduces emissions to BACT levels, or they would shut down and be replaced by cleaner facilities that could meet BACT performance standards. However, EPA, state and local air agencies, and facility owners have all ignored these opportunities and have mostly interpreted BACT to mean end-of-pipe controls.

Unfortunately, it is a common practice that, when performance standards are established by referring to technologies (such as EPA's approach to BACT or the industry-specific categorical discharge limits established under the Clean Water Act), their full authority is rarely applied. Instead, they tend to be interpreted by all parties as authorizing only specific, end-of-pipe technologies: "Even though these requirements [such as 'best available technology' standards] are performance-based requirements, they have a strong tendency to lock in the technology that is used to demonstrate achievability."⁴⁹ Permit writers may insist that facilities install the specific technology mentioned in the performance standard because they can be assured the technology will achieve the desired environmental results. Regulated entities, in turn, know that if they install the specific technology, they will be satisfying regulators' concerns.⁵⁰

Together, those tendencies often convert a performance standard like BACT into a *de facto* technology prescription. As EPA's implementation of NSR demonstrates, this system then obstructs the use of performance-based approaches -- such as pollution prevention, source reduction, and process changes -- to achieve environmental goals.

To ensure that air quality improvements can be achieved in the future through the most effective, yet least costly methods, Congress needs to re-emphasize that it intends the NSR program in general -- and BACT and LAER in particular -- to be implemented by achieving performance levels that reduce emissions, not simply by prescribing particular end-of-pipe control technologies.

The Clearinghouse has not fulfilled its mandate to identify best technologies.

Finding 15. Congress created the RACT/BACT/LAER Clearinghouse (RBLC) to serve as a national technology inventory and to assist air permitting agencies in identifying technologies that meet cleaner performance standards. The clearinghouse has not fulfilled that mandate, however. Instead, it has created inefficiencies in administering NSR, both for states and EPA. Its function as a clearinghouse for technology determinations is severely limited in the following ways:

- Submission of RACT and BACT determinations by regulatory agencies to the RBLC is voluntary even though LAER determinations must be submitted as required by section 173(d) of the Clean Air Act. EPA estimates that, in 2000, less than 50 percent of all PSD (BACT) permits were recorded in the RBLC;⁵¹
- Submission of RACT, BACT, or LAER determinations is often incomplete; and states may choose not to respond to a data request, leaving data fields empty and the submissions incomplete;

- Installation and/or construction of RACT, BACT, or LAER technologies is not verified; there is no follow up mechanism to determine if a facility was built, or how the pollution control technology performed; and
- In recent years, the RBLC has reduced the amount of data it requests from the submitting states (*i.e.*, user profiles, technology cost information), thus the data that are recorded are not especially useful for evaluating the overall effectiveness of the NSR program.

Failure to maintain a robust clearinghouse may contribute to inconsistency among states in applying BACT under similar circumstances.⁵² EPA has stated that “sufficient and comparable information regarding BACT determinations across states and regions would make program assessment much simpler, as well as provide better control technology information for future BACT determinations.”⁵³

The public has been unable to participate effectively in NSR decisions.

Finding 16. The design and implementation of NSR constrains the ability of the public to participate effectively in permitting decisions. First, only limited data is available to the public related to NSR, especially because many of the decisions related to the application of NSR are made internally by regulated entities and never reported to permitting agencies.

Second, relatively few facilities actually apply for NSR pre-construction permits because many facilities “net out” of NSR and because a number of facilities have simply failed to comply with NSR. Further, some states now issue “general” permits for some synthetic minor units. Typically, the principal opportunity for public comment on a general permit is when the general permit rule is adopted, not when a facility is granted a general permit.

For example, in Ohio, about 1,200 construction permits are issued each year, but only 20 to 40 percent of those permits will also involve issuing or modifying a Title V permit. About 75 percent of the 1,200 permits are issued as “direct final” permits, meaning that a draft permit is not issued for public comment. Those direct final permits can be appealed if someone objects but, absent appeal, the permit becomes final in a short period of time. Ohio EPA only issues draft permits for public comment in cases that involve major emission sources, synthetic minor facilities, or where significant controversy exists.⁵⁴

Third, NSR often involves complex decisions related to technical aspects of industrial processes, aggravated by the fact that NSR sometimes involves only a small part of a larger industrial facility; and frequently little information is available as to the overall impact of the facility on nearby communities. Finally, NSR permit applications are filed infrequently, leaving the public to wait years or even decades for an opportunity to participate and thus learn more about facilities in their communities.

NSR pre-construction permits could be integrated with Title V operating permits.

Finding 17. NSR pre-construction permits and Title V operating permits could be combined. NSR requires a pre-construction permit for new or modified major facilities, and the permit has no expiration date. Title V of the Clean Air Act further requires an operating permit for any major source of air pollution, and these permits last for five years. Some states have begun to integrate NSR pre-construction permits with operating permits, sometimes referring to them as “construction and operating permits” or as “permits to install/permits to operate.”

Congress patterned Title V permits after the National Pollution Discharge Elimination System (NPDES) of the Clean Water Act.⁵⁵ The Title V program was designed, among other reasons, to make the Clean Air Act easier to enforce because the applicable requirements for a source are combined in one operating permit.⁵⁶

However, unlike NPDES permits, Congress did not provide for Title V permits to set new emissions limits for facilities. Instead, the permits simply assemble in one place the limitations established through other processes, such as the state SIPs, NSPS, or NSR. However, this process has proven to be difficult because pre-construction permits may be decades old and often do not reflect how a facility currently operates. As a result, operational controls and other limits in the older pre-construction permits may be difficult to translate into an operating permit. That situation is especially problematic for states that have a “unitary” permit requirement for all permit conditions to be reflected in a single permit, precluding the state from preparing separate pre-construction and operating permits for the same unit.⁵⁷

Furthermore, states may experience difficulty using an operating permit for new sources because the compliance certification requirement for operating permits does not easily accommodate the start-up and shakedown period that may result in higher emissions during the early phases of operating new equipment. Pre-construction permits often allow a “work out” period to tune the emission controls so the NSR performance standards can be met.⁵⁸ Some states have chosen to integrate construction and operating permits for sources only regulated under state law (referred to as “non-Title V sources”) because of the additional public review process required under a Title V permit, and because EPA places a high priority on oversight of Title V permits, which increases the likelihood that EPA might review an NSR decision if it were a part of a Title V permit.

Investing in CO₂ and NSR controls at the same time would be cost-efficient for industry.

Finding 18. It will be significantly more expensive for facilities, especially power plants and refineries, to control CO₂ after they have already met NSR’s requirements for reducing other air emissions than to make investment decisions for controlling those and CO₂ emissions at the same time.⁵⁹ Requiring facilities to add further controls for CO₂ at a later date would also compromise their need for significant lead-times when making major capital investments, and might strand earlier NSR-related investments.

Moreover, a number of states have already adopted legislation to regulate CO₂ and, unless Congress takes action to adopt nationwide CO₂ limits, industry will soon be facing a patchwork

quilt of emission standards and deadlines across the nation. Since 1999, legislation to reduce CO₂ emissions has been introduced in 23 states. Nine states have enacted climate change-related laws, and some of those require CO₂ reductions. See Appendix E.

While Congress debates whether to reform NSR and adopt uniform federal CO₂ requirements, CO₂ emissions that industry could control through NSR continue to increase. For example, power plants account for one-third of this country's CO₂ emissions, and plants built before 1972 account for about 40 percent of the CO₂ emitted by utilities in the U.S.⁶⁰ From 1999 to 2000, overall emissions from electric utilities increased by 4.7 percent.⁶¹ CO₂ emissions from utilities required to report under the Title IV Acid Rain program also have steadily increased. They rose by 2.8 percent from 1995 to 1996, by 3.1 percent from 1996 to 1997, by 3.9 percent in 1998,⁶² and by 2.5 percent in 2000.⁶³

State environmental commissioners have recently expressed a need for a "stable planning environment for energy providers and consumers as well as a well-defined planning horizon"⁶⁴ when adopting reforms to NSR. Various industries have expressed similar interests in obtaining certainty so they can plan for future regulatory requirements.

Moreover, Congress adopted requirements for monitoring and reporting CO₂ in the 1990 Amendments to the Clean Air Act. All sources subject to Title IV are required to monitor CO₂ emissions and to report that information to EPA for public disclosure.⁶⁵ These requirements establish a mechanism for measuring progress toward, and holding facilities accountable for, reducing CO₂ emissions if or when such limits are adopted by Congress or state legislatures.

ENDNOTES

¹ See, e.g., Letter from Sharon H. Kneiss, American Forest & Paper Association, to Donald Kettl (January 8, 2001); see also, Robert LaCount, PG&E National Energy Group, Presentation to Academy Panel (January 11, 2002); Pat Raher, Hogan and Hartson, LLP, Presentation on "fast-to-market industries" to Academy Panel (January 11, 2002).

² *New Source Review: Report to the President*, 5. EPA did identify some areas of concern for new sources, including the determination of the BACT/LAER technology that must be applied; procedures related to the federal land managers' review of permits near Class I areas; the moratorium on all construction activities prior to issuance of the permit; and the cost and availability of offsets in nonattainment areas.

³ See, e.g., Letter from representatives of the NSR Reform Complex Manufacturing Group to Bill Harnett and Karen Blanchard (July 20, 2000), Attachment 25; *New Source Review: Report to the President*, 5. Industry states that the process for determining what technology BACT requires can be time-consuming and resource-intensive. EPA has found that incomplete permit applications, or the selection of a less stringent BACT, can contribute to delay in permit issuance. U.S. EPA, *NSR 90-Day Review Background Paper*, Docket A-2001-19, Document II-A-02 (June 22, 2001), 7. Moreover, EPA has found that the time for issuing NSR permits has been decreasing and that pre-application meetings with agency staff can significantly reduce delays. *Ibid.*

⁴ See, e.g., *New Source Review: Report to the President*, 7. A moratorium on construction prior to the permit could be troublesome, particularly in colder climates where the construction season is limited, or where there are lengthy permit delays. Permitting agencies say, however, that if sources were allowed to begin construction prior to approval of their NSR permits, it would be more difficult for the source to make necessary changes and would undermine the government's ability to require such changes.

⁵ See, e.g., for Communities for a Better Environment, *Holding Our Breath: Environmental Injustice Exposed in Southeast Los Angeles* (July 1998); Florida Environmental Equity Commission, *Final Report* (undated); Indianapolis Urban League Environmental Coalition, *Race, Income and Toxic Air Releases in Indianapolis, Indiana* (May 2000); U.S. EPA, *Environmental Equity: Reducing Risk to All Communities* (1992), Volume 1 and Supporting Document. Black Leadership Forum, Clear the Air, Georgia Coalition for the Peoples Agenda and the Southern Organizing Committee for Economic and Social Justice, *Air Injustice: African Americans and Power Plant Pollution* (October 2002).

⁶ *Wisconsin Electric Power Company v. Reilly*, 893 F.2d 901, 912 (7th Cir. 1990); *Alabama Power Co. v. Costle*, 636 F.2d 323, 400 (D.C. Cir. 1979).

⁷ U.S. General Accounting Office. *Air Pollution: Emissions from Older Electricity Generating Units* (June 2002), GAO-02-709. Figures use a 1998 national emissions baseline.

⁸ See Chapter 5, Section 5.A-3.

⁹ The Clean Air Task Force, for example, estimated that 51 power plants that were the subject of EPA enforcement action in mid-2001 resulted in 4,300 to 7,000 preventable deaths attributable to excess emissions. Clean Air Task Force, *Power to Kill: Deaths and Disease from Power Plants Charged with Violating the Clean Air Act*. Boston, MA (July 2001). The Clean Air Task Force relied on a larger study conducted by Abt Associates quantifying the impact of power plant emissions generally: *The Particulate-Related Health Benefits of Reducing Power Plant Emissions* prepared for Clean Air Task Force. See also Chapter 5, Section 5.B-2.

¹⁰ See Chapter 5, Sections 5.A-2 and 5.A-3.

¹¹ K.L. Blanchard, "Results of the Prevention of Significant Deterioration (PSD) Program Review." EPA internal memorandum. (December 21, 2001). The figure cited probably slightly understates the actual total. See Chapter 5, Section 5.A-3.

¹² US EPA, *NSR 90-Day Review Background Paper* (June 2001) Docket A-2001019 Document II-A-01, 7.

