

# CLEAN AIR ACT

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### NAS Issues Interim Report on NSR Reforms

In January 2005, the Committee on Changes in New Source Review Programs for Stationary Sources of Air Pollutants established by the National Research Council of the National Academy of Sciences issued its interim report. The interim report provides a synthesis of background information on relevant health effects, air quality indicators, emissions, and industry activities that will provide the context for the Committee's final report. The Committee's mandate is to evaluate the energy efficiency, pollution prevention, and pollution control implications of the 2002 and 2003 NSR rule reforms as compared to the rules previously in effect. Although the interim report contains several conclusory statements about the benefits of the Clear Skies legislation, it does not set out any conclusions on the basic mandate that Congress gave it.

Set out below is a brief summary of the chapters in the report.

#### **Regulatory Overview**

This chapter reviews the regulatory context for the Committee's work. The chapter reviews the 2002 and 2003 NSR reforms (new "baseline actual emissions" definition, actual-to-projected-actual applicability test, and authorizations for plantwide applicability limitations, Clean Units and the pollution control project exclusion), the

statutory and regulatory history of the PSD and non-attainment NSR programs, the case law addressing whether an actual-to-actual or actual-to-potential emissions increase test should be applied, EPA's NSR enforcement initiative against electric utilities, EPA's NSR reform deliberations, and the Bush Administration NSR report in connection with the National Energy Policy Group. It also describes the differing perspectives of environmental groups and industry regarding the appropriate scope of the "modification" definition.

In general, the regulatory overview is a balanced summary of the regulatory context in which the Committee will carry out its review. It expressly recognizes the important role of other programs for achieving emissions reductions at existing sources. In discussing the relative perspectives of environmental groups and industry, the portrayal is slightly slanted toward the environmental group perspective, but not too significantly so. The Committee does not attempt to draw lines regarding when an actual-to-actual and an actual-to-potential test are properly applied. In discussing the regulations, however, the Committee does state that an actual-to-potential test is appropriate when a unit "has not begun normal operations." It does not address where the line between units that have begun operations and those that have not should be drawn. It does accurately summarize the *Puerto*

*Rican Cement* and *WEPCO* cases in which this issue was addressed.

In discussing the Clear Skies legislation, the Committee deviates significantly from its relatively balanced presentation of information. After presenting a balanced summary of the provisions of the legislation, the Committee purports to make a comparison of the potential benefits of the Clear Skies legislation and the prior NSR requirements. The basic conclusion is that the prior NSR requirements would result in greater emission reductions than will occur under the Clear Skies legislation. This conclusion is apparently based upon the unsupported premise that all utilities will be required to install controls under the NSR requirements. The same flaw is reflected in its discussion of the Clean Air Interstate Rule. In both instances, the fact that emission limits under NSR for those sources that trigger NSR would be tighter than likely would be required under Clear Skies or the Clean Air Interstate Rule is held out as a basis for the conclusion that NSR would result in greater emission controls. The discussion contains no recognition that only changes that result in a significant net emissions increase will trigger NSR. Implicitly, it seems that the Committee has assumed that all major replacement projects at electric utilities will trigger NSR.

### **Overview of Health Effects, Air Quality, and Emissions**

This chapter reviews in some depth available information on health effects, air quality and emissions. It sets out the National Ambient Air Quality Standards for criteria pollutants, reviews the health effects of each of these pollutants, and discusses the attainment status for areas of the country for each of the standards. It also

discusses emission sources and trends for the criteria pollutants and briefly reviews available information on the National Emissions Inventory. In addition, it indicates the percentage contributions of emissions by source category for PM 2.5, SO<sub>2</sub>, NO<sub>x</sub> and VOC.

This chapter also focuses more heavily on emissions from electric utilities than from other source categories. The concluding section reviews the contribution of emissions for SO<sub>2</sub> and NO<sub>x</sub> for electric utilities by their “vintage” (age of power plants). It also indicates the 2002 NO<sub>x</sub> and SO<sub>2</sub> emissions and shares of generation of coal-fired capacity, as well as the percentages of capacity subject to the utility NSPSs.

