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Prevention of Significant Deterioration for Nitrogen Oxides; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 51

[AD–FRL–7981–1; E–Docket ID No. OAR–2004–0013 (Legacy Docket No. A–87–16)]

RIN–2060–AM33

Prevention of Significant Deterioration for Nitrogen Oxides

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: In today's final action, EPA is retaining the existing nitrogen dioxide (NO_2) increments as part of the Agency's regulations for the Prevention of Significant Deterioration (PSD) of air quality from emissions of nitrogen oxides (NO_X). These regulations are designed to preserve the air quality in national parks and other areas that are meeting the national ambient air quality standards (NAAQS) for NO_2 (hereafter called the NO_2 NAAQS). EPA reevaluated the original NO_2 increments in response to a 1990 court ruling that directed the Agency to consider and harmonize the statutory criteria for establishing PSD regulations for NO_X contained in sections 166(c) and 166(d) of the Clean Air Act (CAA or Act). EPA is also amending its PSD regulations to clarify that States otherwise meeting these requirements of the Act may obtain approval to employ alternative approaches to the existing increments for NO_2. Under a separate action, we will be publishing a Supplemental Notice of Proposed Rulemaking (SNPR) to show how implementation of the model cap and trade program under the 2005 Clean Air Interstate Rule (CAIR) can meet the requirements for a State to use this approach in lieu of the existing NO_2 increments in order to prevent significant deterioration of air quality from emissions of NO_X.

DATES: This final rule is effective on November 14, 2005.

ADDRESSES: EPA has established a docket for this action under Docket ID No. OAR–2004–0013. All documents in the docket are listed in the EDOCKET index at *http://www.epa.gov/edocket*. Although listed in the index, some information may not be publicly available, *i.e.*, CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically in EDOCKET or in hard copy at the Air Docket, EPA/DC, EPA West, Room B102, 1301 Constitution Ave., NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566–1744, and the telephone number for the Air Docket is (202) 566–1742.

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SUPPLEMENTARY INFORMATION:

I. General Information

A. Does This Action Apply to Me?

Entities affected by this rule include sources in all industry groups. The majority of sources potentially affected are expected to be in the following groups:

Industry group	SIC [a]	NAICS [b]
Electric Services	491	221111, 221112, 221113, 221119, 221121, 221122
Petroleum Refining	291	324110
Industrial Inorganic Chemicals	281	325181, 325120, 325131, 325182, 211112, 325998, 331311, 325188
Industrial Organic Chemicals	286	325110, 325132, 325192, 325188, 325193, 325120, 325199
Miscellaneous Chemical Products	289	325520, 325920, 325910, 325182, 325510
Natural Gas Liquids	132	211112
Natural Gas Transport	492	486210, 221210
Pulp and Paper Mills	261	322110, 322121, 322122, 322130
Paper Mills	262	322121, 322122
Automobile Manufacturing	371	336111, 336112, 336211, 336992, 336322, 336312, 336330, 336340, 336350, 336399, 336212, 336213
Pharmaceuticals	283	325411, 325412, 325413, 325414

[a] Standard Industrial Classification.
[b] North American Industry Classification System.

Entities affected by the rule also include States, local permitting authorities, and Indian tribes whose lands contain new and modified major stationary sources.

B. Where Can I Obtain Additional Information?

In addition to being available in the docket, an electronic copy of today's final rule is also available on the World Wide Web. Following signature by the EPA Administrator, a copy of today's final rule will be posted on the EPA's New Source Review (NSR) Web site, under Regulations & Standards, at *http://www.epa.gov/nsr/index.html*.

C. How is This Preamble Organized?

The information presented in this preamble is organized as follows:

II. Background

A. PSD Program

Part C of title I of the Act contains the requirements for a component of the major new source review (NSR) program known as the Prevention of Significant Deterioration (PSD) program. This program sets forth procedures for the preconstruction review and permitting of new and modified major stationary sources of air pollution locating in areas meeting the NAAQS, *i.e.*, ''attainment'' areas, or in areas for which there is insufficient information to classify an area as either attainment or nonattainment, *i.e.*, ''unclassifiable'' areas.

The applicability of the PSD program to a particular source must be determined in advance of construction and is pollutant-specific. Once a source is determined to be subject to PSD, it must undertake a series of analyses to demonstrate that it will use the best available control technology (BACT) and will not cause or contribute to a violation of any NAAQS or incremental ambient pollutant concentration increase. In cases where the source's emissions may adversely affect an area classified as a Class I area, additional review is conducted to protect the increments and special attributes of such an area defined as ''air quality related values'' (AQRV).

When the permitting authority reaches a preliminary decision to authorize construction of each proposed major new source or major modification, it must provide notice of the preliminary decision and an opportunity for comment by the general public, industry, and other persons that may be affected by the major source or major modification. After considering and responding to the comments, the permitting authority may issue a final determination on the construction permit in accordance with the PSD regulations.

B. Existing PSD Increment System for NO_X

On October 17, 1988, EPA promulgated pollutant-specific PSD regulations for NO_X under section 166 of the CAA. 53 FR 40656. As part of these regulations, the EPA decided to establish NO_2 increments following the pattern enacted by Congress for the particulate matter (PM) and sulfur dioxide (SO_2) increments. These increments establish maximum increases in ambient air concentrations of NO_2 (expressed in micrograms per cubic meter ($\mu g/m^3$)) allowed in a PSD area over a baseline concentration. Emissions increases from both stationary and mobile sources are considered in the consumption of the NO_2 increments which are implemented through the PSD permitting provisions in 40 CFR parts 51 and 52.

The NO_2 increment system includes the three-tiered area classification system originally established by Congress in section 163 for the statutory increments for SO_2 and PM. Congress designated Class I areas (including certain national parks and wilderness areas) as areas of special national concern, where the need to prevent air quality deterioration is the greatest. Consequently, the allowable level of incremental change in air quality is smallest, *i.e.*, most stringent, in Class I areas. Congress initially established as Class II all areas not specifically designated in the Act as Class I areas. The increments of Class II areas are less stringent than those of the Class I areas and allow for a moderate degree of emissions growth. For future redesignation purposes, Congress defined as Class III any existing Class II area for which a State may desire to promote higher levels of industrial development (and emissions growth). Thus, Class III areas are allowed to have the greatest amount of pollutant increase while still achieving the NAAQS. There have been no Class III redesignations to date.

EPA based the levels of the original NO_2 increments for the three area classifications on the percentage-of-NAAQS approach that Congress used to define the increments in the Act for SO_2 and PM. Congress used different percentages of the NAAQS to calculate the Class I increments for PM and SO_2. For the NO_2 increments, we chose the percentage that Congress used for SO_2. This decision yielded a lower numerical value for the Class I NO_2 increment than would have resulted by using the PM percentages.

The existing Class I NO_2 increment is 2.5 $\mu g/m^3$ (annual average), a level of 2.5 percent of the NO_2 NAAQS. It is based on the Class I SO_2 increment, which is set at the same percentage (2.5 percent) of the SO_2 annual NAAQS. The Class II NO_2 increment is 25 $\mu g/m^3$ − 25 percent of the NO_2 NAAQS. The Class III NO_2 increment is 50 $\mu g/m^3$ − 50 percent of the NO_2 NAAQS.

C. SIP Requirements for Implementing PSD Program

Air quality planning requirements for new and modified stationary sources of air pollution are an integral part of the PSD program. States must develop, adopt, and submit to EPA for approval a State Implementation Plan (SIP) that contains emission limitations and other

control measures to attain and maintain the NAAQS and to meet other requirements of section 110(a) of the Act. Each SIP must contain a preconstruction review program for the construction and modification of any stationary source of air pollution to assure that the NAAQS are achieved and maintained. Further, each SIP must: protect areas of clean air; not interfere with any other State's NAAQS maintenance; protect AQRVs, including visibility, in national parks and other natural areas of special concern; assure that appropriate emissions controls are applied; maximize opportunities for economic development consistent with the preservation of clean air resources; and ensure that any decision to increase air pollution is made only after full public consideration of all the consequences of such a decision.

D. Court Challenge to Increments for NO_X

EPA's original NO_2 increments were challenged in 1988 by the Environmental Defense Fund (now Environmental Defense, or ''ED'') when ED filed suit in the U.S. Court of Appeals for the District of Columbia Circuit against the Administrator (*Environmental Defense Fund, Inc.* v. *Reilly*, No. 88–1882). ED successfully argued that EPA failed to sufficiently consider certain provisions in section 166 of the CAA. The court remanded the case to EPA ''to develop an interpretation of section 166 that considers both subsections (c) and (d), and if necessary to take new evidence and modify the regulations.'' *Environmental Defense Fund* v. *EPA*, 898 F.2d 183, 190 (D.C. Cir. 1990) (''*EDF* v. *EPA*''). EPA initiated this action in response to the court decision. We discuss the opinion of the court further below.

III. Overview of Today's Final Action

To ensure protection of the air quality in national parks and other areas that meet the NAAQS for NO_2, EPA is taking final action today on its reevaluation of the Agency's pollutant-specific PSD regulations for NO_X, which include the existing NO_2 increments. We have decided to retain the existing NO_2 increments while also granting States the option to seek approval of alternative approaches that protect parks and prevent significant deterioration of air quality from emissions of NO_X.

A. What We Proposed

In accordance with the directions of a 1990 court ruling, EPA conducted a review of the existing NO_2 increments that are part of the Agency's pollutant-specific PSD regulations for NO_X. We considered and harmonized the statutory criteria, contained in sections 166(c) and 166(d) of the Act, that govern the content of these PSD regulations for NO_X. EPA proposed to apply the statutory criteria using the ''contingent safe harbor'' approach that was suggested by the court as an appropriate way to ensure that EPA's PSD regulations for NO_X will prevent significant deterioration of air quality in parks and other areas that are designated to be in attainment with the NAAQS or are unclassifiable. Applying this legal interpretation, we proposed three options to satisfy the statutory requirements. See 70 FR 8880 (Feb. 23, 2005).

In the first option (option 1) of our February 2005 proposal, EPA proposed to retain the existing regulatory framework and the original, existing increments for NO_2 that the Agency first promulgated in 1988 to protect the air quality in national parks and other areas that meet the NAAQS for NO_2. These increments were established as a percentage of the NAAQS, and were based on the same ambient measure (NO_2) and averaging period (annual) as the NAAQS. We proposed to find that an increment with these characteristics satisfied the minimum requirements of section 166(d) of the Act for preserving the air quality in parks and other attainment and unclassifiable areas. In addition, to address the requirements of section 166(c), we reviewed the existing regulatory framework of the Agency's PSD regulations for NO_X and the scientific and technical information pertaining to the health, welfare, and ecological effects of NO_X. In light of this review, EPA proposed to find that the statutory requirements were met by retaining annual NO_2 increments that are based on the percentages of the NAAQS that Congress employed to set the increments for SO_2. The available research on health and welfare effects indicated that the existing NO_2 increments, in conjunction with the case-by-case permit reviews for additional impacts and impairment of AQRVs, fulfilled the criteria in section 166(c).