¹³ The actual-to-potential test did not apply to the electric power generation sector, which uses an actual to future actual test instead. Under the 2002 regulatory changes, a actual-to-projected-actual test is adopted for all facilities. Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR); Final Rule and Proposed Rule, 67 *Federal Register* 80186 (December 31, 2002).

¹⁴ As part of its 90-day review process, EPA did commission a consultant's report on NSR's impacts on the refining and utility sectors. ICF Consulting, *NSR 90-Day Review Background Paper* (June 2001) Docket A-2001019, Document II-A-01.

¹⁵ See Chapter 4, endnote 29.

¹⁶ Senate Committee on Environment and Public Works, Report No. 95-127, 95th Congress, 1st Sess., Clean Air Amendments of 1977 (May 10, 1977), 18: “[T]his approach [best available control technology] should lead to the rapid adoption of improvements in technology as new sources are built, not the stagnation that occurs when everyone works against a single national standard for new sources.”

¹⁷ *Ibid.*

¹⁸ See Chapter 5, Section 5.A-2.

¹⁹ See Chapter 5, Section 5.A-4.

²⁰ *New Source Review: Report to the President.*

²¹ U.S. General Accounting Office, *Air Pollution: Emissions for Older Electricity Generating Units*, GAO-02-709. (June 2002), 13. Older units are defined as those in existence prior to 1972. Additional emissions are defined as emissions in excess of those that would be generated if the units complied with the relevant NSPS.

²² See, e.g., Communities for a Better Environment, *Holding Our Breath: Environmental Injustice Exposed in Southeast Los Angeles (July 1998)*; Florida Environmental Equity Commission, *Final Report* (undated); Indianapolis Urban League Environmental Coalition, *Race, Income and Toxic Air Releases in Indianapolis, Indiana* (May 2000); U.S. EPA, *Environmental Equity: Reducing Risk to All Communities* (1992), Volume 2 and Supporting Document.

²³ *National Law Journal*, “Unequal Protection: the Racial Divide in Environmental Law” (September 21, 1992).

²⁴ Earthjustice, “New Source Review—In the Shadow of Refineries: Communities Fighting for Clean Air,” *Community Voices*. Available at http://www.earthjustice.org/factsheets/NSRVoices_021402.pdf.

²⁵ See Chapter 3, Section 3.C.

²⁶ See Chapter 3, Section 3.A-2.

²⁷ See Chapter 3, Section 3-4.

²⁸ *Alabama Power Company v. Costle*, 636 F.2d 323, 400 (D.C. Cir. 1979). See Chapter 3, Sections 3.D-2 and 3.E.

²⁹ The requirement that there be a significant net emissions increase was imposed by EPA in the 1980 regulations. 40 C.F.R. §§52.21(b)(2)(ii) and 51.166(b)(2)(PSD); 40 C.F.R. §§52.24(f)(5) and 51.165(a)(1)(v); and 40 C.F.R. Part 51, App. S II.4 (nonattainment).

³⁰ 40 C.F.R. §52.21(b)(3). See *Draft New Source Review Workshop Manual* (October 1990), 51, for an example of netting calculations.

³¹ The courts have upheld the concept of netting, even in nonattainment areas. The legality of netting is based on the definition of stationary source, which was interpreted by EPA to allow states to treat all pollution-emitting devices within the same industrial grouping as though they were encased within a single "bubble," rather than as discrete operations or units. *Alabama Power Co. v. Costle*, 636 F.2d 323, 401 (D.C. Cir. 1979); *Chevron, U.S.A., Inc. v. NRDC*, 467 U.S. 837 (1984). In the 1990 Clean Air Act Amendments, Congress allowed netting to be used in determining whether VOC emissions increased above *de minimis* (or significant) levels, while lowering the significance level set out in the regulations for VOCs to 25 tons from 40 tons for all nonattainment areas except extreme areas. In extreme areas, no *de minimis* level is allowed, and any net increase is considered significant. 42 U.S.C. §7511a(c)(6).

³² As discussed in Chapter 3, EPA at one time proposed requiring sources to give written preconstruction notice to the regulatory agency when it deemed a physical change would not qualify as a major modification due to sufficient offsetting emission reductions. 44 *Federal Register* 51924, 51926 (Sept 5, 1979). That requirement was dropped from the final rules at the urging of industry. 45 *Federal Register* 52676 (August 7, 1980).

³³ In *Alabama Power*, the Court of Appeals for the D.C. Circuit held that Congress intended that existing facilities located in PSD areas be allowed to offset their increases with decreases resulting from other parts of the plant, such as abandonment of an old unit. 636 F.2d 323, 401 (D.C. Cir. 1979). In *Chevron*, the U.S. Supreme Court extended the netting concept to facilities located in nonattainment areas. 467 U.S. 837 (1984). The legality of netting is based on the definition of "stationary source," which was interpreted by EPA to allow states to treat all of the pollution-emitting devices within the same industrial grouping as though they were encased within a single "bubble," rather than looking at the emissions from each discrete operation or unit. *Alabama Power Co. v. Costle*, 636 F.2d 323 (401) (D.C. Cir. 1979); *Chevron, U.S.A., Inc. v. NRDC*, 467 U.S. 837 (1984).

³⁴ 42 U.S.C. §7411(a)(4). In both the PSD and nonattainment sections of the Clean Air Act, modification has the same meaning as it is defined in the NSPS section at 42 U.S.C. § 7411(a). 42 U.S.C. §§ 7479(2)(C) and 7501(4).

³⁵ 40 C.F.R. §§52.21(b)(2)(ii) and 51.166(b)(2)(iii)(a)(PSD); 40 C.F.R. §§52.24(f)(5)(iii)(a) and 51.165(a)(1)(v)(C)(1); and 40 C.F.R. Part 51, App. S II.4 (nonattainment). The preambles to the NSR rules included no discussion or clarification of the exclusion. See, e.g., "Requirements for Preparation, Adoption, and Submittal of Implementation Plans; Approval and Promulgation of Implementation Plans," 45 *Federal Register* 52676 (August 7, 1980). The exclusion for routine maintenance mirrored the one that was allowed for modifications under the NSPS. See "Standards of Performance for New Stationary Sources: Modification, Notification and Reconstruction," 40 *Federal Register* 58416 (December 16, 1975).

³⁶ "Requirements for Preparation, Adoption, and Submittal of Implementation Plans; Approval and Promulgation of Implementation Plans; Standards for Performance for New Stationary Sources," 57 *Federal Register* 32314, 32326 (July 21, 1992) (1992 regulatory changes for electric utilities).

³⁷ To make that determination, EPA weighs the nature, extent, purpose, frequency and cost of the work. *Wisconsin Electric Power Company v. Reilly*, 893 F.2d 901, 912 (7th Cir. 1990). See Chapter 3, of the history and evolution of the routine maintenance exclusion.

³⁸ See Chapter 3, Section 3.F.

³⁹ *In re: Tennessee Valley Authority*, before the Environmental Appeals Board, U.S. EPA, Final Order on Reconsideration, Docket No. 00-6, Sept. 15, 2000. This case is currently on appeal in the 11th Circuit. *Tennessee Valley Authority v. EPA*, Docket No. 00-12310-E (11th Cir.).

⁴⁰ *In re: TVA*, Final Order, Appendix A, A1.

⁴¹ *Ibid.*, A4.

⁴² For a discussion of NSR's data limitations and their consequences see Finding 13 and Chapter 5, Section 5.A-2.

⁴³ See, e.g., Memorandum from Karen L. Blanchard to John S. Seitz, *Results of the Prevention of Significant Deterioration (PSD) Program Review* (October 17, 2001), 14; US EPA *NSR 90-Day Review Background Paper*. (June 2002), 1.

⁴⁴ National Academy of Public Administration, *Environment.gov: Transforming Environmental Protection for the 21st Century* (2000), 60.

⁴⁵ *Ibid.*

⁴⁶ B. Swift, "How Environmental Laws Work: An Analysis of the Utility Sector's Response to Regulation of Nitrogen Oxides and Sulfur Dioxide under the Clean Air Act," *Tulane Environmental Law Journal*, vol. 14, no. 2 (Summer 2001), 408-409.

⁴⁷ *Ibid.*, 409.

⁴⁸ Clean Air Act, 42 U.S.C. §7479 (3).

⁴⁹ "Permitting and Compliance Policy: Barriers to U.S. Environmental Technology Innovation," *Report and Recommendations of the Technology Innovation and Economics Committee of the National Advisory Council for Environmental Policy and Technology*, EPA 101/N-91/001 (January 1991), 39.

⁵⁰ Environmental Law Institute, *Barriers to Environmental Technology Innovation and Use* (January 1998), 7.

⁵¹ Personal correspondence by e-mail, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards (February 2003). The estimate is based on permit data from most EPA regions during 1991 to 1999 and was limited to PSD (BACT) permits. Estimates for 2003 are much higher (70 percent to 90 percent) because increased funding has allowed the clearinghouse staff to visit EPA's regional offices and state permitting agencies to retrieve missing data. Additionally, EPA reports that there has been a significant increase in direct submittals from major permitting states.

⁵² The CAA allows the states to make technology determinations on a case-by-case basis. Yet, "...though States have discretion over the extent to which cost, energy, and environmental concerns are factored into a BACT selection, it is possible that some may be meeting the letter of the requirement, while not necessarily meeting the intent of the law, regulations, and guidance." Memorandum from Karen L. Blanchard to John S. Seitz (October 17, 2001), 13.

⁵³ *Ibid.*, 14.

⁵⁴ Interview with Bob Hodenbosi, Ohio Environmental Protection Agency (April 2002).

⁵⁵ A. Reitze, Jr., *Air Pollution Control Law: Compliance and Enforcement* (Environmental Law Institute: 2001), 209.

⁵⁶ *Ibid.*

⁵⁷ Interview with Ursula Kramer, Director, Pima County Department of Environmental Quality (January 2003).

⁵⁸ *Ibid.*

⁵⁹ Michael Bradley, "For Generators, Including CO₂ is Best in Long-Run," *The Environmental Forum* (May - June 2002), 51.

⁶⁰ U.S. General Accounting Office, *Air Pollution: Emissions for Older Electricity Generating Units* (June 2002) GAO-02-709, 13.

⁶¹ Energy Information Administration, *Emissions of Greenhouse Gases in the United States* OE/EIA (2001), (Washington, D.C.: December 2002), ix.
http://www.eia.doe.gov/oiaf/1605/ggrpt/executive_summary.html (retrieved December 4, 2002).

⁶² <http://www.epa.gov/airmarkets/emissions/score01/graphs01.pdf> (retrieved December 4, 2002).

⁶³ *Ibid.*

⁶⁴ Environmental Council of the States, Resolution Number 01-12 (August 28, 2001).

⁶⁵ Pub. L. 101-549, Section 821 (Nov. 15, 1990).

CHAPTER SEVEN

PANEL RECOMMENDATIONS

As detailed in this report, the Panel's analysis of the NSR program leads it to the following recommendations for significant reforms. The Panel strongly urges Congress and EPA to consider these recommendations as a comprehensive framework, not a menu of separate options. These reforms of NSR can only be effective if all the Panel's recommendations are implemented together.

Recommendation 1: End Grandfathering.

Congress should end grandfathering of major sources with high emission levels as soon as possible. Within the next ten years, all major sources that have not obtained an NSR permit since 1977 should upgrade their equipment and lower their emissions to levels that are equivalent to the reductions achieved by the current BACT or LAER performance standards.

The Panel urges Congress to require that the oldest facilities with the highest emission levels are upgraded on a priority basis in order to ensure that air quality benefits are achieved quickly. It is important for these plants to be upgraded sooner and other upgrades done in later stages so that demands for the necessary skilled labor and specialized technologies can be spread evenly across the ten-year period for phasing out the grandfather provision.¹

Recommendation 2: Retain NSR For Newly Built Sources.

Congress should continue to require that all newly built, major sources of any criteria air pollutant must obtain NSR pre-construction permits, operate at BACT or LAER performance standards and fulfill all other requirements of the current NSR program, such as obtaining offsets in nonattainment areas.

Recommendation 3: Continue to Enforce NSR Vigorously.

EPA and the Department of Justice should continue their investigations and enforcement actions to correct past violations of NSR, especially for changes at existing facilities. These actions will produce significant environmental benefits, deter future violations, and encourage other modified facilities to comply with NSR until the time when Congress has adopted the Panel's other NSR reforms.

Recommendation 4:**Reform NSR for Existing Sources Using a Performance-Based System.**

4-1: Replace NSR for existing sources with a compulsory three-tier, performance-based system.