### **Emission Sources and Technology Options**

This chapter reviews which source categories account for the greatest modification permitting activity under NSR, whether modifications are an important part of all NSR permitting, the kinds of repairs and replacements most often done in key industries, and the typical technology options or considerations for these source categories. The chapter provides statistical information indicating the percentage of NSR modification permits issued to a broad range of source categories and provides this information on a pollutant-by-pollutant basis. Not surprisingly, the source category in which the largest share of NSR permits have been issued is electric utilities. The report indicates that the “key inferences” from available data suggests that the following industries have significant NSR permitting activity for modifications, whether measured in terms of the number of permits or the permitted emissions: electric utilities; stone, clay and products; paper and allied products;

chemicals and allied products; and food products. The report indicates that the “reported tons of permitted emissions for modifications” comprised 25-48% of the “reported total of permitted emissions for all NSR permits, including greenfield, new facilities at existing locations, and modifications, depending on the pollutant.”

The chapter also discusses the processes, repairs and replacements, and pollution prevention and control approaches for a number of industries. As with other chapters, the heaviest focus is on electric utilities. It includes detailed information on uncontrolled NO<sub>x</sub> emissions and cost effectiveness estimates for utility boiler NO<sub>x</sub> control. The report also discusses industrial boilers, petroleum refining, and pulp and paper industries.

The chapter also includes a section on technological change that can be influenced by the stringency and form of environmental regulations. It states that “understanding the relationship between regulation and technological change is important to accurately assess the cost and, in some cases, the benefits of environmental regulations into the future, including the changes to NSR rules being considered” in the report. It further states that “regulatory stringency and applicability have a direct relationship to the size of the potential market for a particular control technology and the incentive of a developer to improve that technology.” These sweeping conclusory statements notwithstanding, the Committee does acknowledge that there are “no empirical studies” of the effects of new source regulations on new technology development. The technology discussion also specifically reviews the technology for flue gas desulfurization and selective catalytic reduction. The Committee indicates that studies of the effect of NSPS and

the acid rain requirements on innovation in scrubber technology suggest that both forms of regulation helped spur technological advances.

The chapter also discusses the incentives for technological change potentially created by NSR modifications. It recognizes the dearth of evidence on this subject, but speculates that, if the new rules reduce applicability to existing sources, demand for retrofits could reduce innovation. However, in contrast to earlier parts of the report, the discussion recognizes that NSR applies only when major modifications actually take place, resulting in limited investment in activities in any event and, thus, the effect on innovation is “likely to be small.”

### **Analytic Methods for Assessing Effects of NSR Rule Changes**

This chapter discusses various methods that it indicates could be used to assess the effects of the NSR rule changes. It recognizes that its assessment will involve “comparing two different estimates -- an estimate of what would have happened had the rule changes not occurred and an estimate of what will happen with the rule changes.” It also recognizes that both estimates are “subject to substantial uncertainty.” However, it then goes on to indicate that it will be necessary to consider a range of possible scenarios for the economic and environmental assumptions that are applied in order to estimate and compare outcomes from the revised NSR rules with outcomes from the NSR rules before the revisions.

The bulk of this chapter is devoted to discussing “frameworks for assessing the impact of regulation.” The first segment of the “frameworks” discussion is devoted to reviewing

how to assess “individual firm behavior.” Within this segment are discussions of conceptual models, regulated markets, differentiated regulation (*i.e.*, regulation such as NSR only triggered by certain behavior), methods for applying conceptual models, effects of differential regulation over space and vintage of source, and process engineering models. The next segment of the “frameworks” discussion addresses how to assess “sector-wide response,” and includes discussions of “general framework for sectoral assessments,” “methods for sectoral assessments,” and “costs, productivity, growth and innovation.” Finally, the “frameworks” discussion includes discussion of how to estimate effects across multiple sectors of the economy and how to estimate environmental and public health impacts.