In the second option (option 2), we proposed to allow States to prevent significant deterioration of air quality due to emissions of NO_X by adopting an EPA-administered market-based interstate cap and trade program, such as the model cap and trade program for EGUs contained in our CAIR. Under this option, a State that implemented this program to address NO_X emissions would no longer be required to conduct certain source-specific analyses, including the current NO_2 increment analysis. This option would require States to submit revised SIPs that include a cap and trade program to reduce NO_X emissions in accordance with statewide emissions budgets prescribed by EPA. Neither the statewide budget nor the regional cap would be a legally enforceable limit on total NO_X emissions but would be used as an accounting technique to determine the amount of emissions reductions that would be needed from specific source 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 of the cap did not grow more than projected, the overall regionwide budget would be met.

As a third option (option 3), we proposed to allow States to adopt their own planning strategies to meet the requirements of section 166 of the CAA. We proposed to allow a State to forego implementation of the NO_2 increments if the State could demonstrate that measures in its SIP, in conjunction with Federal requirements, would prevent significant deterioration of air quality from emissions of NO_X. Under this option, in lieu of implementing the increment system for NO_X, a State would have to demonstrate that specific planning goals and requirements contained in its SIP would satisfy the requirements in section 166 of the Act and the goals and purposes of the PSD program set forth in section 160. We proposed to require that States establish a clear planning goal that satisfied the requirements of sections 166(c) and 166(d) of the Act. Under this option, EPA did not propose to require a State to demonstrate that its SIP included a specific type of program. However, we indicated that we believed a goal to keep statewide emissions of NO_X from all sources below 1990 levels would prevent significant deterioration of air quality and satisfy the requirements of section 166 of the Act.

B. Final Action and Differences From Proposal

In this final action, we are adopting option 1 of the February 2005 proposal and retaining the existing NO_2 increments along with other parts of the existing framework of pollutant-specific PSD regulations for NO_X. However, we are also amending the text of one of our PSD regulations in order to make clear that States may seek EPA approval of SIPs that utilize an alternative approach to the NO_2 increments if the State can demonstrate that an alternative program satisfies the requirements of sections

166(c) and 166(d) of the CAA and prevents significant deterioration from emissions of NO_X. States have always had the option to submit alternative approaches in their SIPs that can be shown to be more effective than the minimum program elements established by EPA, but this regulatory change is intended to clarify that a system other than increments may be utilized by a State to prevent significant deterioration from emissions of NO_X where the requirements of the CAA are otherwise met.

In options 2 and 3, we proposed to address the requirements of section 166 of the CAA for NO_X through the review and approval of State programs that employed alternative approaches to fulfill the requirements of sections 166(c) and 166(d) of the Act. We are codifying this basic principle in our regulations today without defining any specific type of alternative program that we believe would meet these requirements. We are simply making clear in our regulations that States have the option to continue implementing the NO_2 increment program or to design an alternative approach as part of the SIPs and submit this program to EPA for approval. Rather than promulgating a specific alternative program of the type we proposed in option 2 and option 3, we are allowing States the flexibility to submit any type of alternative for consideration on a case-by-case basis to determine if the alternative meets the requirements of sections 166(c) and 166(d) of the CAA as we interpret these provisions in this final action. We are not establishing any additional regulatory criteria (such as planning goals or emissions inventory requirements) that would govern the review of such a program other than what is already contained within the CAA. Thus, we make no final finding at this time that any particular type of program other than the existing increment framework meets the requirements of sections 166(c) and 166(d) of the CAA. Instead, we plan to make such determinations on a case-by-case basis whenever a State submits an alternative approach for EPA to approve as part of a SIP.

Although we are not adopting a specific cap and trade (option 2) or emissions inventory-based planning program (option 3) at this time, we continue to see promise in using a cap and trade approach modeled on the CAIR to meet the goals of the PSD program for NO_X. As a result, we intend to publish a supplemental notice of proposed rulemaking that builds on option 2 and provides more details on how a State that achieves the NO_X emissions reductions required under CAIR can fulfill the objectives of the PSD program, satisfy the statutory requirements of section 166 of the Act, and obviate the need to implement the NO_2 increments program.

IV. Legal Basis for Final Action

A. Clean Air Act Provisions and Court Opinion

1. Applicable Statutory Provisions

EPA is taking this action in accordance with the requirements of section 166 of the CAA for NO_X. In section 166(a) of the Act, Congress directed EPA to conduct a study and promulgate regulations to prevent significant deterioration of air quality which would result from emission of hydrocarbons, carbon monoxide, photochemical oxidants, and NO_X.

Congress further specified that such regulations meet the following requirements set forth in sections 166(c) and 166(d):

> (c) Such regulations shall provide specific numerical measures against which permit applications may be evaluated, a framework for stimulating improved control technology, protection of air quality values, and fulfill the goals and purposes set forth in section 101 and section 160.
>
> (d) The regulations * * * shall provide specific measures at least as effective as the increments established in section 163 [for SO_2 and PM] to fulfill such goals and purposes, and may contain air quality increments, emission density requirements, or other measures.

The goals and purposes of the PSD program set forth in section 160 are as follows:

> (1) to protect public health and welfare from any actual or potential adverse effect which in the Administrator's judgment may reasonably be anticipate[d] to occur from air pollution or from exposures to pollutants in other media, which pollutants originate as emissions to the ambient air, notwithstanding attainment and maintenance of all national ambient air quality standards;
>
> (2) to preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value;
>
> (3) to insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources;
>
> (4) to assure that emissions from any source in any State will not interfere with any portion of the applicable implementation plan to prevent significant deterioration of air quality for any other State; and
>
> (5) to assure that any decision to permit increased air pollution in any area to which this section applies is 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.

In addition, the goals and purposes of the CAA described in section 101 of the Act are the following:

> (b) * * * (1) 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) to initiate and accelerate a national research and development program to achieve the prevention and control of air pollution;
>
> (3) to provide technical and financial assistance to State and local governments in connection with the development and execution of their air pollution prevention and control programs; and
>
> (4) to encourage and assist the development and operation of regional air pollution prevention and control programs [; and]
>
> (c) * * * to encourage or otherwise promote reasonable Federal, State, and local governmental actions, consistent with the provisions of this Act, for pollution prevention.

2. Opinion of the Court in *EDF* v. *EPA*

In its 1990 opinion on the challenge to EPA's 1988 regulations for NO_X, the court held that EPA had satisfied its obligation under section 166(d) but had not sufficiently considered whether different increments should be established under the criteria in section 166(c).

Environmental Defense Fund v. *EPA*, 898 F.2d 183 (D.C. Cir. 1990) (*''EDF* v. *EPA''*). More specifically, the court held that EPA's percentage-of-NAAQS approach for determining the increments satisfied the duty under section 166(d) to promulgate regulations for NO_X that were ''at least as effective'' as the increments in section 163. *Id.* at 188. As to subsection (c), however, the court held that EPA's approach of using the percentage ambient concentrations as a ''proxy'' for meeting the subsection (c) criteria overlooked the language of subsection (c) and turned subsection (c) into an option despite its mandatory wording. Thus, the court remanded the case to EPA ''to develop an interpretation of section 166 that considers both subsections (c) and (d), and if necessary to take new evidence and modify the regulations.'' *Id.* at 190.

The court identified three steps that EPA took to develop PSD regulations for NO_X under section 166. The first two steps reflected EPA's decisions to implement the PSD program for NO_X by adopting regulations for NO_X that employed increments with an area classification system. These first two steps were not controverted in *EDF* v. *EPA*. See 898 F.2d at 184–85. The dispute in the EDF case involved only

the third step, which was EPA's action to establish several characteristics of the increments by reference to the NAAQS. The characteristics that EPA derived from the NAAQS were (1) the level of the increments using the percent-of-NAAQS approach; (2) the time period (annual average) for the increments; and (3) the pollutant (NO_2) for which the increments were established. Since these three characteristics of the increments were the only issues controverted in the *EDF* v. *EPA* case, EPA interprets the court's remand to direct the Agency only to reconsider these three questions. However, in the proposal, we also believed it would be beneficial to consider alternative approaches to an increment system and voluntarily reconsidered the first two steps in the process of developing pollutant-specific PSD regulations for NO_X.

In *EDF* v. *EPA*, the court held that, in light of the criteria in section 166(c), EPA could not use the NAAQS as the sole basis for deriving increments. However, the court held that using the NAAQS as the basis for deriving increments was permissible in determining whether the ''at least as effective'' standard under subsection (d) was met. But, with respect to subsection (c), the court stated: ''We find nothing in the language or legislative history suggesting that this duty [consideration of the goals and purposes of the statute] could be satisfied simply by referencing the NAAQS.'' *Id.* at 190. The court noted the differences between the health and welfare criteria on which the NAAQS are based (sections 108 and 109) and the ''goals and purposes'' of the PSD program set forth in section 160, highlighting the special value the PSD program places on protection of national parks. At the same time, the court recognized that ''[n]evertheless, the ambient standards are the basic measure of air quality under the [Clean Air Act], and the controlling standards by no means exclude any value that is the subject of focus under the PSD provisions.'' *Id.* at 176 (internal citations and quotations omitted). In other words, the court observed that NAAQS remain relevant to the inquiry under section 166 because they are a basic measure of air quality and may indirectly reflect some consideration, among others, of the same values that are the focus of the PSD program. However, the court indicated that we could not rely solely upon the NAAQS to comply with section 166 because this provision directs us to focus on the specific goals and purposes of PSD which are not necessarily the factors that determine the NAAQS under section 109.

Thus, the court directed EPA to reconsider the characteristics of the existing increments in light of the criteria in both sections 166(c) and 166(d). The court indicated that one permissible interpretation for harmonizing subsections (c) and (d) would be to construe subsection (d) as a ''contingent safe harbor'' or presumptive baseline. Thus, increments derived from the NAAQS could be authorized if the Agency were to undertake additional analysis and make a reasoned determination that the criteria under subsection (c) do not call for different increments than the ''safe harbor'' that meets the criteria in subsection (d) of the statute.