The Panel recommends that Congress replace NSR for existing sources with a compulsory three-tier performance-based system that will require facilities to reduce air pollution. Following Congressional action, EPA should promulgate regulations clearly explaining how states can implement all three tiers and should offer compliance training to EPA, state, local, and facility personnel. For each tier, emission limits should be based on the performance levels achievable by the cleanest technologies available. With the development of newer technologies that can reduce emissions further, NSR's applicable performance standards will then be likely to decline over time.

Tier 1: Cap-and-Trade: *A national or regional multi-pollutant cap-and-trade system for fossil fuel-fired power plants, industrial boilers, and similar facilities that can monitor their emissions continuously, or model their emissions reliably.*

Facilities required to enter this market-based system are ones where EPA, or states, or local air agencies determine that continuous emission monitoring systems are cost-effective, or where equally reliable emissions modeling can be performed. Once in the system, facilities could make any desired modification to an existing emission source, so long as they hold sufficient allowances to cover all emissions. Initial allocations of emission allowances should be based on current BACT and LAER performance standards.²

A multi-pollutant cap-and-trade system should include, at a minimum, emissions of SO₂, NO_x, and CO₂. Regional caps, such as the current NO_x cap in the Northeast, should be established for pollutants in areas where a nationwide cap is not appropriate but where a cap-and-trade system can nevertheless operate effectively.

Nationwide and regional caps should be set initially at levels based on current BACT and LAER, but the caps should decline over time to protect public health and meet the nation's air quality goals. Significant, automatic penalties should be imposed when a facility does not hold allowances equal to its annual emissions. The cap-and-trade tier should also include safeguards to prevent local emission hot spots and should require public reporting of emissions.

Tier 2: Cap-and-Net: *Emission limits based on the BACT or LAER performance standards and covering an entire facility with multiple sources that cannot reliably monitor or model and report its emissions on a continuous basis, and thus cannot participate in the cap-and-trade system of Tier 1.*

These limits should have a fixed duration; and plants participating in this tier should be required to conduct frequent emission monitoring or modeling, and to report their emissions to regulators and the public, as well as including these limits in their Title V operating permits.

A facility not meeting current BACT or LAER performance levels when its cap is set should be required to meet the cap within a specific period, such as five years. Such facilities would then be free to modify their existing equipment over the life of the cap, so long as the plant's overall emissions do not exceed the limits in the Title V permit.

Upon the expiration of the Title V permit, new emission limits would be set. These limits would be more stringent if needed to meet then-current BACT or LAER performance standards or to produce further progress for achieving air quality standards, protecting air quality in clean air areas, or reducing regional haze.

Tier 3: Unit-Cap: *Unit-specific emission limits for individual sources where neither the cap-and-trade nor the cap-and-net approaches of Tiers 1 and 2 can feasibly be adopted.*

Units in this category would receive unit-specific emission limits based on current BACT or LAER performance standards. Those unit-specific limits would be incorporated into each facility's Title V operating permit and would have a fixed duration.

Units not meeting current BACT/LAER performance standards at the time the unit-cap is approved would be required to meet that limit within a specific period, such as five years. Once the limit is approved, the facility would be free to modify that unit so long as its emissions do not exceed the unit-cap limit.

Upon the expiration of the unit-cap, a new limit would be set. This limit would be more stringent if needed to meet then-current BACT or LAER performance standards or to produce further progress toward meeting air quality standards, protect air quality in clean air areas, or reduce regional haze. Frequent monitoring or modeling and reporting of emissions to the public and regulators should also be required for facilities that obtain unit-caps.

To accommodate some expansion of facility operations, Congress should give EPA and other air agencies discretion to set unit-caps at levels that allow for reasonably anticipated growth of production over the permit term. But frequent monitoring or modeling and reporting of emissions should be required to verify that the unit-cap is not exceeded.

4-2: Adequately fund implementation of NSR reforms.

These reforms of NSR will require considerable resources. Congress should appropriate sufficient funding for EPA to promulgate new rules and for implementation of the reforms by EPA, states, and localities. State and local air agencies should also seek additional funding from several other sources, such as increased state appropriations, increased federal grants, and increased permit application fees.

**Recommendation 5:
Improve EPA and State Information Systems and Public Accountability.**

Because assuring easy public access to frequent reports on facility emission levels and stronger public involvement in permit applications are essential to the success of both market-based and performance-based programs, the Panel recommends the following improvements to information and transparency for the NSR program.

5-1: Fully Fund and Staff the Technology Clearinghouse.

Congress should provide adequate appropriations for, and specifically require EPA to fund, a fully staffed and well-maintained BACT/LAER Clearinghouse for information about technologies that can prevent or reduce emissions most effectively. The clearinghouse should be required to provide complete and up-to-date information on state-of-the-art technologies for preventing and controlling air pollution, and should make that information readily available to state and local permitting agencies, facility managers, and the public.

5-2: Ensure the Clearinghouse Contains Complete Data.

Congress should also specify that no approval of an NSR permit for a new or modified source will take effect until the permitting authority or a facility has submitted to the BACT/LAER Clearinghouse a complete report on how the permit will reduce emissions in ways that meet applicable performance standards. Furthermore, Congress should require the states and EPA to use BACT/LAER information from the Clearinghouse when establishing cap-and-net or unit-cap permit limits. The Interstate Technology Regulatory Council, which shares information about new technologies for cleaning up hazardous waste sites, is a model for such a clearinghouse.³

5-3: Require Emission Reporting for Accountability.

Congress should require that all new and existing major sources of air pollution must monitor or model their emissions, and regularly report those data to regulatory agencies and the public. This requirement will remedy the serious information gaps that have undermined the existing NSR program, will enable air agencies to track whether NSR is working as Congress intends, and will increase public confidence in the program. Moreover, accurate and timely monitoring and reporting of facility emissions are essential to the effectiveness of the Panel's other recommendations for performance-based reforms of NSR. They would also enable regulators to enforce NSR more effectively at newly built sources, as well as existing sources covered by the three tiers of the Panel's reformed NSR system.

5-4: Improve Public Participation.

Congress should ensure its NSR reforms facilitate better public understanding of the permitting process and facility operations by requiring that permit applicants involve stakeholders early in the permitting process and offer the public better opportunities to participate in the permitting process in meaningful ways.

Recommendation 6: Establish Clear Requirements for Compliance.

All NSR reforms should specify clearly how facilities can meet applicable emission limits and performance standards so that compliance -- and enforcement when necessary -- would be more predictable, more efficient, and less complicated for EPA, state and local governments, affected facilities, and the public. The Panel's recommended reforms for increased transparency and accountability of the NSR program will also greatly aid compliance.

Recommendation 7: Prepare for the Future.

The Panel recommends that Congress' NSR reforms should anticipate future environmental challenges, as well as address past compliance problems. Such future challenges include preparing for possibly stricter standards to reduce emissions of fine particulates, ozone, and carbon dioxide. They also require more effective integration of the NSR program with other elements of the Clean Air Act, such as Title V operating permits and state implementation plans. Most importantly, the Panel recommends that Congress adopt these reforms in a manner that provides future regulatory certainty for the regulated community, while ensuring that public health and the environment will be protected.

ENDNOTES

¹ Older, more polluting facilities should be given priority for upgrading their equipment due to possible limits on the availability of both technologies for preventing or controlling pollution and of skilled workers, particularly boilermakers. Thus a phased approach may be needed to ensure that all grandfathered plants can reduce their emissions and meet the BACT or LAER performance standards within the next ten years. See ARCADIS Geraghty & Miller, *Engineering and Economic Factors Affecting the Installation of Control Technologies for Multipollutant Strategies*, EPA-600/R-02/073 (October 2002), section 6.2.

² For example, a power plant could enter the cap-and-trade tier having last performed a BACT/LAER upgrade in 1980. The plant would thus be emitting more pollution per unit of power produced than an otherwise identical plant that is performing at current BACT/LAER levels. Assuming that their recent power production has been identical, the two plants would receive an identical number of allowances, because the older plant would only receive allowances that reflect emissions as if the plant were operating at current BACT/LAER. Under such a system, the plant with higher pollution levels would not be “rewarded” with additional allowances that subsidize its higher pollution levels.

³ Interstate Technology Regulatory Council, <http://www.itrcweb.org>, 1-2 (retrieved December 4, 2002).

AFTERWORD

TRANSITION TO THE REFORMED NSR PROGRAM

The Panel recognizes that implementing these performance-based NSR reforms will require a phase-in or transition period of several years. Until the reformed NSR program takes effect, the Panel recommends that EPA adopt some interim changes to its current NSR regulations as they apply to existing facilities. These changes will address industry's concerns about adverse impacts on efficiency and competitiveness, as well as concerns that NSR is not adequately protecting public health.

- **Use Actual-to-Future-Actual Calculations With Stringent Oversight**

First, the Panel recommends that EPA revise its NSR regulations to allow existing facilities to use the actual-to-future-actual method for calculating potential increases in emissions due to a modification. EPA extended this methodology to all existing sources in its final NSR rules promulgated on December 31, 2002.¹ The Panel believes that this change in methodology for calculating emissions increases will help to accommodate some industries' need for rapid or frequent process changes without continually triggering NSR.

The Panel is concerned, however, about the extension of the actual-to-future-actual test in its present form to all facilities. To avoid the problems the Panel has found with past NSR regulations that rely on self-policing and inadequate reporting of information, EPA should carefully oversee these emission calculations and not allow sources to self-police. Thus, EPA should specifically require facilities to monitor and report their future emission data to permitting agencies, and emission calculations should be well-documented.

The Panel believes it is important for EPA to extend current reporting requirements beyond power plants so that any modified facility must monitor its future actual emissions and report them to permitting agencies, at least annually, to assure there is no increase in emissions from the change. A source should not be allowed to make deductions from actual emissions for growth in market-demand with no effective oversight to assure accuracy, as EPA's final 2002 rule has allowed despite the concerns expressed by EPA in 1998 over this issue.² These elements in EPA's recently promulgated NSR rule would seem to exacerbate further the public policy and enforcement problems that have resulted from self-policing and inadequate reporting of information under EPA's past NSR regulations.

Moreover, the pre-change emissions baseline, determined by the average rate of actual emissions over the most recent two years, should continue, as it has been applied by EPA in the past to most facilities. The Panel believes that lengthening to ten years the time period for determining the pre-change emission baseline, as EPA has provided in its 2002 final rule, will only broaden the loopholes and aggravate the problems identified by the Panel that have allowed many older, more polluting facilities to avoid NSR's requirements for installing modern equipment. If a facility determines that this time period is not representative of its normal operations, EPA rules already allow it to seek approval from the permitting agency for a different baseline. This

accommodation should be sufficient to prevent a too-strict application of the baseline calculation in individual cases.

The Panel believes that the use of an actual-to-future-actual methodology for all sources will alleviate concerns of industries that must continuously change their production processes, by assuring that they do not have to obtain an NSR permit based on what they potentially could emit rather than what they actually emit. At the same time, the Panel believes strongly EPA should require annual reporting of actual emissions by all existing facilities that make changes, which will provide permitting agencies and the public with key information on air pollution levels and will ensure compliance with NSR requirements.

- **Limit the Use of Netting**

Second, the Panel recommends that EPA should limit netting as much as administratively possible and that Congress should direct EPA to eliminate the use of netting as a mechanism for avoiding compliance with NSR. While netting has been upheld as valid for determining source-wide application of NSR in both PSD and nonattainment areas, the Panel believes that, as currently applied, netting conflicts with Congress' intent that modernizations and expansions be linked to pollution prevention or upgrades to cleaner equipment so that air quality will continue to improve. Quick Congressional enactment of a strict limitation on netting will bring more existing facilities into the current NSR process, until EPA and the states implement the Panel's other recommended performance-based reforms for NSR.

- **Require Advance Determinations of NSR Applicability for Routine Maintenance and Other Exclusions**

Third, in keeping with the plain words of the Clean Air Act, the Panel recommends that current EPA regulations governing exclusions from NSR for major modifications to existing facilities should be revised to require that facilities must apply to air agencies for a determination whether NSR would apply to *any* physical or operational changes that would significantly increase emissions. The Panel believes that requiring facilities to seek a prior determination from permitting agencies before making modifications that increase emissions will ensure that abuses of the routine maintenance exclusion do not continue.