In sum, the chapter sets out methods for assessing effects of the NSR rule changes that are highly theoretical, are inevitably inadequate for estimating effects of the changes, and require data for making estimates that will not be available. The summary section of the chapter begins by stating that “whether the formal methods described in this chapter will have sufficient sensitivity to the NSR rule changes under investigation to be able to estimate their effects accurately remains to be determined.” It then goes on to indicate that “insights into the behavior of individual firms might help in estimating how individual facilities could respond to the incentives created by the rule changes.” It further indicates that “if recent historical evidence supports these behavioral models, this might then allow an assessment of at least the direction of the impacts of these changes on the outputs of concern (*e.g.*, whether emissions are likely to increase or decrease) and possibly an estimate of

the magnitude of the impact for typical facilities in different industrial sectors.”

The summary section, as in other parts of the report, focuses on the electricity-generating sector and indicates that some models of this sector “appear to be sufficiently detailed and sensitive to allow conclusions about the responses of individual facilities to be aggregated to the entire industrial sector.” It states that “long-term simulations with these models could allow a first assessment of how changes in NSR rules might affect technology adoption and emission trends.” It then states that there would need to be a “thorough sensitivity analysis” to see how much the conclusions change with different input assumptions and scenarios. The report indicates that such models are not available for other sectors and states that “any generalization from the estimates of facility-level responses to estimates of industrial sector responses will have to be undertaken more informally.”

With respect to assessing impacts on health and other outcomes of emissions changes, the report recognizes the extraordinary complexity of making any such estimates. It indicates that it is unlikely, “at least in most cases,” that the Committee will be able to make estimations with the required specificity for the estimates to have any validity. Where such estimations cannot be made, the report does recognize that the Committee “probably will be able to do little more than indicate the likely direction and possibly the rough magnitude of these impacts, if any.”

### **General Approach to Assessing Impacts of NSR Rule Changes**

This chapter discusses how the Committee will use the information it develops to actually develop an assessment of the impacts of the NSR changes. It recognizes that, because NSR is not the only Clean Air Act program that affects air emissions, the incremental effects of NSR changes on decisions at a particular facility or industry sector will also depend on developments concerning other relevant regulations. It also recognizes that it must use alternative scenarios in assessing the impacts of the changes. In particular, it points out that it must establish different scenarios to take into account the different interpretations of the prior NSR rules (*i.e.*, stringent versus less stringent interpretations).

This chapter discusses an analytical framework that is highly complex and would require data that will clearly not be available. Nonetheless, the Committee indicates its intent to “evaluate pathways by which the NSR changes could affect industry decisions and determine the plausibility of the pathways and the likely direction and magnitude of the emissions changes.” It states that, on the basis of its assessment, the Committee will focus on the NSR program changes, industries, and pathways that appear likely to contribute substantially to changes in emissions of specific pollutants, pollution prevention, pollution control, and energy efficiency. It indicates that it “will conduct this analysis on a pollutant-by-pollutant basis, evaluating factors such as geographic location, stack height, and proximity to population centers that might, for example, cause an industry sector with lower emissions to have more significant public health impacts. Evaluating dominant pollutants and source characteristics will help determine the most significant contributors to population exposure and human health impacts and also will help the Committee focus on data

sources that may support additional quantitative analyses.”

After setting out this complex, unrealistic mission, the Committee recognizes that “data are sparse, the number of possible scenarios is large, and uncertainties are numerous. However, the Committee concludes that this enumerative approach will help to uncover aspects of the NSR changes and the pathways that may influence the effects that the Committee has been asked to study.”

## **Conclusion**

The tasks and goals the Committee has outlined are breathtakingly complex and seemingly impossible to be met in a manner that should provide any meaningful information for Congress or anyone else to assess the implications of the NSR rule changes. Despite this reality, it should not be assumed that the report will not reach conclusions that opponents of the NSR rule changes will attempt to use in their advocacy efforts in the media and Congress. The industry most likely to be most significantly affected will be electric utilities. It is less clear that the report will find significant adverse effects on future air quality from the effects of the rule changes on other industries. Nonetheless, conclusions related to electric utilities may be used as a basis for reaching conclusions applicable to all industries.