B. EPA's Interpretation of Section 166 of the Act

In the February 2005 notice of proposed rulemaking (February 2005 proposal), we responded to the court's opinion by describing in detail how the EPA proposed to interpret and apply the relevant provisions of the CAA in the course of reevaluating the existing PSD regulations for NO_X on remand. 70 FR at 8885–88. Our interpretation is grounded on five central elements. First, we read section 166 of the Act to direct EPA to conduct a holistic analysis that considers how a complete system of regulations will collectively satisfy the applicable criteria, rather than evaluating one individual part of a regulatory scheme in isolation. Second, we adopted the ''contingent safe harbor'' approach suggested by the court which calls for EPA to first establish the minimum level of effectiveness necessary to satisfy section 166(d) and then to conduct further analysis to determine if additional measures are necessary to fulfill the requirements of section 166(c). Third, we interpreted section 166(c) of the Act to identify eight statutory factors that EPA must apply when promulgating pollutant-specific regulations to prevent significant deterioration of air quality. Fourth, we interpreted the requirements to simultaneously satisfy each of these factors to establish a balancing test in cases where certain objectives may be at odds with each other. Fifth, we recognized that the requirements of section 166 may be satisfied by adopting other measures besides an increment and that EPA may allow States to demonstrate that alternatives to increment contained in a SIP meet the requirements of sections 166(c) and 166(d).

We maintain this interpretation in this final action and summarize the main points below. Further discussion of many of these points can be found in the February 2005 proposal. 70 FR at 8885. In addition to reiterating the main points below, the following discussion also clarifies our interpretation in light of several comments that we received.

1. Regulations As a Whole Should Fulfill Statutory Requirements

Commenters did not question our holistic approach, which is grounded on the structure of section 166 of the Act. Section 166(a) directs EPA to develop pollutant-specific regulations to prevent the significant deterioration of air quality. Sections 166(c) and 166(d) provide detail on the contents of those regulations. In order to develop pollutant-specific regulations under subsection (a), EPA must establish an overall regulatory framework for those regulations and fill in specific details around that framework. Thus, EPA interprets section 166 to require that the entire system of PSD regulations for a particular pollutant must, as a whole, satisfy the criteria in sections 166(c) and 166(d).

As a result, when we reevaluated the existing PSD regulations for NO_X, we did not look at increments in isolation, but also considered how these increments work in conjunction with other measures to satisfy the statutory criteria. The other measures that we considered with the increments are the area classification system, AQRV review in Class I areas, additional impacts analysis, and BACT requirements. This approach is consistent with section 166(d), which says that pollutant-specific PSD regulations ''may contain'' increments or ''other measures.''

In option 1 of the proposal, we proposed to retain the increment system and focused our reevaluation on the specific characteristics of the increments (level, time period, and pollutant) in our existing PSD regulations for NO_X. This was because the dispute in *EDF* v. *EPA* involved only EPA's decisions to define the characteristics of the increments for NO_X in relation to the NAAQS. Since the increment and area classification system in EPA's PSD regulations for NO_X was not controverted, we interpreted the court's opinion not to require that the Agency reconsider this basic framework for its PSD regulations for NO_X. Thus, in this action to finalize option 1 of the proposal, we continue to focus on the level, time period, and pollutant employed to establish increments for NO_X. However, under our holistic approach, we considered these characteristics of the increment in conjunction with the other measures

contained in our PSD regulations for NO_X that were not challenged in *EDF* v. *EPA*.

2. Contingent Safe Harbor Approach

Our proposal to harmonize the criteria set forth in sections 166(c) and 166(d) by employing the ''contingent safe harbor'' approach was also not opposed by any commenters. Several commenters took issue with our ultimate decision not to establish increments more stringent than the safe harbor, but no one questioned the analytical approach that we used to harmonize sections 166(c) and 166(d) of the Act.

We continue to believe this is an appropriate reading of the statute. Subsection (c) of section 166 describes the kinds of measures to be contained in the regulations to prevent significant deterioration of air quality called for in section 166(a) and specifies that these regulations are to ''fulfill the goals and purposes'' set forth in sections 160 and 101 of the Act. Then, under subsection (d), to ''fulfill such goals and purposes,'' EPA must promulgate ''specific measures at least as effective as the increments established in section 7473 of this title [section 163 of the Act].'' 42 U.S.C. 7476. Thus, subsection (d) can be construed to require that EPA identify a minimum level of effectiveness, or safe harbor, for the body of pollutant-specific PSD regulations adopted under section 166. Then, subsection (c) may be read to require that EPA conduct further review to determine whether, based on the criteria in subsection (c), EPA's pollutant-specific PSD regulations under section 166 should contain measures that deviate from the minimum ''safe harbor'' identified under subsection (d). As in 1988, we construe subsection (d) to require that the measures be ''at least as stringent'' as the statutory increments set forth in section 163.

When we employ an increment and area classification system in our section 166 PSD regulations, we interpret this language to require that EPA, at minimum, establish increments that are consistent with the statutory increments established by Congress in section 163 of the Act. Thus, we identified the ''safe harbor'' increments for NO_X for each area classification (Class I, II, or III) to be increments established in relation to the NO_2 NAAQS that were set (1) at an equivalent percentage of the NAAQS as the statutory increments; (2) for the same pollutants as the NAAQS; and (3) for the same time period as the NAAQS. We then conducted further review to determine whether these ''safe harbor'' increments, in conjunction with other measures adopted under the PSD program and section 166, sufficiently fulfilled the criteria in subsection (c).

After weighing and balancing the criteria set forth in subsection (c) (and the incorporated goals and purposes of the CAA in section 101 and the PSD program in section 160), we have determined that the ''safe harbor'' increments and associated measures satisfy the criteria in subsection (c) for NO_X. Thus, we are not adopting different increments, additional increments, or additional measures to satisfy the section 166(c) criteria. However, under the contingent safe harbor approach, if we had determined that the ''safe harbor'' increments and other measures did not satisfy the criteria applicable under section 166(c), we would have promulgated additional increments or other measures as part of our pollutant-specific PSD regulations for NO_X under section 166.

3. The Statutory Factors Applicable Under Section 166(c)

We proposed to interpret section 166(c) of the Act to establish eight factors to be considered in the development of PSD regulations for the pollutants covered by this provision. These factors are three of the four criteria listed in section 166(c) and the five goals and purposes identified in section 160 of the Act. The three stand-alone criteria in section 166(c) indicate that PSD regulations for specific pollutants should provide (1) specific numerical measures for evaluating permit applications; (2) a framework for stimulating improved control technology; and (3) protection of air quality values. 42 U.S.C. 7476(c). The five goals and purposes in section 160 are incorporated into the analysis by virtue of the fourth criterion in section 166(c), which directs that EPA's pollutant-specific PSD regulations ''fulfill the goals and purposes'' set forth in sections 160 and 101 of the Act. This fourth criterion in section 166(c) cannot be understood without reference to other parts of the Act. Thus, we construed the term ''fulfill the goals and purposes,'' as used in section 166(c), to mean that EPA should apply the goals and purposes listed in section 160 as factors applicable to pollutant-specific PSD regulations established under section 166.

A few commenters disagreed with our choice of words in an introductory paragraph when we collectively described these eight parts of the Act as ''factors to be considered.'' However, no one disagreed that these eight objectives should be the focus of our analysis. For instance, commenters did not question our decision to emphasize the five goals and purposes in section 160, while looking to the more general goals in section 101 of the Act to provide guidance on the meaning of the more specific goals and purposes of the PSD program in section 160.[1]

In this rulemaking action, we use the term ''factors'' as shorthand to describe the group of eight statutory objectives (three criteria and five goals and purposes) that we believe Congress directed us to achieve in promulgating pollutant-specific PSD regulations under section 166 of the Act. We do not intend for our use of ''factors'' to suggest that EPA does not believe it must satisfy all four criteria in section 166(c), one of which requires that EPA fulfill the five goals and purposes in section 160. The Agency has used the term ''factors'' in this action to avoid confusion when referring to the combination of criteria in section 166(c) and goals and purposes in section 160 that the court directed us to consider further on remand. Regardless of the semantics, our objective is to establish regulations that satisfy each of these factors.

4. Balancing the Factors Applicable Under Section 166(c)

A few commenters questioned our interpretation of the Act to establish a balancing test among many of the eight factors applicable under section 166(c) of the Act. In the proposal, we described how we believed the Act directed us to balance the goal to promote economic growth with the factors that direct us to protect: (1) AQRVs; (2) the public health and welfare from adverse effects, and (3) the air quality in parks and special areas. We are not persuaded that this is an impermissible reading of the Act. Section 166 of the CAA directs EPA to promulgate pollutant-specific PSD regulations that simultaneously satisfy each of the eight factors described above. While these objectives are

[1] The Agency's view is that PSD measures that satisfy the specific goals and purposes of section 160 also satisfy the more general purposes and goals identified in section 101 of the Act. The overall goals and purposes of the CAA listed in sections 101(b) and 101(c) are general goals regarding protecting and enhancing the nation's air resources and controlling and preventing pollution. Because these broad goals are given more specific meaning in section 160, EPA does not believe it is necessary to consider them in detail when evaluating whether PSD regulations satisfy the criteria in section 166(c). In addition, the court's inquiry in *EDF* v. *EPA* focused exclusively on the specific goals and purpose of the PSD program set forth in section 160. However, because the broad purpose of the CAA set forth in section 101(b)(1) provides some additional guidance as to the meaning of the more specific PSD goal set forth in section 160(3), we considered section 101(b)(1) further in the limited context of interpreting one of the factors applicable under section 166.

generally complementary, there are circumstances where some of the objectives may be in conflict. In these situations, some degree of balance or accommodation is inherent in the requirement to establish regulations that satisfy all of these factors at the same time. If not, it might be impossible for EPA to establish one set of regulations that fulfills all the factors applicable under section 166(c).

As discussed in the proposal, we believe this balancing test derives primarily from the third goal and purpose set forth in section 160. Section 160(3) directs us to ''insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources.''

To some extent, this goal of the PSD program in section 160(3) more specifically articulates the broader purpose of the CAA, described in section 101(b)(1) of the Act, 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.'' 42 U.S.C. 7401(b)(1). Sections 160(3) and 101(b)(1) are similar in that both sections reflect the goal to simultaneously protect air quality and maximize opportunities for economic growth. Thus, in interpreting the meaning of section 160(3) when used as a factor applicable under section 166(c), we also consider the broader purpose of the Act set forth in section 101(b)(1).

The first part of the goal of the PSD program set forth in section 160(3) (''to insure that economic growth will occur'') makes clear that the PSD program is not intended to stifle economic growth. However, the second part of this goal indicates that economic growth should ''occur in a manner that is consistent with the preservation of existing clean air resources.'' 42 U.S.C. 7470(3). Section 101(b)(1) indicates that these goals are not necessarily inconsistent because Congress sought to ''protect and enhance the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population.'' When considered in light of the purpose of the Act set forth in section 101(b)(1), it is clear that section 160(3) establishes the goal of the PSD program to maximize opportunities for economic growth and to protect clean air resources. Therefore, when applied as a guiding factor for the content of pollutant-specific PSD regulations under section 166(c), we construe section 160(3) to require that we balance economic growth and environmental protection.