While such a requirement might seem to impose an administrative burden on already over-worked state and local agencies, there are factors that will reduce the administrative load. The Panel notes that, once the actual-to-future-actual methodology for calculating emission increases (as described above), fewer facilities will be required to apply for an NSR applicability determination because the calculation will only trigger NSR when sources are increasing actual emissions, not potential emissions. Thus, NSR will no longer apply to routine activities that merely repair or replace components and do not actually increase emissions. Moreover, clear EPA guidelines that provide more certainty to industry and the agency as to what specific activities would fall within or outside of the routine maintenance exclusion would also reduce the burden on agencies in making these determinations.

- **Clarify and Restrict the Routine Maintenance Exclusion**

Finally, the Panel believes that, to reduce air pollution and achieve effective public administration, EPA must clarify and limit its regulations excluding routine maintenance, repairs, and replacements from NSR. Fairness and accountability require that EPA establish clear rules -- tailored to specific industry sectors if necessary -- about what routine repairs for particular types of equipment are exempt from NSR requirements, and in exchange, require that facilities give air agencies prior notice and obtain advance approvals for these activities, as discussed above.

EPA's enforcement actions since 1988 against facilities that have made major investments in modifications without obtaining NSR permits have highlighted industry abuses of EPA's routine maintenance exclusion. Yet, EPA has recently proposed further expanding this exclusion.³

The Panel believes that simply allowing more modifications to be excluded from NSR will not solve the problems with NSR, nor will it improve environmental protection. Instead, creating wider loopholes will further thwart the intent of Congress for NSR to promote replacing or upgrading old, more polluting equipment. In the key NSR decision, *Wisconsin Electric Power Company (WEPCO) v. Reilly*, the federal court of appeals anticipated this problem, and noted that a "too restrictive interpretation of 'modification'" could lead to the indefinite postponement of NSR requirements, and would upset the Clean Air Act's "economic-environmental balance in unintended ways."⁴

For all these reasons, Congress should adopt the Panel's recommended NSR reforms as expeditiously as possible and should direct EPA to implement these interim revisions of its rules, so NSR can fulfill its intended purpose of protecting air quality and public health.

ENDNOTES

¹ “Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR); Final Rule and Proposed Rule,” 67 *Federal Register* 80186 (Dec. 31, 2002).

² *Ibid.* See “Notice of Availability; Alternatives for New Source Review (NSR) Applicability for Major Modifications; Solicitation of Comment,” 63 *Federal Register* 39857, 39861 (July 24, 1998).

³ “Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR): Routine Maintenance, Repair and Replacement,” 67 *Federal Register* 80290 (Dec. 31, 2002).

⁴ *Wisconsin Electric Power Company (WEPCO) v. Reilly*, 893 F. 2d 901, 910 (7th Cir. 1990).

GLOSSARY

Air Pollutant: The generic term for a substance regulated under the Clean Air Act. Section 302(g) defines air pollutant to include “any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive ... substance or matter which is emitted into or otherwise enters the ambient air.”

Air Quality Control Region: An area within a state for which attainment with NAAQS (see below) is planned, implemented, and measured.

Allowance: An authorization to a source to emit a fixed amount of a regulated pollutant. Under Title IV of the Clean Air Act (relating to acid rain), certain allowances may be bought and sold on the open market.

Ambient Standards: Method to measure quality of the open air.

Area Source: A stationary source of air pollution that is not large enough to be a major source.

Attainment: A term used to define an area where ambient air quality meets an applicable NAAQS.

Best Available Control Technology (BACT): The technology requirement for, *inter alia*, new sources and modifications in areas that are subject to PSD requirements. It is defined under §169(3) of the Clean Air Act as “an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under [the Act] emitted from or which results from any major emitting facility, which the permitting authority, on a case-by-case basis, taking into account energy, environmental and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems, and techniques . . . for control of each such pollutant.” BACT is generally more stringent than RACT, but may be less stringent than MACT and LAER.

Bubble: Treating as one source, groups of plants or multiple sources within one plant, so that increased emissions at one source can be exchanged for decreases at others.

Clean Air Act: Although the original Clean Air Act was passed in 1963, the current the national air pollution control program is based on the 1970 version of the law, plus subsequent amendments, most notably in 1977 and 1990.

Continuous Emission Monitoring Systems (CEMS): Equipment that measures, on a continuous basis, air pollutants released by a source.

Control Technology or Control Measures: Equipment, processes, or actions used to reduce air pollution.

Criteria Pollutant: A pollutant for which a NAAQS has been established (i.e., sulfur dioxide, particulate matter, carbon monoxide, ozone, nitrogen dioxide, and lead).

Debottlenecking: A change that removes an impediment at one place in a process so that a

separate unchanged unit can be operated in ways that increase potential emissions after the change.

Emission: The process through which a pollutant enters the ambient air.

Emission Standard: A requirement that limits the quantity, rate, or concentration of emissions.

Enforcement: The legal methods used to make polluters obey the Clean Air Act. Methods include citations, fines and even jail terms.

Hazardous Air Pollutants (HAPs): Chemicals that cause serious health and environmental effects.

Increment: The maximum allowable increase in concentrations of certain air pollutants that is allowed in an area subject to PSD requirements (see below).

Lowest Achievable Emission Rate (LAER): The technology requirement for new major stationary sources and modifications in nonattainment areas. It is defined under §171(3) as the most stringent requirement that is required in any SIP, or the most stringent emission limitation that is actually achieved in practice, whichever is more stringent.

Maximum Achievable Control Technology (MACT): The technology requirement for sources of hazardous emissions. For new sources, it must at least equal the most stringent level of control achieved in practice by a similar source. For existing sources, it must be no less stringent than the average level of control achieved by the “best performing” 12 percent of sources.

Major Source: A stationary source with a level of actual or potential emissions sufficiently high to trigger certain regulatory requirements. The level of emissions that will make a source “major” varies from one provision of the statute to another.

Mobile Source: A movable source of emissions, *e.g.*, a motor vehicle, aircraft, train, or vessel.

Modification: Any change at a source, usually involving an increase in actual or potential emissions, that triggers additional requirements under the Act.

Monitoring: Measurement of air pollution is referred to as monitoring.

National Ambient Air Quality Standards (NAAQS): Standards promulgated by EPA establishing the maximum allowable concentration of criteria pollutants in the ambient air.

Netting: Calculating changes in emissions under a “bubble” so that a source can avoid more stringent NSR requirements.

New Source Review (NSR): The pre-construction permitting program for building new major stationary sources and modifications at existing major stationary sources.

Nonattainment: A term used to define an area where the ambient air quality does not meet an applicable NAAQS.

New Source Performance Standards (NSPS): Standards promulgated by EPA under §111 of the Act for new stationary sources. An NSPS provides the floor for all other technology

requirements, including BACT and LAER.

Offsets: Reductions of pollution by other sources in a nonattainment area to allow for construction or modification of another source in the same area.

Ozone: A compound consisting of three atoms of oxygen. In lower levels of the atmosphere, ozone is a criteria pollutant formed through the interaction of VOCs, NO_x, and sunlight, and forms one of the primary constituents of smog. In the stratosphere, ozone provides a shield against ultraviolet radiation.

Particulate Matter: Particulate matter includes dust, soot, and other tiny bits of solid materials that are released into and move around in the air.

Permit: A document that resembles a license, required by the Clean Air Act for large sources of air pollution, such as power plants, chemical factories and, in some cases, smaller polluters.

Phase I and Phase II: Two levels of SO₂ reductions that power plants must achieve to control acid rain.

Point Source: A stack, vent, or other point through which emissions of air pollutants are vented for release into the ambient air.

Prevention of Significant Deterioration (PSD): A pre-construction air pollution permitting program designed to ensure air quality in attainment areas does not degrade beyond NAAQS levels, or beyond specified increments above a prescribed baseline level.

Reasonably Available Control Technology (RACT): The technology requirement applicable to existing major sources in nonattainment areas. It is not defined in the statute, but has been interpreted to impose requirements that are generally less stringent than BACT or LAER.

RACT/BACT/LEAR Clearinghouse (RBLC): A national database where states and local air pollution control agencies record their RACT, BACT, or LAER determinations to create a library of technology options for future determinations. Submission of LAER determinations to the Clearinghouse is mandatory under §173 (d) of the Clean Air Act.

Repowering: Reconstruction of an existing power plant in which most major components are replaced. As used in the Clean Air Act, it refers primarily to the replacement of an existing coal-fired burner with a new clean-coal technology in order to achieve significant emission reductions.

Significant Emissions: A rate of emissions that equals or exceeds any rates specified in the regulations for particular pollutants, thus triggering NSR permit requirements.

State Implementation Plan (SIP): A plan promulgated by a state to implement the state's regulatory obligations under the Act, such as those that relate to attainment of an NAAQS.

Source: Any place or object from which pollutants are released.

State: A political subdivision that is required to act as a "state" under the Act. For most purposes, it includes any of the 50 states, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands. It

may also include certain Native American tribes.

Stationary Source: A source, that is not mobile, of regulated air emissions from a fixed location.

Synthetic Minor: An existing source that uses netting or accepts a permit condition as an enforceable limit, rather than have a modification be subject to NSR review.

Top Down: A method of defining BACT that begins by identifying the most stringent emission level that is technically achievable, and then considers other factors, such as economic feasibility, that may justify approving a less stringent level.

Transport Commission: A commission composed of state and federal officials convened to formulate recommendations for control of pollutant transport in a transport region.

Transport Region: A multi-state region in which emissions in one state contribute significantly to nonattainment problems in another state.

WEPCO: Based on the name of the 1990 court case, *Wisconsin Electric Power Co. v. Reilly*. The term is used to describe a series of issues that have arisen concerning the application of regulatory requirements for “modifications” when changes are made by stationary sources.

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APPENDIX A
Chronology of the Legislative, Regulatory, and Enforcement History
of the New Source Review Program

December 31, 1970: Clean Air Act of 1970. Established federal and state regulatory programs designed to protect the nation's air. Establishing a dual-track system, the Act prescribed standards of performance for new stationary sources (NSPS) and provided for the attainment of national ambient air quality standards (NAAQS) through state implementation plans (SIPs). Pub. L. No. 91-604, 84 Stat. 1676. Codified at 42 U.S.C 7411.

December 23, 1971: General provisions for New Source Performance Standards (NSPS) promulgated at 40 C.F.R. Part 60. 36 Federal Register 24876. Contained exemption for routine maintenance, repair, and replacement from the definition of modification.

1972: *Sierra Club v. Ruckelshaus*, 344 F. Supp. 253 (D.D.C.), *aff'd per curiam*, 4 Env't Rep. Cas. (BNA) 1815 (D.C. Cir. 1972), *aff'd by an equally divided Court sub nom. Fri v. Sierra Club*, 412 U.S. 541 (1973). Court found that the Clean Air Act of 1970 was based "in important part on a policy of nondegradation of existing clean air" and invalidated the existing regulations, which had allowed pollution levels to rise to the national ambient air quality standards. This case gave rise to the Prevention of Significant Deterioration (PSD) program, first proposed by EPA in December 1974 and codified in the 1977 CAA amendments.

July 16, 1973: Notice of proposed PSD regulations. The notice set forth four plans for the prevention of significant deterioration. The plans reflected various approaches to defining and preventing significant deterioration in areas where air pollution levels are below the NAAQS. 38 Federal Register 18986.

August 27, 1974: EPA proposed regulations governing PSD. 39 Federal Register 31000. The proposed PSD permit program applied to new or expanded sources. An "expanded source was defined as one which intends to increase production through a major capital expenditure, and EPA defined the term "in order to avoid possible confusion with the more commonly used term 'modified source.'" Final rules promulgated on December 5, 1974.

October 15, 1974: EPA proposed amendments to the NSPS at Part 60 Code of Federal Regulations. Clarified the definition of the term "modification" appearing in the Act to apply only to changes that increase the amount of any air pollutant, and clarified when NSPS are applicable to reconstructed sources. 39 Federal Register 36946; Final rule was promulgated on December 16, 1975.

December 5, 1974: First set of PSD rules promulgated by EPA pursuant to the *Sierra Club v. Ruckelshaus* decision. Allowed incremental deterioration of air quality in clean air areas, depending on whether the area is classified as Class I (pristine), Class II or Class III, but only if sources met emission reductions based on best available control technology (BACT). Applied to facilities that began construction after 1975. Stated, "Routine maintenance, repair, and replacement shall not be considered a physical change." 39 Federal Register 42510.