The interim report indicates that the final report will be issued in late 2005. ”

EPA Issues ANPR on  
Identification of Potentially  
Inadequate Monitoring

On February 16, 2005, EPA published an advance notice of proposed rulemaking (ANPR) in which it seeks comments to assist the Agency in identifying monitoring in applicable requirements that is “potentially inadequate” under the “statutory monitoring requirements” under Title V. 70 Fed. Reg. 7905 (Feb. 16, 2005). The ANPR also asks for comment on ways to improve any such monitoring. This ANPR is a partial response to EPA's final action on January 22, 2004, identifying actions to be taken in connection with its decision not to revise the Title V monitoring requirements by authorizing “sufficiency reviews” of periodic monitoring contained in applicable requirements. 69 Fed. Reg. 3202.

In the ANPR, EPA identifies specific categories of “potential monitoring inadequacies” based on its preliminary review of certain NSPS and NESHAP rules, but makes clear that it is not seeking comments on post-1990 NSPS and NESHAP rules or on monitoring imposed under the compliance assurance monitoring requirements. The specific categories of potential monitoring inadequacies that EPA lists is as follows:

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No monitoring of any kind is required.

- Monitoring is specified for certain units, but no monitoring is required for other units. Limits on both PM mass and opacity are specified, but only monitoring of opacity is required (and not of PM mass).

- Monitoring is specified for certain control devices (e.g., monitoring of pressure drop), but no monitoring is specified for other control devices.
- Monitoring method is specified, but no monitoring frequency is specified, or monitoring is required only when directed by permitting authority.

- Infrequent periodic testing required, but no monitoring of the control device is specified between required tests.
- Monitoring of parameters may be insufficient to assure proper operation of control device.
- Monitoring of parameters required, but no parameter range is specified, nor is a procedure for setting the range specified.
- No monitoring or recordkeeping (to serve as monitoring) is specified for work practices (such as keeping covers closed at all times except during transfer of materials).

EPA also sets out a series of questions that it seeks to have addressed in comments. In brief, these questions seek information regarding the following:

- Specific identification of pre-1990 Federal rules where monitoring is believed inadequate, why that is believed to be true, and the types of monitoring that are believed to be adequate.
- Additional categories of potential monitoring inadequacies other than those listed above, citation to specific rules of concern and possible other ways to identify inadequate monitoring (e.g., by source category, industry, pollutant, etc.).
- Kinds of revisions or improvements that are suggested to be made to improve inadequate monitoring in underlying Federal rules, with several possible types

identified (establishing periodic testing, more frequent monitoring, collecting more representative data, switching from indicator monitoring to direct measurement of pollutants, or a combination of the above).

- Programmatic or other changes to make improvements to inadequate monitoring, such as rulemakings to revise standards, issuance of guidance or policy, or other approaches.
- Whether categories of potential monitoring inadequacies identified above also appear in SIP rules and, if so, identification of such SIP rules; also how to identify specific standards or rules in specific SIPs that contain potential monitoring inadequacies, with request to submit available information, such as costs, accuracy, feasibility, or other factors relevant to revised or improved monitoring.
- Whether opacity is an effective means of determining compliance with particulate matter limits and whether there are more effective ways of assuring compliance, with specific information on situations where other monitoring approaches would be more appropriate and what new technologies may be cost effective and reliable.

Comments are due in response to the ANPR by April 18, 2005. "

## EPA Issues PSD NO<sub>2</sub> Increment Proposal

On February 23, 2005, EPA published a proposal to reevaluate the PSD increments for NO<sub>2</sub> that were first established in 1988. This rulemaking is in response to a 1990 court decision directing EPA to reconsider and harmonize the statutory criteria for establishing PSD regulations for nitrogen oxides (NO<sub>x</sub>) contained in sections 166(c) and (d) of the Clean Air Act. *EDF v. EPA*, 898 F.2d 183 (D.C. Cir. 1990). The court ruled that EPA's NO<sub>2</sub> increments satisfy the requirement in section 166(d) that the NO<sub>x</sub> increments be "at least as effective" as the SO<sub>2</sub> and particulate increments in section 163. However, the court held that EPA's approach of using percentage ambient concentrations as a "proxy" for meeting section 166(c) criteria, which require, among other things, "a framework for stimulating improved control technology" and "protection of air quality values," had not been shown to be satisfied by the NAAQS percentage-based increments.