A few commenters objected to our characterization of the goal in section 160(3) as establishing an objective to ''foster economic growth.'' According to common usage, the term ''foster'' means to ''promote the growth or development of.'' Merriam-Webster's Collegiate Dictionary, Tenth Edition, Page 459 (2001). We used ''foster'' in the context of describing the goals in sections 160(3) and 101(b)(1) of the Act, and considered the term to be consistent with the goal to ''insure'' economic growth under certain conditions and to ''promote'' the productive capacity of the population while protecting air quality. However, to be more consistent with our terminology in recent NSR rulemaking actions (67 FR at 80187), we will use the phrase ''maximize opportunities for economic growth'' in this final action rather than ''foster economic growth.''

One commenter also argued that EPA was impermissibly departing from an earlier interpretation that the goal in section 160(3) required EPA ''to ensure that economic growth in clean areas occurs only after careful deliberation by State and local communities.'' 53 FR 3698, 3699 (Feb. 8, 1988). However, we believe our current view is consistent with what we said in that earlier notice of proposed rulemaking. In 1988, we also recognized that Congress had directed us to balance several of the goals and purposes listed in section 160 of the Act. 53 FR at 3699. We stated that the PSD program is required to balance the first goal to protect public health and welfare, the second goal to protect air quality in national parks and other special areas, and a third goal as expressed above. 53 FR at 3699. From the language we used, however, it is apparent that this ''third goal'' was actually a combination of the goal in section 160(3) with the goal in section 160(5) of the Act. Section 160(5) establishes the goal to ''assure that any decision to permit increased air pollution in any area is made only after careful evaluation of all the consequences of such decision and after adequate opportunities for informed public participation in the decisionmaking process.'' 42 U.S.C. 7470(5). We continue to believe that Congress directed us to fulfill both the goals in sections 160(3) and 160(5) at the same time. However, because, as we describe in more detail below, we believe that other aspects of our existing PSD regulations for NO_X fulfill the goal in section 160(5), we have not emphasized the language of section 160(5) in the balancing test we utilized to analyze the characteristics of the increment.

In the present action, we are carrying this balancing approach an additional step by seeking to harmonize the goals in section 160 with other criteria applicable under section 166(c) of the Act. Thus, we have not disavowed what we said in 1988, but rather have added to it. Consistent with the direction of the court, we have analyzed the terms of sections 166(c) and 160 more carefully after the court held that we had not adequately considered these provisions of the Act. Having considered these parts of the statute in more depth at this stage, we believe our current interpretation is well-grounded in the terms of the Act and in fact consistent with what we said in 1988.

The need to balance the applicable factors to achieve these objectives simultaneously is also supported by our interpretation of the second goal in section 160(2) of the Act to ''protect public health and welfare.'' The precise meaning of this goal in the context of the PSD program is somewhat ambiguous because it appears to mirror the legal standards applicable to the promulgation of the primary and secondary NAAQS. Under section 109(b) of the Act, the primary NAAQS must ''protect the public health'' with an adequate margin of safety (section 109(b)(1)) and the secondary NAAQS must ''protect the public welfare from any known or anticipated adverse effects'' associated with ambient concentrations of the pollutant (section 109(b)(2)). The term ''welfare'' is defined in the Act to include ''effects on soils, water, crops, vegetation, man-made materials, animals, wildlife, weather, visibility, and climate.'' Section 302(h) of the Act.

In the specific context of the PSD program, we construe this charge to ''protect public health and welfare'' to require EPA to evaluate whether adverse effects may occur as a result of increases in ambient pollutant concentrations to levels below the NAAQS. If such effects may occur in some areas of the country, then EPA must consider how to establish PSD regulations that protect public health and welfare against those effects where they may occur. However, we do not interpret the PSD program to require regulations that eliminate all negative effects that may result from increases in pollution in attainment areas.

The PSD program is, as its title indicates, designed to prevent ''significant deterioration'' from a baseline concentration. See S. Rep. 95–127 at 11 (3 LH at 1385) (''This legislation defines 'significant deterioration' in all clean air areas as a specified amount of *additional* pollution * * *. This definition is intended to prevent any *major decline* in air quality currently existing in clean

air areas.'' (emphasis added)). Thus, some decline in air quality (relative to the baseline air quality concentration) is permissible for any particular area of the country that is currently achieving the NAAQS, as long as it is not ''significant.''

When EPA employs an area classification system in its section 166 regulations, these factors must be weighed in each type of area (Class I, Class II, and Class III). However, the weight given to each factor may be more or less, depending on the area involved and the amount of deterioration deemed ''significant'' for that type of area. For example, economic growth may be the most important factor in a Class III area, but our PSD regulations for such areas should offer some level of protection for existing clean air resources. In a Class I area, our PSD regulations should allow some level of economic growth, even though preservation of existing clean air resources may be the dominant factor for these areas.

5. Authority for States To Adopt Alternatives To Increment

We do not interpret section 166 to require that EPA (or that States that implement our regulations) employ an increment system for every pollutant listed in this section. Section 166(d) states that our pollutant-specific PSD regulations ''may contain'' increments or ''other measures.'' Thus, EPA or the States may employ approaches other than an increment system, so long as such an approach otherwise meets the requirements of sections 166(c) and 166(d).

If a State adopts regulations in its SIP that meet the criteria of sections 166(c) and 166(d), we believe section 166 would give EPA the authority to allow the State to implement that program in lieu of the NO_2 increment program that we are reaffirming today. Thus, one approach we proposed for fulfilling our obligation to promulgate pollutant-specific regulations for NO_X under section 166 was to adopt regulations that allow States to demonstrate that alternative programs satisfy section 166.

Under section 110(a)(1) of the Act, each State is required to submit a SIP that provides for implementation, maintenance, and enforcement of the primary and secondary NAAQS established by EPA. All areas are required to submit SIPs within certain timeframes, and those SIPs must include specified provisions identified under section 110(a)(2) of the Act. SIPs for nonattainment areas are required to include additional specified control requirements, as well as controls providing for attainment of any revised NAAQS and periodic reductions providing ''reasonable further progress'' in the interim (see section 172(c) of the Act). For attainment areas subject to the PSD program, section 161 of the Act requires that ''each applicable implementation plan shall contain emissions limitations and such other measures as may be necessary, as determined under regulations promulgated under this part, to prevent significant deterioration of air quality in each region * * * designated * * * as attainment or unclassifiable.'' We have interpreted sections 166 and 161 to collectively require that EPA promulgate a specific PSD regulatory program for each pollutant identified in section 166 (such as the existing NO_2 increments and associated regulations), and then to require the States to adopt that program as part of their SIPs. Nothing in the CAA precludes EPA from promulgating a minimum program, such as the NO_2 increments we reaffirm today, and giving States the option to either adopt the minimum program or to design an alternative program and demonstrate to EPA that such a program meets the requirements of sections 166(c) and 166(d), as interpreted in this action.

One commenter argued that EPA is authorized under sections 160, 161, and 166 of the Act to direct States to adopt SIPs that reduce emissions of NO_X from existing sources. However, we do not completely agree with this interpretation. The PSD program was designed to be a growth management program that limits the deterioration of air quality beyond baseline levels that may be caused by the construction of major new and modified sources. The commenter disputed this view by pointing to language in section 160(2) which establishes the goal to ''preserve, protect, and enhance'' air quality in national parks. However, considering the growth management goals of the PSD program, we believe the use of the term ''enhance'' in section 160(2) was intended to refer to the visibility provisions in sections 169A and 169B and those situations where a PSD increment is violated. Section 160 lists the goals and purposes of part C of the CAA, and this part includes sections 169A and 169B which establish the Regional Haze program. An explicit goal of this program is to ''remedy any existing impairment of visibility in mandatory Class I Federal areas.'' 42 U.S.C. 7491(a)(1). Thus, we believe the goal to ''enhance'' air quality in national parks is implemented through the Regional Haze program while the PSD program focuses on preserving and protecting air quality in these areas. However, when a PSD increment is violated, we agree that EPA may require a State to revise its SIP to correct a violation. See 40 CFR 51.166(a)(3). Otherwise, we do not interpret these PSD provisions to authorize us to direct States in their SIPs to achieve reductions in emissions from existing sources for PSD purposes.

However, we recognize that the growth management goals of PSD may also be fulfilled when the States adopt controls on existing sources that would reduce emissions and allow growth from new sources and major modifications to existing sources without causing significant deterioration. Under the increment approach, we have previously recognized that States may choose to require reductions from existing sources in order to expand the increments and allow for more growth under the PSD program.[2] However, we have never required States to do so because, in the absence of an increment violation, we do not believe section 166 and other provisions in part C give us the legal authority to mandate such reductions for PSD purposes.

V. Health and Welfare Effects of NO_X

As explained in the preceding section, the goals and purposes of the PSD program that are especially relevant to the development of our pollutant-specific PSD regulations for NO_X address protection of public health and welfare, with a particular emphasis on the air quality in national parks and other natural areas. Thus, we evaluated the available scientific and technical information on the health and welfare effects of NO_X to determine whether any modification of those increments is warranted.

In this section, we summarize the scientific and technical information that we considered, as well as the relevant health and welfare findings that we believe support retaining the existing NO_2 increments. Additional discussion on the potential effects of NO_X is contained in the February 2005 proposal. See 70 FR 8880 (February 23, 2005) at 8888–8894.

A. Overview of the Potential Effects of Nitrogen Oxides

''Nitrogen oxides'' is the generic term for a group of highly reactive gases that contain nitrogen and oxygen in varying amounts. The high-temperature combustion of fossil fuels, primarily

[2] 43 FR 26380, 26381 (June 19, 1978) (''States can expand the available PSD increments by requiring emissions reductions from existing sources.'')

from electric utilities and mobile sources, is a major contributor to the formation of nitric oxide (NO) and NO_2.[3] Most NO_X from combustion sources is emitted as NO (about 95 percent); the remainder are primarily NO_2. Emissions of NO are rapidly oxidized in the atmosphere to produce even more NO_2.[4] In a relatively short time, however, NO_2 in the atmosphere can be transformed into other nitrogen compounds, including nitric acid and nitrates. We also know that nitrogen oxides[5] play a major role in the formation of other criteria pollutants—ozone and PM (nitrogen-bearing particles and acid aerosols)—each with their own set of adverse health and welfare effects.[6] For example, nitrate particles contribute to visibility impairment and regional haze and nitrates are a major component of acidic deposition.