December 16, 1975: Final rule amending NSPS at Part 60 Code of Federal Regulations. (Proposed rules published Oct. 15, 1974.) Those rules covered a limited number of source categories for which EPA had established NSPS requirements. Defined modification to mean “any physical change in, or change in the method of operation of, an existing facility which increases the amount of any air pollutant (to which a standard applies) emitted into the atmosphere by that facility or which results in the emission of any air pollutant (to which a standard applies) into the atmosphere not previously emitted.” Required a source to provide written notice of any physical change unless that change is specifically exempted under the definition of modification. Stated that “maintenance, repair, and replacement which the Administrator determines to be routine for a source category” shall not, by itself, be considered a modification. Clarified definitions of source and facility. Defined capital expenditure. Required owners or operators to notify EPA within 30 days of commencement of construction of an affected facility. Did not extend the “bubble concept” for offsetting emissions to new construction. Defined reconstruction. 40 Federal Register 58416.

December 21, 1976: Nonattainment NSR Interpretative Ruling (Emissions Offset Rule) proposed by EPA. Identified when and under what circumstances new sources of pollution would be permitted in areas where NAAQS had not yet been attained (nonattainment areas). Addressed the issue of whether NAAQS can restrict growth in nonattainment areas. A new or modified source would be allowed in a nonattainment area only if emissions from existing sources were reduced by an amount greater than the emissions from the proposed new or modified source, and only if the source were required to meet emission limits at the lowest achievable emission rate (LAER) for such type of source. “Requirements for Preparation, Adoption, and Submittal of Implementation Plans,” 41 Federal Register 55524. Final offset rule published on January 16, 1979.

1976: *Sierra Club v. EPA*, 540 F.2d 1114 (D.C. Cir. 1976), *vacated sub nom. Montana Power Co. v. EPA*, 434 U.S. 809 (1977). D.C. Circuit upheld the 1974 PSD regulations over challenges by both industry and environmental groups. The U.S. Supreme Court vacated the decision, and remanded to reconsider the regulations in light of the passage of the 1977 Clean Air Act Amendments.

August 7, 1977: Clean Air Act Amendments of 1977. Congress maintained the 1970 framework and enlarged the federal regulatory role. Congress adopted the PSD pre-construction permit program to prevent further degradation in clean air areas, and the new source review (NSR) program to allow industrial expansion to occur in nonattainment areas while still making progress toward attainment. (The 1977 Act is the statutory basis for the NSR regulatory programs.) The Act tightened requirements for PSD pre-construction review by (1) requiring case-by-case BACT determinations rather than automatic application of set NSPS; (2) requiring air quality impact analyses; (3) requiring visibility protections in Class I areas even if increments met; (4) requiring public hearings in all cases. In nonattainment areas, stringent permitting and reconstruction requirements were imposed on major stationary sources, such as requiring emissions offsets sufficient to represent reasonable further progress (RFP) toward attainment of NAAQS and requiring the lowest achievable emission rate (LAER) for the source. Pub. L. No. 95-95, 91 Stat. 685.

November 16, 1977: Congress passed technical and conforming amendments to the CAA Amendments, incorporating the definition of “modification” as defined in the NSPS requirements to the PSD program. P.L. 95-190.

June 19, 1978: Revised PSD Rules promulgated by EPA. EPA promulgated two sets of PSD rules. One specified minimum requirements for the PSD program that must be contained in a State Implementation Plan (SIP) in order to warrant EPA approval. (codified at 40 D.F.R. §51.21(1979)) The other set amended the 1974 PSD regulations for federal requirements in areas with unapproved SIPs. (codified at 40 C.F.R. §52.21 (1979)). Major modification defined as “any physical change in, or change in the method of operation of, a major stationary source or addition to a stationary source which increases the potential emission rate of any air pollutant regulated under the Act (including any not previously emitted and taking into account all accumulated increases in potential emission occurring at the source since August 7, 1977, or since the time of the last construction approval issued for the source pursuant to this section, whichever time is more recent, regardless of any emission reductions achieved elsewhere in the source) by either 100 tons per year or more for any source category identified in paragraph (b)(1)(i) of this section, or by 250 tons per year or more for any stationary source.” Contained exclusion for routine maintenance, repair and replacement. 43 Federal Register 26380 and 43 Federal Register 26388.

January 16, 1979: Revised Emission Offset Interpretative Ruling promulgated by EPA. Set forth the pre-construction review requirements involving a major new source or major modification locating in a nonattainment area. Contained exclusion for routine maintenance, repair and replacement. 44 Federal Register 3282 (codified at Appendix S to 40 C.F.R. Part 51).

March 27, 1979: U.S. District Court for the District of Columbia held that EPA could conduct its own pre-construction review under its Part 52 regulations until a state had an approved PSD SIP revision. *Citizens to Save Spencer County v. EPA*, 600 F.2d 844 (D.C. 1979).

April 1979: EPA issued guidance on EPA’s evaluation of what constitutes an approved SIP. General Preamble for Proposed Rulemaking on Approval of Plan Revisions for Nonattainment Areas. 44 Federal Register 20372.

June 18, 1979: *Alabama Power Company v. Costle*, 606 F.2d 1068 (D.C. Cir. 1979). United States Court of Appeals for the District of Columbia issued a decision that upheld some of the substantive provisions of both the 1978 Part 51 and Part 52 PSD regulations, and overturned others. In its opinion, the court merely summarized its holdings, but promised to issue supplemental opinions after it had considered any petitions for reconsideration. In an order accompanying the summary opinion, the court stayed the effect of its decision until it had issued the supplemental opinion. The purpose of that procedure, the court explained, was “to enable EPA to proceed as soon as possible to commence rulemaking or other proceedings necessary to promulgate those revisions in the PSD regulations required by [the court’s] rulings.” Final decision issued December 14, 1979.

July 1979: EPA issued an interpretative rule concerning certain statutory restrictions or a “construction moratorium” on new construction in nonattainment areas. 44 Federal Register 38471.

September 5, 1979: Proposed new NSR rules regarding following the *Alabama Power* ruling. EPA proposed to replace the provisions the court had held invalid, such as the definitions of source, modification, and potential to emit. EPA also proposed new amendments such as de minimus exemptions to the requirements. Although the *Alabama Power* court had before it only the PSD rules, several statutory definitions and other concepts addressed by the court were also relevant to the NSR requirements for nonattainment areas. Thus, changes were proposed to both the PSD and nonattainment NSR requirements. “Requirements for Preparation, Adoption and Submittal of SIPS; Approval and Promulgation of State Implementation Plans, 44 Federal Register 51924.

December 14, 1979: D.C. Circuit issued its final opinion in *Alabama Power Co. v. Costle*, 636 F.2d 323 (D.C. Cir. 1979), superseding the previous *per curiam* opinion. The court expanded the scope of netting to a plant-wide basis and imposed a contemporaneity limit on netting, meaning that any offset changes claimed in order to keep the emissions from being significant must be contemporaneous. The Court said that implementation of the requirements for modifications would undoubtedly be inconvenient and costly to affected industries. It recognized, however, that while Congress intended to grandfather existing industries, the structure of the Act indicated that Congress did not intend to provide perpetual immunity from all standards under the PSD program. Court upheld EPA interpretation of a major emitting facility to extend PSD requirements to any source with potential to emit 250 tons per year. Court rejected EPA interpretation that potential to emit included all uncontrolled emissions, without considering air pollution control equipment designed into the source. The Court said EPA “must look to the facility’s ‘design capacity’”, so that any air pollution control equipment designed into the facility had to be taken into account when calculating PTE. The Court also found EPA regulations deficient, because they did not provide for continuous pre-construction monitoring for determining impacts on NAAQS and increments.

May 13, 1980: EPA promulgated a stay of the Emissions Offset Ruling and the construction moratorium (A similar stay to the PSD rules had been issued earlier). 45 Federal Register 31304. On the same day, EPA promulgated certain amendments to the Offset Ruling, the regulations relating to new source review at 40 CFR 51.18, and the construction moratorium. Those amendments established the geographic applicability of the various nonattainment requirements relating to the construction of new sources and modifications. 45 Federal Register 31307. The amendments embodied EPA’s response to many of the comments on the September 1979 proposal.

May 19, 1980: EPA promulgated regulations aimed at consolidating and unifying various permit requirements and procedures regarding the processing of applications for permits under the new Part 52 PSD regulations. 45 Federal Register 33290.

August 7, 1980: EPA promulgated PSD and Nonattainment NSR Final Rules. EPA received approximately 375 written comments on its rulemaking, which began in September 1979. The

new regulations codified contemporaneity as a requirement for determining net offsets. They defined PTE to take into account limits from air pollution control equipment, as ordered by *Alabama Power*, as well as limits on hours of operation and the amount or type of materials stored or combusted, as long as such limitations were federally enforceable. Fugitive emissions were not to be considered in determining whether a source would be a major source, except when such emissions came from specified source categories. Two ways to determine federal enforceability were (1) the PSD or NSR pre-construction permit process; and (2) incorporation of the limit into the EPA-approved SIP. 45 *Federal Register* 52676.

Fall 1980: CMA and other industry petitioners challenged in court EPA's 1980 NSR regulations, particularly concerned that EPA's rule on potential to emit did not recognize all existing controls and limitations on a source. (Consolidated into D.C. Cir. No. 79-1112). Settlement agreement entered on February 22, 1982.

December 1980: American Mining Congress (AMC) and various mining companies petitioned EPA for reconsideration of the 1980 PSD regulations regarding fugitive emissions. Petition for Reconsideration of Regulations Relating to Prevention of Significant Deterioration of Air Quality (Dec. 1, 1980).

January 19, 1981: EPA granted part of AMC petition. EPA confirmed that in the regulations it intended to mean that any project which would be major only if fugitive emissions were taken into account is not to be considered "major" for any PSD purpose, unless the project belongs to one of the 30 listed categories set forth by EPA. EPA agreed to amend the regulations to conform them to that intention. See 48 *Federal Register* 38742 (August 25, 1983). Petitioners also joined the *CMA* challenge, cited above, on the issue of fugitive emissions.

October 14, 1981: Plantwide definition of stationary source in PSD and Nonattainment NSR rules promulgated by EPA. The definition would allow a state to treat all of the pollution-emitting devices within the same industrial grouping as though they were encased within a single "bubble." Under this definition, an existing plant that contains several pollution-emitting devices may install or modify one piece of equipment without triggering NSR if the alteration would not increase the total emissions from the plant. 46 *Federal Register* 50766. Proposed rules were published at 46 *Federal Register* 16281 (August 1981).

February 22, 1982: *CMA et al.* Settlement Agreement. EPA agreed to propose and take final action on the methodology for calculating PTE in the determination of whether NSR is applicable when a source undertakes a modification. EPA agreed to propose a definition of PTE that did not contain the federal enforceability criterion, but limits that were "enforceable under federal, state or local law" and "discoverable by the Administrator and any other person." The proposal was presented in Exhibit B to the Settlement Agreement. The CMA Exhibit B proposal also allowed a source the alternative of using its hourly potential emission to determine baselines for NSR applicability rather than actual annual emissions. Under the proposal, sources could use this potential-to-potential test for NSR applicability. EPA presented the proposal for comment as an alternative in the 1996 NSR Proposed rules.

August 25, 1983: EPA proposed, among other revisions, a rule deleting the federal enforceability requirement in determining whether a source has reduced its potential to emit. This proposal was to fulfill its commitment made in the *CMA* settlement agreement. EPA also proposed revising its position on fugitive emissions, stating that fugitive emissions of a stationary source shall not be included in determining whether it is a major stationary source or whether there is a significant increase in emissions, unless the source belongs to one of the listed categories. EPA also proposed revisions regarding the requirements for health and welfare equivalence for netting under the definition of major modification, the definition of significant, the innovative control technology waiver in PSD, secondary emissions, and the crediting of source shutdowns and curtailments as offsets in nonattainment areas. In addition, EPA provided guidance on the obligation of a state to cure a violation of a PSD increment for particulate matter, the issuance of a non-PSD permit to a project that would cause or contribute to a violation of a PSD increment, and technology transfer for determinations of lowest achievable emission rate for nonattainment pre-construction review. “Requirements for Preparation, Adoption, and Submittal of Implementation Plans; Approval and Promulgation of State Implementation Plans.” 48 Federal Register 38742. Final action taken June 28, 1989.

June 25, 1984: *Chevron, U.S.A., Inc. v. NRDC*, 467 U.S. 837 (1984). EPA regulations expanding the use of the plantwide bubble to the nonattainment area NSR program under title 1, part D of the Act were upheld by the Supreme Court. The Court deferred to EPA’s definition of source and held the plantwide definition was a permissible construction of the statutory term “stationary source.”