EPA's proposal contains a detailed analysis of: (1) the court's decision and EPA's legal authority under the Act; (2) the health and welfare effects of NO<sub>x</sub>; and (3) three options to address EPA's requirement to adopt pollutant-specific regulations to prevent significant deterioration of NO<sub>x</sub> and to preserve, protect, and enhance air quality in national parks and other areas of special interest.

### **Option 1**

Option 1 is to retain the existing increment system for NO<sub>x</sub>. The increments adopted in 1988 were established as a percentage of the NAAQS, and were based on the ambient

measure (NO<sub>2</sub>) and the same time period (annual) as the NAAQS. As noted above, the court held that an increment with these characteristics satisfies the minimum requirements of section 166(d) that the "specific measures [be] at least as effective as the increments established in" section 163. EPA refers to this approach as a "contingent safe harbor." Based on its "initial review" of the existing NO<sub>2</sub> increments, EPA also believes that the existing PSD increments and regulations satisfy the criteria in section 166(c).

### **Option 2**

Option 2 is to allow states to use a cap and trade program in lieu of an increment system for NO<sub>x</sub>. Under this option, states would be allowed to satisfy the PSD requirements now met through compliance with PSD increments by implementing the model cap and trade program for electrical generating units contained in EPA's Clean Air Interstate Rule. A state that implements this program to address NO<sub>x</sub> emissions would no longer be required to conduct certain source-specific analyses, including the current NO<sub>2</sub> increment analyses. However, as with the other two options, the requirement for new or modified major sources in attainment areas to comply with BACT would continue in effect.

Option 2 would require states to revise their SIPs to include a cap and trade program to reduce NO<sub>x</sub> emissions in accordance with statewide emissions budgets prescribed by EPA. However, neither the statewide budget or the regional cap would be a legally enforceable limit on total NO<sub>x</sub> emissions but instead would be used as an accounting technique to determine the amount of emissions reductions that would be

needed from source specific categories to satisfy the budget or cap. The requirements of the cap and trade program would be enforceable, and this would ensure that as long as emissions from sources outside the cap did not grow more than projected, the overall regionwide budget would be met.

EPA discusses how the cap could be established for the cap and trade program. The proposal indicates that a cap that maintains ambient concentrations of NO<sub>2</sub> within a certain percentage of the pre-cap NO<sub>2</sub> levels in most areas (assuming no increment violations currently exist) could be demonstrated to be at least as effective as increments. EPA also indicates that it might be possible for a state to demonstrate that an emissions cap less than or equal to current NO<sub>2</sub> levels (or baseline level) might be prima facie evidence that significant deterioration is being prevented. EPA requests comments on how the cap should be established and numerous other issues, and indicates that the adoption of a cap and trade program would necessitate further EPA rulemaking to flesh out the details of such a program.

### **Option 3**

Option 3 is to allow states flexibility to use a state planning approach in lieu of an increment system for NO<sub>x</sub>. Under this option, a state would be permitted to forego implementation of the NO<sub>2</sub> increments and associated requirements if the state can demonstrate that measures in its SIP, in conjunction with federal requirements, would prevent significant deterioration from emissions

of NO<sub>x</sub>. States would be required to demonstrate that the specific planning goals and requirements contained in their SIP would satisfy the requirements in section 166 and the goals and purposes of the PSD program set forth in section 160. To achieve the goals established, states could impose NO<sub>x</sub> emission limitations on whatever type of emission sources they choose, including new or existing sources.

Under option 3, EPA does not propose to require a state to demonstrate that its SIP includes a specific type of program EPA believes is sufficient. However, EPA indicates that it believes a goal to keep statewide emissions of NO<sub>x</sub> from all sources below 1990 levels would prevent significant deterioration and satisfy the requirements of section 166. Adoption of that goal would streamline the review of the state's demonstration, but a state would not be precluded from using another approach. EPA indicates that it will issue a supplemental proposal addressing myriad detailed issues if it proposes to further pursue this option. "

## **EPA Finalizes Clean Air Interstate Rule**

**O**n March 10, 2005, Acting EPA Administrator Stephen Johnson signed the Clean Air Interstate Rule ("CAIR"), imposing substantial reductions of SO<sub>2</sub> and NO<sub>x</sub> in 28 states and the District of Columbia. EPA finds that 23 of the 28 states, along with the District of Columbia, contribute significantly to levels of fine particulate in downwind states, and that 25 of the 28 states, plus the District of Columbia, contribute significantly to ground-level ozone

pollution in other downwind areas. EPA also issued a proposed rule to include Delaware and New Jersey under the fine particle provisions of CAIR. These two states are currently subject only to the CAIR's ozone requirements.