In addition, reduced nitrogen compounds, such as ammonia (NH_3) (derived largely from emissions from livestock waste as well as the application of fertilizer to the ground) and ammonium (NH_4^+), are also important to many of the public health and environmental impacts associated with atmospheric nitrogen compounds. However, because these nitrogen compounds are not associated with emissions of NO_X from the stationary sources subject to review under the PSD program, we did not consider it appropriate to factor them into the review of the adequacy of the existing NO_2 increments.

These varied origins of nitrogen in the atmosphere add to the difficulty of determining the specific source contributing to the total nitrogen concentration. This, in turn, increases the difficulty of designing an emissions control strategy for reducing the nitrogen contribution in a particular area.

B. Scope of Our Analysis

In the proposal, we explained that we did not believe our pollutant-specific PSD regulations for NO_X were the appropriate place to address the effects of the secondary pollutants ozone and PM. Some commenters disagreed with our proposed approach and argued that EPA should address the adverse effects of ozone and PM as part of our assessment of the existing NO_2 increments. Photochemical oxidants (ozone)[7] and PM[8] are formed in part by reactions of NO_X emissions with other pollutants in the atmosphere. However, we do not agree that this fact alone dictates that our pollutant-specific PSD regulations for NO_X must address ozone and PM impacts. Because nitrogen oxides are not the only compounds that contribute to the formation of ozone and PM, we believe we can more effectively address the effects of PM and ozone through separate regulations for these pollutants under section 166 of the Act.

It would be unreasonable to establish pollutant-specific PSD regulations to protect against the effects of ozone without also considering the other major precursor for ozone—volatile organic compounds. Any PSD regulation attempting to mitigate the ozone impacts from NO_X, notwithstanding the ozone NAAQS, would be unfounded without also addressing this significant component. Thus, we conclude that, for PSD purposes, the contribution of NO_X to the formation of ozone should be considered primarily in the context of the establishment of pollutant-specific PSD regulations for ozone.[9]

Like ozone, PM has several precursors, of which NO_X is only one. NO_2 may be transformed to nitrate particulates by means of chemical reactions in the atmosphere.[10] However, any PSD strategy for PM should consider both direct PM emissions and all of the regulated precursors instead of placing disproportionate emphasis on only one component of the pollutant. Regulations for NO_X that address PM effects in a narrow manner (*i.e.*, nitrates only) could potentially affect the stringency of the PM increments and considerations regarding the baseline concentration and baseline date. Thus, we believe it would be inappropriate to promulgate pollutant-specific regulations for NO_X based on its transformation into PM. In a separate notice, EPA intends to consider options for regulating precursors to $PM_{2.5}$.

Some commenters believe that the statutory PSD requirements obligate EPA to promulgate NO_X regulations to prevent significant deterioration of air quality from ozone and PM. These commenters cited language from section 166(a) of the Act which directs EPA to ''promulgate regulations to prevent significant deterioration of air quality which would result from the emissions of such pollutants.'' CAA § 166(a).

However, we do not interpret this language to compel the action commenters recommend. The phrase ''result from emissions of such pollutants'' refers back to the first clause of the sentence which lists several pollutants (''hydrocarbons, carbon monoxide, photochemical oxidants, and nitrogen oxides'') that are subject to section 166. We do not read this language to compel EPA to promulgate a single regulation to address all such pollutants at once. Reading the sentence as a whole, we interpret the language in section 166(a) to provide EPA with the discretion to separately promulgate pollutant-specific PSD regulations for each of these four groups of pollutants (which include ozone because it is formed by photochemical oxidants). Thus we believe our obligation in this action to promulgate pollutant-specific PSD regulations for ''nitrogen oxides'' does not necessarily have to include consideration of the effects of ozone.

For similar reasons, we do not read the provisions of section 166 of the Act to require that EPA consider effects attributable to PM when promulgating pollutant-specific PSD regulations for ''nitrogen oxides.'' Congress established separate increments for PM, originally measured as total suspended particulate (or TSP), under the authority of section 163 of the Act. Congress later authorized EPA to replace the TSP increments with increments for PM_{10}. See CAA § 166(f). Section 166(a) of the Act also directs EPA to promulgate pollutant-specific PSD regulations for any pollutants for which a NAAQS is established after the

[3] Some forms of NO_X are produced naturally (via lightning, soils, wildfires, stratospheric intrusion, and the oceans).

[4] Because NO is readily converted to NO_2 in the atmosphere, the emissions of NO_X reported by EPA assume NO_X in the form of NO_2. In predicting ambient impacts that may result from emissions of NO_X, initially is assumed to be emitted from sources as NO_X. (40 CFR part 50 app W sec. 6.2.4.)

[5] Seven oxides of nitrogen are known to occur in the atmosphere: nitric oxide (NO), nitrogen dioxide (NO_X), nitrate (NO_3^-), nitrous oxide N_2O), dinitrogen trioxide (N_2O_3), dinitrogen tetroxide (N_2O_4) and dinitrogen pentoxide (N_2O_5).

[6] The term ''welfare'' is defined in the Act to include, *inter alia,* ''effects on soils, water, crops, vegetation, man-made materials, animals, wildlife, weather, visibility, and climate.'' Section 302(h).

[7] Ozone is the oxidant found in the largest quantities in the atmosphere. The EPA promulgated NAAQS for photochemical oxidants in 1971. The chemical designation of the standard was changed in 1979 from ''photochemical oxidants'' to ozone. See 44 FR 8202 (February 8, 1979).

[8] Particulate matter (PM) is composed of directly emitted particles and secondarily formed particles. Secondary particulates are produced from gaseous pollutants, mainly NO_X, SO_2, ammonia, and some VOCs. Emissions of NO_X can result in the formation of particulate nitrates whose contribution to fine particles varies depending on geographic location and other criteria.

[9] In the 1988 final preamble adopting the NO_2 increments, we gave limited consideration to whether limiting increases of NO_X emissions would worsen ozone ambient concentrations, in response to comments raising this issue. 53 FR at 40668. We did not, however, attempt to set the NO_2 increments to address ozone public health and welfare impacts, nor do we believe that is required here, for the reasons stated above. Increments for ozone have not been established because of the technical difficulty associated with predicting ambient concentration changes resulting from a single stationary source. 61 FR 65764, 65776 (Dec. 13, 1996).

[10] Nitrate is a major constituent of atmospheric PM. Due to limited scientific literature addressing the health impacts of nitrates, exposure currently is analyzed as exposure to fine PM. (NAPAP, 1998.)

enactment of section 166. We interpret this language to apply to pollutants such as $PM_{2.5}$ for which we promulgated a NAAQS after 1977. Thus, it does not follow that section 166 must be read to require that EPA consider PM effects when promulgating regulations for NO_X.

Another commenter asserted that the court's opinion in *EDF* v. *EPA* made it abundantly clear that EPA cannot use any single NAAQS or NAAQS indicator as the sole basis for the regulations required by section 166 to address NO_X. Rather, the commenter stated, EPA must evaluate the impact of NO_X with reference to the goals and purposes in sections 101 and 160, which goals and purposes encompass protection of public health and welfare from ''air pollution'' without exception for any specific pollutants or class of pollutants. We recognize that emissions of NO_X contribute to a range of direct and indirect effects on health, welfare, and AQRVs, but we believe this rulemaking action should focus on those effects that were considered by EPA in the development of the NAAQS for NO_2.

This approach is appropriate because the need to develop PSD rules is tied to the existence of the NAAQS. As the court in *EDF* v. *EPA* acknowledged ''the ambient standards are the basic measure of air quality under the [Clean Air Act] and the controlling standards by no means *exclude* any value that is the subject of focus under the PSD provisions.'' 898 F.2d at 190 (emphasis in original). Thus, the health and welfare effects that were evaluated by EPA when it established the NAAQS should also be considered when EPA establishes regulations under section 166 to protect against significant deterioration of air quality from NO_X emissions.

The provisions of section 166 make clear that EPA is to establish PSD regulations (including an increment, if appropriate) under this provision after the establishment of a NAAQS for the applicable pollutants. In 1971, EPA first established a single standard for NO_2 as both the primary and secondary NAAQS addressing NO_X. 36 FR 8186 (April 30, 1971). Congress then passed section 166 of the Act in 1977 and gave EPA 2 years to complete its study and promulgate PSD regulations for ''nitrogen oxides.'' 42 U.S.C. 7476(a). In addition, for pollutants for which a NAAQS had not been promulgated by August 7, 1977, Congress gave EPA 2 years from the promulgation of such standards to establish PSD regulation under section 166 of the Act. *Id.* The establishment of PSD regulations (which may include increments) must necessarily follow the NAAQS because the NAAQS provides the benchmark against which we are to judge ''significant deterioration'' of air quality.

We do not believe that our decision to define the bounds of our analysis as the range of effects considered in setting the NAAQS is contrary to the court's holding in *EDF* v. *EPA.* The court held that EPA cannot use the NAAQS as the ''sole basis'' for deriving the increment. 898 F.2d at 190. However, in this action, we did not simply focus on the level of the NAAQS as a legal standard, as we did in 1988. In this rulemaking action on remand, we considered the health and welfare effects that EPA evaluated to establish the NAAQS. But rather than considering those effects in relation to the standards set forth in section 109, we evaluated those effects in relation to the factors in sections 166(c) and 160 of the Act. The court held that we could not rely solely on the NAAQS itself to establish increments because of the emphasis in sections 166(c) and 160 on special considerations, such as protection of national wilderness areas, whose special values may be reflected in the NAAQS but are not necessarily the only factors that determine the level of the NAAQS. See 898 F.2d at 190. Thus, within the field of effects that EPA found relevant when establishing the NAAQS, we narrowed our inquiry to focus on the special considerations of PSD and those effects that may occur in some areas notwithstanding attainment of the NAAQS. This approach follows directly from the court's opinion in *EDF* v. *EPA.*

C. Data Considered in Our Analysis

In our February 2005 notice, we proposed to focus primarily on the health and welfare information that we had compiled for the last periodic review of the NO_2 NAAQS. EPA is required to conduct a periodic, comprehensive analysis of available scientific and technical data as part of its process for promulgating NAAQS in accordance with sections 108 and 109 of the Act. The last reevaluation of the NAAQS for NO_X was completed in 1996. 61 FR 52852, November 8, 1996. The most recently reviewed data for NO_X is contained in the 1993 Criteria Document for NO_X (''1993 Criteria Document'') and the associated 1995 OAQPS Staff Paper (''1995 Staff Paper for NO_X''), as further explained below.[11]

Although we also considered the information contained in studies published since the last NAAQS review, several commenters believed that we should have given greater attention to such later studies. These commenters believe these later studies show the growing seriousness of NO_X effects in the form of ozone, PM and atmospheric nitrogen deposition (N deposition).[12] One commenter felt that we ignored a lot of scientific information on NO_X effects on ecosystems. Another commenter argued that our focus on the review of the 1993 Criteria Document and 1995 Staff Paper for NO_X was a ''self-imposed limitation'' that relied on incomplete scientific information considering the fact that new information has been developed since then.