July 12, 1985: EPA promulgated regulations on how a permitting authority should assess adverse impact on visibility of a proposed source. 50 Federal Register 28548. These regulations were proposed October 23, 1984, pursuant to a settlement agreement between EPA and Environmental Defense Fund (EDF). *EDF v. Gorsuch*, No. C82-6850RPA (N.D. CA 1984).

March 22, 1988: *U.S. v. Louisiana-Pacific Corp.*, 682 F. Supp. 1141 (D. Colo. 1988). EPA sought civil penalties and injunctive relief for violation of PSD regulations. Court upheld EPA’s claim that the state minor NSR permit could not keep the source out of the PSD program if state permit limitations were knowingly and regularly violated. See also, *U.S. v. Louisiana-Pacific Corp.*, 682 F. Supp. 1122 (D. Colo. October 30, 1987).

July 15, 1988: EPA Guidance memorandum issued, “Procedures for EPA to Address Deficient New Source Permits under the Clean Air Act.” Sent to regional offices, the memo emphasized the need to respond quickly when reviewing NSR permits that are to be deficient. The memo lists factors for determining when a permit is deficient. Guidance recommends action within 30 days of final permit.

March 29, 1989 (supplemented on May 3 and 10, 1989): Beginning of BACT methodology determination litigation. American Paper Institute and the National Forest Products Association (now reorganized to form American Forest and Paper Association) petitioned EPA to rescind the top-down policy for BACT determinations and initiate rulemaking. EPA denied the request May 12, 1989 (supplemented on June 13, 1989). API filed suit in U.S. Court of Appeals for the District of Columbia and in U.S. District Court for the District of Columbia. (*API v. Reilly*, No.

89-1428 (D.C. Cir. filed July 10, 1989); *API v. Reilly*, No. 89-2030 (D.C.C. filed July 18, 1989). District Court action dismissed Jan. 5, 1993 for lack of subject matter jurisdiction. Similar petition for review filed by a consortium of utilities in *Alabama Power Co. v. EPA*, No. 89-1429(D.C. Cir. Filed July 11, 1989). Cases were consolidated. API filed challenge to EPA's 1990 draft guidance document in *API v. Reilly*, No. 90-1364 (D.C. Cir. filed July 13, 1990). Cases resolved in settlement agreement in which EPA agreed to publish, by Jan. 6, 1992, a proposed rule "to revise or clarify the regulations defining BACT" and "to revise or clarify how BACT determinations should be made." 56 Federal Register 34202 (July 26, 1991) (request for public comment on proposed settlement). EPA 's 1996 NSR proposal containing proposed rule on BACT methodology was presented pursuant to its obligations under the settlement agreement.

June 28, 1989: Final action on the August 25, 1983 proposed rules on federal enforceability. EPA announced its decision to keep the federal enforceability requirement in determining potential to emit (PTE) (reversing its earlier proposal to eliminate the requirement) and provided guidance on how a source can legally limit its potential to emit so as to avoid major NSR. "Requirements for the Preparation, Adoption and Submittal of Implementation Plans, Approval and Promulgation of Implementation Plans", 54 Federal Register 27274. (The position was also explained in a guidance issued by OECA, dated June 13, 1989.) EPA believed federal enforceability was essential to achieving and maintaining the purposes of the Act. EPA provided new procedures explaining how to make a source's controls and limitations federally enforceable. Potential emissions defined as the product of a source's emission rate at maximum operating capacity, capacity utilization, and hours of operation. To appropriately limit potential to emit, all NSR/PSD permits must contain a production or operational limitation in addition to the emission limitation in cases where the emission limitation does not reflect the maximum emissions of the source operating at full design capacity without pollution control equipment. Blanket emissions limits are not a sufficient limitation on PTE. The guidance followed the opinion in the *U.S. v. Louisiana-Pacific Corp.*, 682 F. Supp. 1141 (D. Colo. 1988).

August 28, 1989: Industry filed a challenge to the June 1989 PTE rules regarding federal enforceability in *Chemical Mfrs. v. EPA*, No. 89-1514. On June 7, 1990, court issued an order deferring the briefing on this case because of the imminent passage of the Clean Air Act Amendments of 1990. Order Deferring Briefing, *Chemical Mfrs., v. EPA*, No. 89-11514 (D.C. Cir. June 7, 1990). Judgment entered on Sept. 15, 1995.

October 31, 1989: First Circuit upheld EPA's application of the actual-to-potential methodology to determine net emissions increases in a case involving conversion of a cement plant from a wet process to a more efficient dry process. In July 1987, Puerto Rican Cement Company requested from EPA a nonapplicability determination because it claimed the physical change would not produce actual emissions increases. EPA said potential emissions could rise, so the company had to either go through PSD process or take an enforceable restriction on emissions. Court upheld EPA's use of an actual-to-potential methodology. Court agreed with EPA that the regulatory exclusion for certain increases in a source's production rate or hours of operation applies only when such an increase is unaccompanied by construction or modification activity. *Puerto Rican Cement Co. v. EPA*, 889 F.2d 292 (1st Cir. 1989).

November 28, 1989: In *United States v. Solar Turbines*, 732 F.Supp. 535 (M.D.Pa 1989), court ruled that EPA could not bring an enforcement action against a source that has received and complied with a state-issued permit, even though EPA contended the permit was improperly issued. EPA can charge a source only if it has violated quantifiable emission standards. EPA's only recourse was against a state to remedy the permit deficiencies after the state had issued the permit, not against the source that relied on the state-issued permit.

January 19, 1990: Seventh Circuit upheld EPA's interpretation that an electric utility's extensive renovations of coal-fired steam-generating units amounted to a physical change under the Act. The court looked at a set of factors, including WEPCO's own characterization of the work, to hold that EPA properly determined that the renovation was a modification under the regulations, not an exempted routine replacement. WEPCO's renovations included replacement of large steam drums and air heaters, and involved a nine-month shutdown of each unit. However, the court struck down EPA's use of an actual-to-potential test for determining whether the change produced significant emissions increases that would subject the unit to BACT requirements. The court held that while EPA could apply an actual-to-potential test when the physical or operational change was so different that it could say the changed unit had not yet begun operations, in this case, when the change was a like-kind replacement, EPA could not reasonably interpret the unit to have not yet begun operations, and therefore could not compare actual emissions before the change with potential emissions after the change. The court therefore set aside EPA's determination that PSD requirements applied. *Wisconsin Electric Power Co.(WEPCO) v. Reilly*, 893 F.2d 901 (7th Cir. 1990).

October 1990: EPA's 1990 Draft New Source Review Workshop Manual prepared for NSR training and guidance to permitting agencies.

November 15, 1990: Clean Air Act Amendments of 1990. Among other things, the 1990 Amendments established a market-based acid rain control program, an operating permit program in Title V, and a new program for regulating 189 hazardous air pollutants. Enforcement was enhanced. Regarding NSR, the Amendments reduced the threshold amount and increased the offsets required for a major source in certain ozone nonattainment areas, depending on the seriousness of the pollution problem. Created Ozone Transport Areas. Required that offsets used in NSR be federally enforceable. Pub. L. No. 101-549, 104 Stat. 2399.

1992: EPA began investigation into plywood and wood products industry for CAA violations. Some of the results of that investigation:

In July 1992, EPA issued notices of violation (NOV) against Louisiana Pacific for failure to obtain NSR permits. In May 1993, Louisiana Pacific settled the case, agreeing to pay \$11 million civil penalty, install \$70 million in new pollution control equipment, and conduct audits at its wood products plants. No. CV93-0869 (W.D. La. May 24, 1993). Criminal charges were upheld against Louisiana Pacific in *U.S. v. Louisiana Pacific Corp.*, 42 ERC 1033 (D. Col. 1995).

In August 1994, EPA issued NOVs against Weyerhaeuser and Georgia Pacific. Georgia Pacific settled in 1996, agreeing to conduct audits at its plants, to pay \$6 million in penalties, install \$25

million in controls, and spend \$4.25 million for special environmental projects. *U. S. v. Georgia-Pacific Corp.*, 960 F. Supp. 298 (N.D. Ga. Dec. 23, 1996).

April 16, 1992: General Preamble on how EPA will interpret the Title I changes made by the 1990 Clean Air Act Amendments. 57 Federal Register 13498.

July 21, 1992: EPA promulgated special rules regarding applicability for physical and operational changes at electric utility steam generating units, pursuant to the court's decision in *WEPCO*. Known as the "WEPCO Rule," EPA utilized an actual-to-future-actual methodology for all changes at electric utility steam generating units except the construction of a new electric generating unit or the replacement or reconstruction of an existing emission unit. (utility compares actual annual emissions before the change with projected annual emissions after the change to determine if the change would result in a significant increase in emissions.) A utility must submit information regarding emissions rates for five years to verify the projected emissions rate. The rule provided that when projecting future actual emissions, the electric utility may exclude from the estimate any emission increase that results from increased demand. The rule also adopted a broad NSR exclusion for pollution control projects undertaken at electric utility units. 57 Federal Register 32314.

August 1992: NSR Simplification Workshop held in Chapel Hill, N.C. Purpose was to identify problems and creative solutions to some of the problems that exist with respect to the NSR program.

March 17-18, 1993: Second NSR Simplification Workshop.

Early 1990s: EPA began the development of Sector Notebooks containing a comprehensive environmental profile of the industrial processes and a holistic view of pollution releases in various industry sectors. Sector Notebooks were issued in 1995 for the wood products and refinery industries and in 1997 for the electric utility industry. See <http://es.epa.gov/oeca/sector> (retrieved January 14, 2003).

1993-1994: EPA established a new subcommittee of the Clean Air Act Federal Advisory Committee for NSR/PSD reform to provide independent advice and counsel to EPA on policy and technical issues associated with reforming the NSR rules. NSR federal advisory subcommittee meetings held.

July 8, 1994: Preliminary draft of 1996 Proposed Rules made available for public comment. 59 Federal Register 35119.

January 25, 1995: EPA issued "Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act." The transition policy allowed sources to limit PTE without federally enforceable limitation if sources have actual emissions between 50 percent and 100 percent of the major source threshold and hold state-enforceable limits that are enforceable as a practical matter.

July 21, 1995: *National Mining Ass'n v. EPA*, 59 F.3d 1351 (D.C. Cir. 1995) (*per curiam*). Court held CAA Amendments regarding the hazardous air pollutant program did not mandate a federal enforceability requirement for non-major source permit limitations. Court said EPA failed to consider effective state emissions controls in determining potential to emit, and whether a source is classified as major.

September 15, 1995: In *Chemical Manufacturers Association v. EPA*, 70 F.3d 637 (D.C. Cir. 1995) (*per curiam*), CMA challenged the PTE rules regarding federal enforceability issued in 1989, which challenge was stayed at the time by the court because of the imminent passage of the CAA Amendments of 1990. In a brief order, court vacated the federal enforceability requirement, citing *National Mining*.

January 31, 1996: EPA issued “Effective Limits on Potential to Emit: Issues and Opinions.” Guidance said EPA would not enforce the federal enforceability requirement until a later date.

June 28, 1996: Court addressed the issue of federal enforceability and PTE in Title V permit context in *Clean Air Implementation Project v. EPA*, No. 96-1224 (D.C. Cir. June 28, 1996) (*per curiam*). Court granted summary vacature and remand of the EPA’s PTE definition in regulations promulgated pursuant to Title V, citing *National Mining* and *Chemical Manufacturers*.

July 23, 1996: NSR Simplification Proposal by EPA. Proposed comprehensive overhaul of the NSR/PSD program; designed to streamline the permitting process, relieve regulatory burden, and provide states with flexibility in implementation of the program.. Proposed changes to NSR applicability determinations included (1) a “clean unit” exclusion; (2) a new baseline for determining significant net emissions increases, allowing sources to use any 12 consecutive months in past 10 years to establish pre-change emissions levels; (3) a pollution control project exclusion; (4) a Plantwide Applicability Limit voluntary approach; (5) an extension of the actual-to-future actual test (currently only for electric utilities) to all sources; (6) consideration of the CMA Exhibit B settlement proposal. The proposed rules also contain (1) revisions to the BACT/RACT/LAER control technology determinations; (2) revision of Class I Areas PSD requirements, defining an adverse impact analysis, the role of the Federal Land Managers in determinations, and public review; (3) PSD pre-construction monitoring; (4) changes resulting from the 1990 CAA Amendments; and (5) other miscellaneous provisions. 61 Federal Register 38249.