CAIR establishes emission budgets, or caps, on a state-by-state basis for NO<sub>x</sub> and SO<sub>2</sub>. States must achieve the required emissions reductions by either requiring power plants to participate in an EPA-administered interstate cap and trade system that caps emissions in two stages, or through measures of the state's choosing. The first phase of reductions starts in 2009 for NO<sub>x</sub> and 2010 for SO<sub>2</sub>. The second phase of reductions for both NO<sub>x</sub> and SO<sub>2</sub> starts in 2015. EPA predicts that, when fully implemented, CAIR will reduce SO<sub>2</sub> emissions by over 70%, and NO<sub>x</sub> emissions by over 60% from 2003 levels.

Under the cap-and-trade program, EPA is to allocate allowances for SO<sub>2</sub> and NO<sub>x</sub> to each state. States are then to distribute these to affected sources, which can trade them. Modeled on the acid rain program's cap and trade system, each source must hold sufficient allowances to cover its emissions for a given year. This means that individual plants may choose to meet their allowance requirements either by reducing emissions or buying excess allowances on the market.

According to EPA, CAIR will assist over 450 counties in achieving compliance with the Agency's fine particulate matter (PM<sub>2.5</sub>) and 8-hour ozone National Ambient Air Quality Standards ("NAAQSs"). These counties were designated by EPA in 2004 as nonattainment

areas for these pollutants. States with nonattainment areas must develop and submit to EPA revised State implementation plans to meet these NAAQSs within three years following the effective date of the nonattainment designations. The CAIR will become effective 60 days after publication in the Federal Register, and requires that States submit to EPA for approval enforceable plans for complying with CAIR requirements within 18 months of the date of rule finalization. "

## EPA Issues Clean Air Mercury Rule

On March 15, 2005, EPA Acting Assistant Administrator, Stephen Johnson, signed a rule to permanently cap and reduce mercury emissions from coal-fired power plants. The rule builds on EPA's Clean Air Interstate Rule (see separate article in this Washington Report) to significantly reduce emissions from coal-fired power plants. When fully implemented, these rules will reduce utility emissions of mercury from 48 tons a year to 15 tons, a reduction of almost 70%.

The Clean Air Mercury Rule establishes "standards of performance" limiting mercury emissions from new and existing coal-fired power plants and creates a market-based cap-and-trade program that will reduce nationwide utility emissions of mercury in two phases. The first phase cap is 38 tons and emissions will be reduced by taking advantage of "co-benefit" reductions, *i.e.*, mercury reductions achieved by reducing SO<sub>2</sub> and NO<sub>x</sub> emissions under the Clean Air Interstate Rule. The second phase of the mercury

rule, which will take effect in 2018, will reduce emissions to 15 tons upon full implementation through the establishment of a second cap.

The mercury rule establishes stringent new source performance standards that will be applicable to new coal-fired power plants. The rule provides that “new” means plants for which construction starts on or after January 30, 2004. In addition, these new plants will be subject to the nationwide caps.

EPA has assigned each state and two tribes an emissions “budget” for mercury, and each state must submit a state plan revision indicating how it will meet its budget for reducing mercury from coal-fired power plants. The two tribes also have been assigned a mercury emissions budget. The rule includes a model cap-and-trade program that states can adopt to achieve and maintain their mercury budgets. The states and the tribes are not required to adopt the EPA-administered cap-and-trade program, but EPA expects that most will do so.

Also on March 15, 2005, in a separate but related action, EPA revised and reversed its December 2000 finding that it was “appropriate and necessary” to regulate coal- and oil-fired power plants under section 112 of the Clean Air Act. EPA stated that it now believes that the December 2000 finding lacked foundation, and recent information demonstrates that it is not appropriate or necessary to regulate under section 112. ”