Although we did focus on the Criteria Document and 1995 Staff Paper for NO_X, we did not wholly ignore new information as the commenters appear to suggest. We considered information contained in more recent studies, particularly those concerning the types of effects on ecosystems associated with atmospheric nitrogen deposition. We evaluated information published since completion of the last NAAQS review to determine whether there have been significant advances in scientific and technical information. The more recent data we reviewed has clearly broadened our understanding of the ecological changes resulting from deposition in general and N deposition in particular. Recent information also provides us with greater information about N deposition trends and the speciation of various N components. The collection of these types of information is an essential step in the process of quantitatively defining the dose-response relationship between emissions of NO_X and the various adverse effects being observed. However, even these later studies, including ones supplied by some of the commenters, do not enable us to establish those relationships at this time.

We focused on the effects described in the Criteria Document and 1995 Staff Paper for NO_X because these documents are the product of a rigorous process that is followed to validate and interpret the information. In accordance with the Act, the NAAQS process begins with the development of ''air quality criteria'' under section 108 for air pollutants that ''may reasonably be anticipated to

[11] The official titles of these documents are, respectively, ''Air Quality Criteria for Oxides of Nitrogen,'' EPA, August 1993; and ''Review of the National Ambient Air Quality Standards for Nitrogen Oxides: Assessment of Scientific and Technical Information,'' EPA, September 1995.

[12] The term ''atmospheric nitrogen deposition'' refers to the process by which nitrogen compounds in the atmosphere are transferred to various surfaces, including water, soil, etc. Additional discussion on this is provided in sections V and VI of this preamble as related to indirect effects of NO_2.

endanger public health or welfare'' and that come from ''numerous or diverse'' sources. Section 108(a)(1). For each NAAQS review, the Administrator must appoint ''an independent scientific review committee composed of seven members of the National Academy of Sciences, one physician, and one person representing State air pollution control agencies,'' known as the Clean Air Scientific Advisory Committee (CASAC). Section 109(d)(2)(A). CASAC is charged with recommending revisions to the criteria document and NAAQS, and advising the Administrator on several issues, including areas in which additional knowledge is required to appraise the adequacy and basis of existing, new or revised NAAQS. Section 109(d)(2)(B), (C).

''Air quality criteria'' must reflect the latest scientific knowledge on ''all identifiable effects on public health or welfare'' that may result from a pollutant's presence in the ambient air. 42 U.S.C. 7408(a)(2). The scientific assessments constituting air quality criteria generally take the form of a ''criteria document,'' a rigorous review of all pertinent scientific studies and related information. The EPA also develops a ''staff paper'' to ''bridge the gap'' between the scientific review and the judgments the Administrator must make to set standards. See *Natural Resources Defense Council* v. *EPA (''NRDC'')*, 902 F.2d 962, 967 (D.C. Cir. 1990). Both documents undergo extensive scientific peer-review as well as public notice and comment. See *e.g.*, 62 FR 38654/1–2.

Our focus on the 1993 Criteria Document and the 1995 Staff Paper for NO_X is supported by the provisions of section 166 which make clear that EPA is to establish pollutant-specific PSD regulations after the establishment of a NAAQS for the applicable pollutants. 42 U.S.C. 7476(a). Under normal circumstances, the Act provides that EPA promulgate new PSD regulations under section 166, including new increments if appropriate, within 2 years from the promulgation of any NAAQS after 1977. 42 U.S.C. 7476(a). In such instances, the health and welfare information used for the setting of the NAAQS would also be ''current'' for purposes of establishing pollutant-specific PSD regulations. We believe this timing was intended to enable EPA to rely upon the same body of information concerning a pollutant's health and welfare effects when it establishes the NAAQS and the subsequent PSD increments (or other measure) defining significant air quality deterioration for the same pollutant.

Thus, while we believe it would be consistent with congressional intent to rely in the ordinary case on only the information used in the most recent NAAQS review when establishing pollutant-specific PSD regulations under section 166, the situation we faced with NO_X was unique. Because considerable time had passed since the 1996 review of the NO_2 NAAQS, we considered the more recent studies discussed above.

Because EPA is taking this action to fulfill a court remand of an increment originally established in 1988, the Act could be read to suggest that we revert back to the information compiled in the NAAQS review that predated our initial action in 1988. When the NO_2 increments were originally developed and promulgated, the most recent Criteria Document for oxides of nitrogen was EPA's 1982 Criteria Document, used for completing the periodic review of the NO_2 NAAQS promulgated on June 19, 1985 (50 FR 25532). However, because of the amount of time that has passed since then, we do not believe it is reasonable to read the Act so narrowly in this case. Thus, we relied on the most recent Criteria Document, because it represented the most recent compilation of scientific and technical evidence for purposes of NAAQS review, even though this was not the Criteria Document we used to develop the 1988 NO_2 increments.

In the last periodic review of the NO_2 NAAQS, in 1996, EPA compiled information that was not part of the scope of the previous NAAQS review. Specifically, the 1993 Criteria Document and 1995 Staff Paper for NO_X considered as part of the secondary standard review ''short- and long-term effects of nitrogen deposition on biological, physical and chemical components of ecosystems and the resulting effect of changes to these components on ecosystem structure and function as well as the traditional issue of visibility impairment, and materials damage.'' The expanded scope is particularly relevant to the types of effects that should be used to consider the effectiveness of the PSD increments.

We do not interpret the court decision in *EDF* v. *EPA* [13] to mean that we should not consider the same data when establishing both the NAAQS and the PSD increments for a particular pollutant, but rather that we would be expected to weigh the same data differently using the different legal criteria as our guide. Consequently, we might arrive at different conclusions for developing the NAAQS and increments because of the differences in the legal criteria for the two types of standards. As the court itself said, ''a pollutant that has only mild public health effects but severe effects on wilderness areas might demand a lower increment (measured as a percentage of its ambient standards) than one with severe health effects but only mild effects on wilderness areas.'' *EDF* v. *EPA*, 898 F.2d at 190. Thus, while the Act seems to require that EPA establish NAAQS and increments for the same pollutant using different legal standards, we believe it is important nevertheless that the body of evidence used for both reviews should initially be subjected to the same level of Agency validation and review.

D. Analysis of Potential Effects

This section contains a summary of our review of the health and welfare effects associated with NO_X reviewed by EPA as part of the reconsideration of the pollutant-specific PSD regulations for NO_X. Although EPA concluded from the available evidence that there was no basis in 1996 for revising the NO_2 NAAQS, the objective of our latest review of the same body of scientific and technical evidence was to determine whether there is any basis for proposing to modify the NO_2 increments, based on specific percentages of those NAAQS, which are part of the PSD regulations for NO_X that we promulgated in 1988. Our analysis of the health and welfare effects associated with NO_X included adverse health effects that were found to occur at levels at or near the NAAQS, as well as a variety of direct NO_2 welfare effects and indirect welfare effects resulting from the transformation of NO_2 to other nitrogen compounds in the atmosphere which are then transferred to other surfaces via N deposition.

We noted earlier that the 1993 Criteria Document and 1995 Staff Paper for NO_X added a level of review not contained in the previous periodic review of the NAAQS for NO_X. That is, the most recent documents include evidence concerning ''short- and long-term effects of N deposition on biological, physical and chemical components of ecosystems and the resulting effect of changes to these components on ecosystem structure and function as well as the traditional issues of visibility impairment and materials damage.'' The consideration of such effects was our primary focus for determining whether the existing increments need to be modified to satisfy section 166(c) of the Act.

[13] The court pointed out that ''the 'goals and purposes' of the PSD program, set forth in § 160, are not identical to the criteria on which the ambient standards are based * * *''

1. Health Effects

In 1996, EPA concluded that there was no need to change the existing primary NAAQS for NO_2 on the basis of the health effects evidence available at that time. Nevertheless, for purposes of evaluating the safe harbor NO_2 increments, we examined those effects which were found to occur at levels at or near NAAQS. Of particular concern were possible health effects resulting from short-term exposure (*e.g.*, less than 3 hours), which might justify consideration of a short-term increment.

The short-term health effects of most concern at ambient or near-ambient concentrations of NO_2 involved mild changes in airway responsiveness (airway constriction and narrowing) and decrease in pulmonary function. In neither case were the observed effects considered serious: Observations of airway constriction did not reveal airway inflammation and were fully reversible, and changes in pulmonary function were considered small. Moreover, most of the observed effects occurred at ambient concentrations of NO_2 that were above levels typically monitored in areas meeting the NAAQS, *i.e.*, PSD areas.

We also considered effects based on longer-term (2-week periods), low-level exposure to NO_2 involving increased respiratory illnesses among children. These studies involved situations of indoor exposure to NO_2 emitted from gas stoves. Various limitations associated with these clinical studies made it difficult to extrapolate the results in a manner that would yield estimates of health impacts associated with outdoor NO_2 exposure. See February 2005 proposal at 70 FR 8890–8891.

2. Welfare Effects

In our February 2005 proposal, we indicated that the 1996 periodic review of the NO_2 NAAQS concluded that the available body of scientific and technical evidence did not provide an adequate basis for setting a separate secondary standard to address welfare effects of NO_X. See 70 FR at 8891. However, as discussed earlier, the goals and purposes of the PSD program give special weight to the protection of welfare, air quality values and areas of special national and regional interest (national parks, national wilderness areas, etc.) Accordingly, EPA reviewed the information on welfare effects to determine whether it supported a need on our part to modify the existing NO_2 increments to provide additional environmental protection, especially for such areas as national parks, wilderness areas and their natural, recreational, scenic, or historic value(s), notwithstanding attainment of the NAAQS in PSD areas.

As mentioned earlier, the evidence we reviewed covered both direct (NO_2) and indirect (other NO_X), short- and long-term effects on biological, physical and chemical components of ecosystems and the resulting effect of changes to these components on ecosystem structure and function. Information from selected later studies was also reviewed to determine the extent to which our knowledge of the adverse effects of NO_X had advanced since the 1996 review. A summary of our review of both direct and indirect effects of NO_2 is presented below.

a. Direct Welfare Effects

The 1993 Criteria Document and 1995 Staff Paper for NO_X provided evidence that exposure to NO_2 can cause potentially adverse effects on plants and materials, and visibility impairment (primarily in the form of local-scale plume discoloration). These effects are summarized below. See also 70 FR 8892–8893.