1996: EPA initiated investigation into potential industry violations of new source review rules. EPA focused on sectors and companies that had experienced a decrease in the number of facilities in operation but an increase or no change in production rate. EPA targeted coal-fired electric generating facilities, the petroleum refining industry and the pulp and paper industry.

March 11, 1997: U.S. District Court in California rejected the *Solar Turbines* rationale and allowed EPA to pursue action against source even though it held a state permit. *U.S. v. Campbell Soup Company*, Civ. S-95-1854 DFL (E.D. Cal. March 11, 1997), 1997 WL 258894.

April 14, 1998: EPA issued guidance document on PTE listing eight source categories with cutoffs for considering a source “minor.”

July 24, 1998: EPA proposed for comment alternatives for NSR applicability for major modifications, including an exclusion for changes if any source takes an enforceable temporary limit on emissions for 10 years after the change, and a plantwide applicability limitations alternative. EPA proposed the WEPCO actual-to-future actual applicability test for all facilities, but would eliminate the demand growth exclusion that did not count emissions stemming from increased demand. Notice of Availability; Alternatives for NSR Applicability for Major Modifications, 63 Federal Register 39857.

November 17, 1998: EPA’s Office of Enforcement and Compliance Assurance adopted policy of no longer allowing a company to limit its potential emissions levels below those that trigger the BACT or LAER requirements once EPA has brought an enforcement action against the company for past violations or new source review rules. The policy was designed to induce companies to correct NSR violations voluntarily rather than waiting until an enforcement action is brought. “Guidance on the Appropriate Injunctive Relief for Violations of Major New Source Review Requirements.”

February 2-3, 1999. Public meeting to discuss approaches for changing NSR applicability criteria and implementation.

November 3, 1999: On behalf of EPA, DOJ filed civil lawsuits against seven investor-owned electric power utilities, charging that 17 of those companies’ power plants made major modifications without installing the equipment required under the PSD and NSR regulations. The actions were the result of an investigation by EPA regarding potential NSR violations, which showed that state agencies were receiving an extremely low number of NSR permit applications in recent years despite the tremendous economic growth and capital expenditures EPA had determined they were subject to NSR because the companies had made major modifications to their plants in order to extend their lives and avoid the cost of building new plants (which would have been subject to NSR standards and required stricter controls). Many of the modifications, which the companies claimed were merely routine maintenance, cost tens of millions of dollars and took years to complete. . EPA also issued an administrative order against the federally owned Tennessee Valley Authority for similar violations at seven plants. EPA explained in the TVA NOV why it did not consider the changes included in the routine maintenance exception:

Each of these changes was an expensive capital expenditure performed infrequently at the plant that constituted the replacement and/or redesign of a boiler component with a long useful life. In many instances, the replacement component was substantially redesigned in such a way that it resulted in increased capacity, regained lost capacity, and/or extended the life of the unit.” See *In the Matter of Tampa Electric Co.*, NOV: EPA-CAA-2000-04-0007, Nov. 3, 1999, 6.

January 13, 2000: Public meeting to discuss EPA’s thinking on alternative approach for compliance with NSR requirements (announced in Federal Register on Dec. 20, 1999).

February 28, 2000: Field hearing on CAA NSR Regulatory programs held in Cincinnati, Ohio before Senate Subcommittee on Clean Air, Wetlands, Private Property and Nuclear Safety of the Senate Committee on Environment and Public Works.

February 29, 2000: EPA announced settlement with Tampa Electric Company in NSR action filed Nov. 3, 1999. The settlement required Tampa Electric to pay a \$3.5 million civil penalty, as well as install permanent emissions-control equipment, and employ other pollution reduction measures.

May 4, 2000: Tennessee Valley Authority petitioned the 11th Circuit Court of Appeals to review EPA's charge that it violated NSR provisions. In a brief dated Sept. 1, TVA sought to set aside EPA's new source review enforcement action on the grounds that EPA failed to give the power companies fair notice of its "new" interpretation of the routine maintenance, repair, and replacement exemption to a modification under NSR rules. TVA argued that it had relied on comments in the 1992 WEPCO rulemaking to determine that maintenance activities undertaken throughout the utility industry were not subject to NSR or NSPS unless they were massive, one-of-a-kind projects as in WEPCO. See *Tennessee Valley Authority v. EPA*, No. 00-12310-E (11th Cir. brief submitted on September 1, 2000).

July 25, 2000: EPA settled with BP and Koch Petroleum Group regarding violation of NSR requirements.

August 30, 2000: Letter from EPA to Region V ratifying the interpretation of when a modification is a routine repair or replacement. Applies a 24-factor test. The test was later used by Region V in a letter to Detroit Edison dated May 23, 2000.

Nov. 3, 2000: National Association of Manufacturers, National Mining Association, Utility Air Regulatory Group, National Rural Electric Cooperative Association, American Public Power Association, and other electric utility companies filed petition with EPA for further notice and comment rulemaking on EPA's proposed rule on NSR, asking the EPA to withdraw EPA's interpretations of the modification rule. Petition of the Industry Petitioners for Further Notice and Comment Rulemaking on EPA's Proposed Rule on New Source Review, Docket No. A-90-37.

November-December 2000: Cinergy and Dominion Virginia Power, two electric utility companies sued for NSR violations, signed Agreements on Principle with EPA in their NSR enforcement cases.

January 19, 2001: Memorandum from Bob Perciasepe, EPA assistant administrator, to NSR stakeholders regarding status of the NSR Improvement Rulemaking. and listing the concepts developed during his term in office regarding NSR reform.

February 2001: DOJ, on behalf of EPA, filed brief in TVA case in the 11th Circuit in Atlanta. Interpretation of modifications argued.

February 27, 2001: Supreme Court held implementation costs may not be considered in setting primary and secondary national ambient air quality standards. Struck down EPA's interpretation of ozone nonattainment implementation policy and remanded to EPA. *Whitman v. American Trucking Associations, Inc.*, No. 99-1257.

March 21, 2001: EPA and the states of Louisiana and Delaware and the Northwest Air Pollution Authority announced settlements with three petroleum refiners with regard to NSR violations. Actions were filed after EPA investigations determined that petroleum refiners made major modifications to their refineries, increasing capacity and air emissions, without installing required BACT or LAER technologies. The companies were Motiva Enterprises, Equilon Enterprises, and Deer Park Refining Limited Partnership.

April 2001: Massachusetts released strict new clean air regulations requiring its six grandfathered power plants to reduce their emissions to the levels required of new plants. The plants must reduce their NO emissions by 2004, and SO₂ and CO₂ by 2006. Mercury emission reductions will be set in 2002.

April 23, 2001: U.S. District Court of Maryland dismissed old NSR violations claimed by EPA against Westvaco Corporation because they were barred by the statute of limitations. Under the federal general statute of limitations for civil enforcement actions, a claim first accrues on the date a violation first occurs. 28 U.S.C. §2462. Where the violation is continuing, however, a claim is not barred as long as it continues within the statute of limitations time period. The court ruled that the NSR claims were not a continuing violation, and dismissed these claims from EPA's complaint. *U.S. v. Westvaco Corp.* (D.Md April 23, 2001).

May 11, 2001: DOJ, on behalf of EPA, entered into a settlement agreement with Marathon Ashland Petroleum LLC in NSR enforcement case. Minnesota, Louisiana, and Wayne County, Michigan also joined in the settlement. Consent decree filed in U.S. District Court in Detroit. Marathon agreed to spend \$265 million to install the latest pollution control equipment and to significantly reduce its emissions from its refineries. It will also pay \$3.8 million in civil penalties, and will spend \$6.5 million on two environmental projects in the communities affected by its pollution.

May 17, 2001: President Bush's energy plan called for EPA and the Department of Energy to review the interpretation and implementation of NSR regulations. It directed Attorney General Ashcroft to review ongoing NSR legal actions to ensure they are consistent with the CAA and its regulations. Chapter Three of the energy plan directed EPA to propose three-pollutant legislation to Congress establishing mandatory reduction targets for emissions of So₂, NO and mercury, possibly allowing for an NSR off-ramp to those facilities.

June 22, 2001: EPA published NSR 90-Day Review Background Paper. Docket a-2001-19, Document II-A-01.

July 12, 2001: Justice Department, EPA and the State of Illinois announced settlement agreement with the Premcor Refining Group, Inc. (formerly Clark Refining), regarding Premcor's oil refinery in Hartford, Illinois. EPA claimed Premcor made major modifications at its plant without complying with NSR requirements. Premcor will pay \$2 million in civil

penalties (\$1.2 million to the United States; \$800,000 to Illinois). It will also install \$20 million in new pollution control equipment.

July 2001: EPA held four regional public hearings on the 90-day New Source Review process.

July 2001: Justice Department began formal review of whether the lawsuits filed against the electric utility companies for NSR violations are justified.

December 20, 2001: DOJ announced agreements with Conoco, Inc. and Navajo Refining and Montana Refining in NSR enforcement cases.

January 15, 2002: DOJ released report on NSR enforcement actions, concluding that the actions do not constitute an impermissible reinterpretation of the Clean Air Act and its regulations, and announcing that DOJ will continue to prosecute vigorously ongoing civil actions.

January 23, 2002: DOJ and state of New Jersey settled with PSEG Fossil LLC in enforcement actions against its New Jersey power plants. PSEG Fossil LLC agreed to spend \$337 million to install state-of-the-art pollution controls, pay civil penalties, and spend \$6 million on additional projects to offset past emissions.

January 24, 2002: DOJ and state of Wisconsin announced settlement with Murphy Oil after ten-day trial, and a court ruling that Murphy had violated NSR requirements. Murphy will pay \$5.5 million in civil penalties.

March 18, 2002: DOJ, state of Indiana, and city of Hammond entered into a settlement of claims against Ferro Corp., a chemical manufacturer, over NSR violations. Ferro agreed to pay \$3 million in civil penalties and participate in a brownfield project.

May 21, 2002: Court of Appeals for 11th Circuit opened *TVA v. EPA* hearings in Atlanta, Georgia.

June 13, 2002: EPA released *New Source Review: Report to the President* in response to the charge from the National Energy Policy Development Group to review NSR regulations. EPA also issued "Recommended Improvements to the New Source Review Program," with four recommendations for final rules, and three recommendations for proposed rules reforming the NSR program.

July 8, 2002: EPA filed Notice of Violation against Xcel Energy, a Colorado utility, for making modifications at two generating stations between 1994 and 2000, without complying with NSR requirements.

July 16, 2002: Hearing on NSR Policy, Regulations and Enforcement Activities before Senate Committee on Environment and Public Works and Committee on Judiciary.

December 31, 2002: EPA promulgated final rules on five changes to the program regarding NSR applicability, including 1) the method for determining baseline actual emissions; 2) actual-to-projected actual applicability test; 3) plantwide applicability limits; 4) clean unit applicability test; 5) pollution control and prevention projects. Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR): Final Rule and Proposed Rule, *67 Federal Register* 80186. On the same day, EPA also issued a proposed rule on the routine maintenance exclusion. *67 Federal Register* 80290.