Experimental studies involving exposure of plants to NO_2 for periods less than 24 hours produced effects on the growth development and reproduction of plants. However, the pollutant concentrations used in these experiments were well above concentrations observed in the ambient air and at a frequency of occurrence not typically found in the U.S. The experimental effects were not considered significant at concentrations at or below the level of the NAAQS.

The effects of NO_2 on materials were not well determined according to the evidence contained in the 1993 Criteria Document. The limited information showed that it was difficult to distinguish NO_2 or any other agent as the single causative agent for observed damage; many agents, together with a number of environmental stresses, act on the surface of materials over time.

Finally, NO_2 can cause visibility impairment in the form of a discoloration effect most noticeable as local-scale (within 50 kilometers of the source) or ''reasonably attributed impairment.'' This effect can be observed as a contrast or color difference between a plume and a viewed background, such as the sky or a distant object. However, some studies have shown that brownish discoloration can result from the presence of particles alone, thus making it difficult to determine a reliable relationship between ground-level concentrations of NO_2 at any given point and discoloration caused by particles that may also be in a source's plume. The 1995 Staff Paper for NO_X noted that despite the known light-absorbing qualities of NO_2, ''there are relatively little data available for judging the actual importance of NO_2 to visual air quality.''

b. Indirect Welfare Effects

The predominant welfare effects of NO_2 are indirect effects caused by nitrogen compounds that have been transformed from NO_2 in the atmosphere, such as nitric acid and nitrates. Studies have shown that nitrogen compounds can contribute to various negative ecological effects when they are transferred from the atmosphere to a variety of surfaces, *e.g.*, water, soil, vegetation, and other materials, by the process of N deposition.'' [14]

Nitrogen deposition occurs in several forms, including wet (rain or snow), dry (transfer of gases or particles), or occult (fog, mist or cloud) deposition. Nitrogen deposition occurs primarily as nitrates, which are formed in the atmosphere by the oxidation of NO and NO_2, or as ammonia, which is released by agricultural or soil microbial activity. When the nitrogen transfer process involves acids (*e.g.*, nitric acid) or acidifying compounds, the deposition process is referred to as ''acidic deposition.''

For the February 2005 proposal, we reviewed various indirect effects resulting from N deposition and which can be categorized according to the specific ecosystem being affected. These include terrestrial, wetland, and aquatic ecosystems. These different effects are summarized below. See also 70 FR 8888–8894.

As with the other effects we considered, we focused primarily on the evidence contained in the 1993 Criteria Document and 1995 Staff Paper for the NO_2 NAAQS. Other more recent studies were also summarized, although we did not consider ourselves to be under an obligation to consider such evidence since it has not yet undergone the extensive level of validation and review that will be necessary if it is to be incorporated into the section 108 Criteria Document for NO_X.

The following subsections summarize the various indirect effects of NO_2 on

[14] Under certain conditions, in terrestrial or agricultural systems, some amount of nitrogen deposition can enhance growth of some forest species and crops. However, in areas where deposition occurs in excess of plant and microbial demand (also known as nitrogen saturation) the added nitrogen can disturb the nitrogen cycle, contributing to such negative effects as increased plant susceptibility to some natural stresses and modification of interplant competition.

ecosystems, including terrestrial systems (*i.e.*, plant communities), wetlands, and aquatic systems. We believe that the effects summarized are potentially relevant to an evaluation of the pollutant-specific PSD regulations for NO_X because these effects have been observed in areas of the country that are attaining the NAAQS.

(1) Terrestrial ecosystems. Soils are the largest pool of nitrogen in forest ecosystems, although such nitrogen is generally not available for plants until it has been mineralized by bacteria (Fenn, 1998). Another important source of nitrogen is atmospheric deposition, which may cause or contribute to significant adverse changes in terrestrial ecosystems, including soil acidification, increase in soil susceptibility to natural stresses, and alterations in plant species mix.

When excess nitrogen input causes soil acidification, it can alter the availability of plant nutrients (*i.e.*, calcium and magnesium) and expose tree roots to toxic levels of aluminum and manganese, thereby having an adverse effect on tree growth. It can also lead to the mobilization of aluminum from the soil as nitrates are leached from the soil and transported to waterways, where the aluminum can exhibit toxic effects to aquatic organisms.[15]

It is worth noting that air pollution is not the sole cause of soil change; high rates of acidification are occurring in less polluted regions of the western U.S. because of natural internal soil processes, such as tree uptake of nitrate and nitrification associated with excessive nitrogen fixation. Although N deposition can accelerate the acidification of soils, the levels of nitrogen necessary to produce measurable soil acidification are quite high. The 1993 Criteria Document indicated that, at that time, N deposition had not been directly associated with the acidification of soils in the U.S. More recent information suggests that in parts of the Northeast, for example, acid deposition has resulted in the accumulation of sulfur and nitrogen in the soil beyond the levels that forests can use and retain, and has accelerated the leaching of base cations, such as calcium and magnesium, that help neutralize acid deposition. (Driscoll, 2001.) Some western forest areas may also be experiencing nitrogen saturation conditions, although the role of N deposition may vary from one location to another (Fenn, 1998, 2003).

Aside from the effects of soil acidification, some studies have shown that increased N deposition can alter tree susceptibility to frost damage, insect and disease attack, and plant community structure. However, other studies have not shown that similar results occur. In all, the studies evaluated in the 1993 Criteria Document which focused on the impact of excessive inputs of nitrogen in forest ecosystems showed mixed results. The long response time of trees to environmental stresses has made it difficult to fully understand how acid rain may affect trees. It is also difficult to isolate the possible effects of acid rain from stresses resulting from other natural and anthropogenic origins. However, more recent studies appear to provide some evidence that acid deposition has caused the death of red spruce trees, particularly at higher elevations in the Northeast by decreasing cold tolerance, and may be in part responsible for the extensive loss of sugar maple in Pennsylvania. (Driscoll, 2001.)

Finally, in terrestrial systems in which the pre-existing balance is marked by a competition among species for the available nitrogen, additional nitrogen inputs, such as N deposition, may bring about an alteration of the species mix. That is, a displacement of one kind of vegetation (*e.g.*, plants, grasses) with another may occur. While the 1995 Staff Paper for NO_X noted that there were no documented accounts of terrestrial ecosystems undergoing species shifts due to N deposition in the U.S., later research provides some evidence suggesting that elevated N deposition can contribute to shifts of species compositions (*e.g.*, Allen, 1998; Bowman, 2000).

(2) Wetlands. Wetlands include swamps, marshes, and bogs. In such lands, water saturation is the dominant factor determining the nature of soil development and the types of plants and animal communities living in the soil and on its surface. These areas function as habitats for plant and wildlife (among other useful environmental purposes), including many rare and threatened plant species. Some of these plants adapt to systems low in nitrogen or with low nutrient levels. Long-term studies (greater than 3 years) of increased nitrogen loadings to wetland systems in European countries have reported that increased primary production of biomass can result in changes of interplant competition. The 1995 Staff Paper for NO_X reported that, based on the evidence reviewed in the 1993 Criteria Document, ''the staff believes we can anticipate similar effects from atmospheric N deposition in the United States* * *.'' However, in the 1995 Staff Paper for NO_X, EPA found no documentation providing sufficient evidence that such species changes have occurred or were occurring at the time in the U.S.

(3) Aquatic ecosystems. Nitrogen deposition may adversely affect aquatic ecosystems as a result of either acidification or eutrophication. Both processes can cause a reduction in water quality that makes the body of water unsuitable for many aquatic organisms.

The 1995 Staff Paper for NO_X indicated that growing evidence supported the concern that the impact of N deposition on sensitive aquatic systems ''may be significant.'' Later studies have shown much more clearly the harm that can result. Atmospheric nitrogen can enter lakes and streams either as direct deposition to the water surfaces or as N deposition to the watershed of which they are a part. In some cases, nitrate may be temporarily stored in snow packs from which it is subsequently released in more concentrated form in snowmelt. In other cases, nitrogen deposited to the watershed may subsequently be routed through plants and soil microorganisms and transformed into other inorganic or organic nitrogen species which, when they reach the water system, are only indirectly related to the original deposition. To complicate matters, recent studies suggest that, in addition to the contribution of nitrogen from anthropogenic sources, nitrogen released from the weathering of nitrogen-bearing bedrock, not commonly considered in the biogeochemical cycling of nitrogen, may contribute a ''surprisingly large amount'' of nitrate to natural waters. (Dahlgreen, 2002.)

Acidification may occur in two ways: Chronic (long-term) acidification and episodic (short-term or seasonal) acidification. Episodic acidification is more likely to be the primary problem in most situations, with chronic acidification occurring mainly where excessive nitrogen saturation exists. (NAPAP, 1998.) The main concern with acidification of aquatic ecosystems is associated with freshwater systems. Acidification impairs the water quality of lakes and streams by lowering the pH levels, decreasing acid-neutralizing capacity, and increasing aluminum concentrations (through the process of aluminum mobilization from the soil, as

[15] Aluminum from soil seldom appears in aquatic systems because natural aluminum minerals are insoluble in the normal pH range of natural waters. However, the term ''aluminum mobilization'' refers to the conversion of aluminum in acidic soils into dissolved forms and its transport, as runoff or subsurface flow, to water systems. Mobilized aluminum can then alter the acid/base property of natural water systems (Wang, 2004).

explained earlier). High levels of aluminum, considered toxic to fish and other organisms, have been recorded in watersheds in the Northeast associated with low levels of acid deposition. (Driscoll, 2001.)

Acid deposition may also increase the conversion of mercury to organic (methyl) mercury in lakes where it is absorbed by aquatic organisms and leads to increasing concentrations in the food chain. Human consumption of fish containing high levels of methylmercury can lead to problems with the central nervous system.

Regions of North America differ in their sensitivity to acidic deposition and in the amount of acidic deposition they receive. Some parts of the eastern U.S. are highly sensitive and chronically or episodically receive damaging concentrations of acidic deposition. For example, a 2001 report indicates that 41 percent of lakes in the Adirondack Mountain region of New York and 15 percent of lakes in New England show evidence of either chronic or episodic acidification, or both. (Driscoll, 2001.) Other sensitive regions, such as the western U.S., are unlikely to suffer adverse chronic effects but may experience acidic conditions more on an episodic basis. Certain high-elevation western lakes, in particular, are subject to episodes of acidic deposition.