APPENDIX B

Settlements of NSR Enforcement Cases

Company	Environmental Results <i>amount reduction per year</i>	Civil Penalties <i>in millions</i>	Control Costs <i>in millions</i>	Value of Work Required/ Supplemental Environmental Projects <i>in millions</i>
Power Plants (2000-2002)				
PSEG Fossil¹ <i>January 2002</i>	SO ₂ — 36,000 tons/yr NO _x — 18,000 tons/yr	\$1.4 M	\$337 M	\$6 M
Cinergy Corp² (Agreement in Principle) <i>December 2002</i>	SO ₂ — 400,000 tons/yr NO _x — 100,000 tons/yr	\$8.5 M	\$1,400 M	\$21.5 M
Tampa Electric³ <i>February 2002</i>	SO ₂ — at least 60,000 tons/yr NO _x — at least 40,000 ton/yr PM — 2,000 tons/yr	\$3.5 M	\$85 M	\$10 M
Virginia Power⁴ (Agreement in Principle) <i>November 2000</i>	SO ₂ — 181,000 tons/yr NO _x — 75,000 tons/yr	\$5.3M	<i>not found</i>	\$13.9 M
Wood Products (1993-2002)				
Boise Cascade⁵ <i>March 2002</i>	VOCs and PM — 2,166 tons/yr	\$4.35 M	\$15 M	\$2.9 M
Wilamette⁶ <i>July 2000</i>	VOCs and other pollutants — 27,000 tons/yr	\$11.2 M	\$74 M	\$8 M
Georgia-Pacific⁷ <i>July 1996</i>	VOCs — 10 million pounds/yr	\$6 M	\$25 M	\$4.25 M
Louisiana-Pacific⁸ <i>1993</i>	—	\$11 M	\$70 M	—
Refineries (2001 - 2002)				
Murphy Oil⁹ <i>2002</i>	<i>not found</i>	\$5.5 M	<i>not found</i>	<i>not found</i>
Koch¹⁰ <i>2001</i>	SO ₂ — 1,950 tons/yr NO _x — 4,190 tons/yr	\$1 M	\$100 M	—
BP¹¹ <i>2001</i>	SO ₂ — 19,600 tons/yr NO _x — 18,300 tons/yr	\$10 M	\$600 M	—
Motiva¹² <i>2001</i>	SO ₂ — 51,120 tons/yr NO _x — 19,570 tons/yr PM — 1,300 tons/yr	\$9.5M	\$400 M	\$5.5 M
Marathon Asland¹³ <i>2001</i>	SO ₂ — 14,000 tons/yr NO _x — 7,440 tons/yr PM — 800 tons/yr	\$3.8 M	\$300 M	\$6.6 M
CONOCO¹⁴ <i>2001</i>	SO ₂ — 4,000 tons/yr NO _x — 3,200 tons/yr PM — 400 tons/yr	\$1.5 M	\$95 - \$110 M	\$5.1 M
Navajo & Montana Mining¹⁵ <i>2001</i>	SO ₂ — 2,350 tons/yr NO _x — 250 tons/yr PM — 100 tons/yr	\$0.75 M	\$20 M	\$1.4 M
Premcor¹⁶ <i>2001</i>	SO ₂ — 4,700 tons/yr NO _x — 270 tons/yr PM — 630 tons/yr	\$2 M	\$20 M	<i>not found</i>

ENDNOTES for Appendix B

¹ U.S. Department of Justice, “United States and New Jersey Announce Clean Air Act Coal-Fired Power Plant Settlement With PSEG Fossil LLC” (Press Release: January 24, 2002). Available at http://www.usdoj.gov/opa/pr/2002/January/02_enrd_037.htm

² Office of Enforcement and Compliance Assurance, Presentation to Academy Panel (Washington D.C.: January 11, 2002). “EPA Agreement in Principle with Cinergy Corp. – Fact Sheet” (December 22, 2000); and see also <http://www.usdoj.gov/enrd/cinergy.htm>.

³ *Ibid.* “Fact Sheet for Settlement with Tampa Electric” (not dated).

⁴ *Ibid.* “Virginia Power Agreement In Principle” (not dated).

⁵ Department of Justice, “U.S. and Boise Cascade Reach Clean Air Act Settlement; Wood products Industry New Source Review Case Settled” (Press Release: March 13, 2002).

⁶ U.S. Department of Justice, “Willamette Industries, Inc. Settlement: Fact Sheet” (July 20, 2000). Available at <http://www.usdoj.gov/enrd/willamettefact.htm>

⁷ U.S. Department of Justice. “Georgia Pacific Agrees to Spend More Than \$35 million to Settle Alleged Clean Air Act Violations” (Press Release: July 18, 1996). Available at <http://www.usdoj.gov/opa/pr/1996/July96/344.enr.html>

⁸ *U.S. v. Louisiana-Pacific Corp.*, No. CV93-0869 (W.D. La May 24, 1993).

⁹ *U.S.A. v. Murphy Oil USA, Inc.* Case No. 00-C-409-C (January 15, 2002). Consent Decree available at <http://www.usdoj.gov/enrd/MurphyCD.pdf>

¹⁰ Office of Enforcement and Compliance Assurance, Presentation to Academy Panel (Washington D.C.: January 11, 2002). “Consent Decree Overview: Koch Petroleum” and “Concluded Global Settlements—2001.

¹¹ *Ibid.* Materials included “Consent Decree Overview: BP,” and “Concluded Global Settlements—2001.”

¹² *Ibid.* “Concluded Global Settlements—2001.”

¹³ *Ibid.* “Consent Decree Overview: Marathon Ashland.”

¹⁴ *Ibid.* “Conoco Inc. Civil Judicial Settlement—Fact Sheet” (December 20, 2001).

¹⁵ *Ibid.* “Navajo Refining Company, L.P. and Montana Refining Company Civil Judicial Settlement—Fact Sheet” (December 20, 2001).

¹⁶ U.S. Environmental Protection Agency, “U.S. Reaches Clean Air Settlement With Petroleum Refiner” (Press Release: July 16, 2001). Available at <http://www.epa.gov/Compliance/resources/cases/civil/caa/premcor.html>

APPENDIX C
Pending New Source Review Court Cases
Status as of March 3, 2003

Case	Court	Status	Power Plants Sued
<i>TVA v. EPA</i>	U.S. Court of Appeals, 11th Circuit	Oral arguments in May 2002. Mediation ordered in June. Mediation failed in August. Awaiting decision.	9
<i>U.S. v. Illinois Power Co. and Dynegy Midwest Generation Inc.</i>	U.S. District Court, Southern District of Illinois	Pre-trial May 19, 2003. Trial June 3, 2003. Awaiting preliminary motion decisions.	1
<i>U.S. v. Southern Indiana Gas & Electric Co. (SIGECO)</i>	U.S. District Court, Southern District of Indiana	Trial rescheduled for July 14, 2003. Awaiting preliminary motion decisions.	1
<i>U.S. v. Cinergy Corp.</i>	U.S. District Court, Southern District of Indiana	Pre-trial Sep. 17, 2004. Trial Oct. 4, 2004	4
<i>U.S., NY, NJ, CN, MA, VT, NH, RI, MD v. American Electric Power Service Corp.</i>	U.S. District Court, Southern District of Ohio	Trial Jan. 2005. Awaiting preliminary motion decisions and discovery.	11
<i>U.S., NY, NJ, CN v. Ohio Edison Co.</i>	U.S. District Court, Southern District of Ohio	Liability phase of trial opened Feb. 3, 2003. Trial concluded Feb. 25. Post-trial oral arguments, April 14.	1
<i>U.S. v. Georgia Power Co. and Savannah Electric & Power Co.</i>	U.S. District Court, Northern District of Georgia	On hold pending <i>TVA v. EPA</i> outcome.	3
<i>U.S. v. Alabama Power Co.</i>	U.S. District Court, Northern District of Alabama	On hold pending <i>TVA v. EPA</i> outcome	5
<i>U.S. v. Duke Energy Corporation</i>	U.S. District Court, Middle District of North Carolina	Trial Sep. 2003. Awaiting preliminary motion decisions.	8

Source: Darren Samuelsohn, "Ohio Edison's NSR Defense Closes; Trial Lineup Reshuffled in Other Clinton-era Cases," *Greenwire* (March 3, 2003).

APPENDIX D

Examples of State Multi-Pollutant Legislation

	Illinois (Public Act 92-0279)	Massachusetts (Air Pollution Control Regs., 310 CMR 7.29)	New Hampshire (HB284-FN and Clean Power Strategy January 2001)	North Carolina (SB1078)
SO₂	IEPA must submit to the Illinois House and Senate by September 30, 2004, findings for the reduction of SO ₂ from fossil fuel electric generating plants, with consideration of maximum annual emissions rate limits, or establishment of an emissions trading program.	Emissions rate for facilities that emit 500 tons or more of SO ₂ during 1997, 1998, or 1999: 6.0 lbs/mwh by October 1, 2004 (calculated over any consecutive 12 mo. period) 3.0 lbs./mwh by October 1, 2006 (calculated over any consecutive 12 mo. period)	Annual statewide emissions cap for fossil fuel electric generating plants: 7,289 tons by 2006 (3.0 lbs/mwh) 75% reduction from baseline emissions of 29,566 based on current allocation under Title IV.	Emissions cap for utilities that emitted more than 225,000 tons in 2000: 150,000 tons by 2009 80,000 tons by 2013 Emissions cap for utilities that emitted less than 225,000 tons in 2000: 100,000 tons by 2009 50,000 tons by 2013
NO_x	IEPA must submit findings for reductions of NO _x , according to the above dates, with consideration of maximum annual emissions rate limits, or establishment of an emissions trading program.	Emissions rate for facilities that emit 500 tons or more of NO _x during 1997, 1998, or 1999 : 1.5 lbs./mwh by October 1, 2004 (calculated over any consecutive 12 mo. period) 3.0 lbs./mwh by October 1, 2006 (calculated over any individual calendar month)	Annual statewide emissions cap: 3,644 tons by 2006 (1.5 lbs/mwh) 70% reduction from baseline emissions of 12,077 tons based on 1999 emissions.	Emissions cap for utilities that emitted more than 75,000 tons in 2000: 35,000 tons by 2007 31,000 tons by 2009 Emissions cap for utilities that emitted less than 75,000 tons in 2000: 25,000 tons by 2007

	Illinois (Public Act 92-0279)	Massachusetts (Air Pollution Control Regs., 310 CMR 7.29)	New Hampshire (HB284-FN and Clean Power Strategy January 2001)	North Carolina (SB1078)
Mercury	IEPA must submit findings about reductions of mercury, on the dates above, with consideration of the availability of control technology, industry practice requirements, or some combination of these approaches.	By December 1, 2002, DEM must prepare a report on the technological and economic feasibility of controlling and eliminating emissions of mercury. Proposal for emission standards must be submitted six months later. Proposed compliance date: October 1, 2006.	An annual cap applicable to total mercury emissions must be recommended by the DES no later than March 31, 2004.	General Assembly finds that the measures to reduce SO ₂ and NO _x emissions will result in significant reductions of mercury emissions. DENR must evaluate available mercury control technologies and estimate the benefits and costs of alternative strategies to reduce emissions of mercury, with interim findings due annually beginning September 1, 2003.
Incentives	See above	Compliance with CO ₂ emissions standards may be demonstrated by using offsite reductions or sequestration of offset emissions above the historical actual emissions.	Multi-pollutant strategy allows trading and banking of emissions reductions.	DENR must develop and adopt incentives to promote voluntary reductions of CO ₂ emissions including banking, trading, and credit for voluntary early reductions.

APPENDIX E

States with Enacted CO₂ Legislation

States with Enacted CO₂ Legislation

State	Year	Bill	Subject
California	2001	SB 527	Greenhouse emissions baseline (CO ₂ included)
Connecticut	2002	HB 6997	Goal is to reduce CO ₂ statewide
Illinois	2002	SB 372	Sequestration
Maine	2001	HP 2211	Sequestration
Nevada	2001	AB 197	CO ₂ has significant health and environmental impacts
Oklahoma	2001	HB 1192	Carbon Sequestration Assessment Cash Fund
Oregon	2001	HB 2200	CO ₂ storage
Wisconsin	1999	SB 287	Creation/Preservation of Carbon Reserves
Wyoming	2001	HB 47	Sequestration advisory committee

Source: National Caucus of Environmental Legislators, <http://www.ncel.net/co2states.html>

APPENDIX F

Panel and Staff Biographies

PANEL

***Donald Kettl** *Chair* – Professor of Public Affairs and Political Science, University of Wisconsin, Madison; Nonresident Senior Fellow, Brookings Institution; Executive Director, Project on Federalism and Homeland Security, Century Foundation

***Peter Harkness** - Editor and Publisher, *Governing Magazine*. Former positions with Congressional Quarterly, Inc. including: Reporter, *CQ Weekly Report*; Managing Editor, *CQ Weekly Report*, Executive Editor and Deputy Publisher (all Congressional Quarterly publications and services).

Lisa Heinzerling – Professor of Law, Georgetown University Law Center. Former Visiting Professor at Yale and Harvard Law Schools; Assistant Attorney General, Environmental Protection Division, Commonwealth of Massachusetts; Law Clerk, Justice William Brennan, U.S. Supreme Court; Law Clerk, Judge Richard Posner, U.S. Court of Appeals for the Seventh Circuit.

***DeWitt John** - Director of Environmental Studies, Bowdoin College. Former Director of the Center for the Economy and the Environment, National Academy of Public Administration; Director, State Policy Program, Aspen Institute; Policy Studies Director for the Economy, Trade, and Agriculture, National Governors Association; Director, Governor’s Policy Office, State of Colorado.

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