Eutrophication generally is a natural process by which aquatic systems are enriched with the nutrients, including nitrogen, that are presently limiting for primary production in that system. However, this process can be accelerated by increased nutrient input resulting from anthropogenic sources, *e.g.*, agricultural runoff, urban runoff, leaking septic systems, sewage discharge. Studies have also shown that N deposition may directly and indirectly play a role in accelerated eutrophication. When nitrogen is a limiting nutrient, input from various origins can make a water system prone to eutrophication, with impacts ranging from the increased turbidity and floating mats of macro algae shading out beneficial submersed aquatic vegetation habitat, to the exacerbation of noxious algae blooms, to the creation of low or no-oxygen conditions which negatively affect fish populations. The National Park Service (NPS) has reported that loadings of total N deposition (wet and dry) have caused changes in aquatic chemistry and biota in the Rocky Mountain National Park's high elevation ecosystems. (U.S. Department of the Interior, 2002.) In the same report, the NPS noted that increasing trends in N deposition at many parks in the western U.S. result from both nitrate and ammonium.

The key to creating a linkage between levels of N deposition and the eutrophication of aquatic systems is to demonstrate that the productivity of the system is limited by nitrogen availability, and to show that N deposition is a major source of nitrogen to the system. Thus, while it appears that nitrogen inputs to aquatic systems may be of general concern for eutrophic conditions, the significance of nitrogen input will vary from site to site. (1995 Staff Paper for NO_X at 77.)

A 1993 National Research Council report identifying eutrophication as the most serious pollution problem facing the estuarine waters of the U.S. was reported in an EPA document issued in 1997, entitled ''Nitrogen Oxides: Impacts on Public Health and the Environment'' (p. 79). Nitrogen input is a major concern because nitrogen is the limiting nutrient for algae growth in many estuaries and coastal water systems. In contrast to the eutrophication concern, acidification typically is not a concern, because estuaries and coastal waters receive substantial amount of weathered material from terrestrial ecosystems and from exchange with sea water.

Estimation of the contribution of atmospheric N deposition to the eutrophication problem can be difficult because of the various direct anthropogenic sources of nitrogen, including agricultural runoff and sewage. Some studies have shown that nitrogen deposited from the atmosphere can be a significant portion of the total nitrogen loadings in specific locations, such as the Chesapeake Bay—the largest of the 130 estuaries in the U.S. It has been estimated that the proportion of the total nitrate load to the Bay attributable to N deposition ranges from 10 to 45 percent (NAPAP, 1998).

In most freshwater systems, including lakes and streams, phosphorus, not nitrogen, is the limiting nutrient. Thus, eutrophication by nitrogen inputs will only be a concern in lakes that are chronically nitrogen limited and have a substantial total phosphorus concentration. This condition is common only in lakes that have received excessive inputs of anthropogenic phosphorus or, in rare cases, have high concentrations of natural phosphorus. In the former case, the primary dysfunction of the lakes is an excess supply of phosphorus, and controlling N deposition would be an ineffective method of gaining water quality improvement. In the latter case, N deposition can measurably increase biomass and thus contribute to eutrophication in lakes with high concentrations of natural phosphorus. Other lakes, including some high-elevation lakes in the Rocky Mountains and Sierra Nevada, are very low in both phosphorus and nitrogen; addition of nitrogen can increase biomass and contribute to eutrophication in these lakes also.

(4) Visibility impairment (Regional Haze). Nitrate particulates are formed as a result of chemical reactions involving NO and NO_2 with other substances in the atmosphere, such as ammonia. These particulates, as both fine and coarse particles, are considered to be more responsible for visibility impairment than NO_2 directly. The fine particles can remain airborne for considerable periods of time, may be transported long distances from the NO_X source, and impair visibility by either scattering light or absorbing it.

The major cause of visibility impairment in the East is sulfates, not nitrates which account for only 7 to 16 percent of the light extinction in the East. However, nitrates in the West are responsible for up to 45 percent of the light extinction.

Recent studies tend to provide more comprehensive documentation of certain adverse effects than were reported earlier in the 1993 Criteria Document. However, even in such later studies the inability to establish quantifiable dose-response relationships NO_X and the various types of ecosystems remains to be a key problem. More study is needed to resolve this problem.

VI. Final Actions

In the February 2005 proposal, we presented for public review and comment the results of our review of the scientific and technical evidence. We described the various health and welfare effects associated with NO_2 and other forms of NO_X and proposed our decision about the adequacy of the existing NO_2 increments. On the basis of the available information, we proposed not to change the existing PSD regulations for NO_X. We also proposed to find that the existing regulations, including the increments for NO_X expressed as annual average ambient concentrations of NO_2 satisfied the requirements under sections 166(c) and 166(d) of the Act.

In today's action, we are retaining the existing NO_2 increments without change. In addition, we are amending the text of our PSD regulations at 40

CFR 51.166 [16] to clarify that any State may employ an alternative approach to the NO_2 increments if the State's approach meets certain requirements. Separately, we will soon publish a supplemental notice of proposed rulemaking that provides more details on how a State that achieves the NO_X emission reductions under CAIR can utilize its CAIR-related reductions as part of its alternative approach to the NO_2 increments. In this section of the preamble, we describe our rationale for the final action we are taking today on the NO_2 increments and respond to significant comments we received on the relevant portions of the proposal.

A. Retain Existing Increment System for NO_X

1. Existing Characteristics of the Regulatory Scheme Fulfill Statutory Criteria

In the February 2005 proposal, we addressed how several aspects of our PSD regulations for NO_X that were not controverted in the *EDF* v. *EPA* court challenge served to satisfy many of the factors applicable under section 166(c). This analysis helps show how our PSD regulations for NO_X, as a whole, satisfy the criteria in section 166.

We continue to believe that many of the factors applicable under section 166(c) are fulfilled by the elements of our regulations that were not challenged in the *EDF* v. *EPA* case. Since we do not interpret the court's decision to require us to reevaluate the entire regulatory framework of the PSD regulations for NO_X we established in 1988, with respect to option 1 of the proposal, we focused our review on the level, time period, and pollutant form (NO_2) reflected in the increments we included in the 1988 PSD regulations for NO_X. Thus, when a factor applicable under section 166(c) was fully satisfied by an aspect of the existing regulations that was not questioned by the court, we did not consider that factor any further in our evaluation of the characteristics of the increment.

In many cases, an aspect of our regulations that was not controverted in the court challenge partially contributes to the fulfillment of an applicable factor but does not fully satisfy that factor. In these instances, to determine if changes to the increments are necessary to satisfy the factors applicable under section 166(c), we also considered the effectiveness of the unchallenged parts of our regulations in conjunction with the three primary characteristics of the increments that were challenged. We believe our obligations under section 166(c) of the Act are satisfied when all of our pollutant-specific PSD regulations for NO_X (including the level and other characteristics of any increment) collectively satisfy the factors applicable under 166(c) of the Act.

a. Increment System

Two of the factors applicable under section 166(c) are fulfilled by employing an increment system in our pollutant-specific PSD regulations for NO_X. In this action, we are retaining this basic framework for our pollutant-specific PSD regulations for NO_X.

An increment-based program fulfills our obligation under section 166(c) to provide ''specific numerical measures against which permit applications may be evaluated.'' Under section 165(a)(3) of the Act, a permit applicant must demonstrate that emissions from the proposed construction and operation of a facility ''will not cause, or contribute to, air pollution in excess of any (A) maximum allowable increase or maximum allowable concentration for any pollutant.'' 42 U.S.C. 7475(a)(3).

An increment is the maximum allowable increase of an air pollutant that is allowed to occur above the applicable baseline concentration. The baseline concentration in a particular area is generally the ambient pollutant concentration at the time the first complete PSD permit application is submitted (*i.e.*, the baseline date) [17] by a new major stationary source or a major modification locating in or otherwise affecting that area.[18] By establishing the maximum allowable level of ambient pollutant concentration increase in a particular area, an increment defines ''significant deterioration.'' Once the baseline date associated with the first proposed new major stationary source or major modification in an area is established, the new emissions from that source consume a portion of the increment in that area, as do any subsequent emissions increases that occur from any source in the area. When the maximum pollutant concentration increase defined by the increment has been reached, additional PSD permits cannot be issued until sufficient amounts of the increment are ''freed up'' via emissions reductions that may be required by the permitting authority. Moreover, the air quality in a region cannot deteriorate to a level in excess of the applicable NAAQS, even if all the increment has not been consumed. Thus, areas where the air pollutant concentration is near the level allowed by the NAAQS may not be able to use the full amount of pollutant concentration increase allowed by the increment.

Thus, an increment is a quantitative value that establishes the ''maximum allowable increase'' for a particular pollutant. It functions, therefore, as a specific numerical measure that can be used to evaluate whether an applicant's proposed project will cause or contribute to air pollution in excess of allowable levels.

Increments also satisfy the second factor in section 166(c) by providing ''a framework for stimulating improved control technology.'' Increments establish an incentive to apply more stringent control technologies in order to avoid violating the increment. Given that the PSD increment level may be consumed by cumulative emissions increases over time, it may become necessary to impose increasingly more stringent levels of control on new sources in order to avoid violating the increment or ensuring that there will be increment remaining for additional economic growth. The more stringent control technologies utilized in these areas may become the basis of BACT determinations elsewhere, as the technologies become more commonplace and the costs tend to decline. See also S. Rep. 95–127 at 18, 30 (3 LH at 1392, 1404) (''the incremental ceiling should serve as an incentive to technology, as a potential source may wish to push the frontiers of technology in a particular case to obtain greater productive capacity within the limits of the increments'').

Because the existing increment-based regulatory framework, which was not controverted in *EPA* v. *EDF*, satisfies these criteria we are retaining the increment approach in this action.

However, we recognize that an increment system is not the only way to fulfill the requirements of section 166 of the Act. Congress did not require EPA to utilize increments in its PSD regulations for NO_X but gave EPA the discretion to employ increments if appropriate to meet the criteria and

[16] Section 51.166 of the CFR contains minimum requirements for the submittal and adoption of regulations that are part of a SIP. We are not making similar changes to the Federal PSD regulations at 40 CFR 52.21.

[17] This date is actually identified as the 'minor source baseline'' date in EPA regulations. 40 CFR 51.166(b)(14); 40 CFR 52.21(b)(14). Because the baseline concentration does not include emissions from certain major sources that consume increment, EPA has distinguished between the 'minor source baseline'' date and the 'major source baseline date.'' See 40 CFR 51.166(b)(13)–(14); 40 CFR 52.21(b)(13)–(14).

[18] For PSD baseline purposes, a source generally ''affects'' an area when its new emissions increase is projected to result in an ambient pollutant increase of 1 $\mu g/m^3$ (annual average) or more of the pollutant.

goals and purposes set forth in sections 166 and 160 of the Act. 42 U.S.C. 7474(d); *EDF* v. *EPA*, 898 F.2d at 185 (''Congress contemplated that EPA might use increments''). Thus, in this action, we are also allowing States to develop alternatives to an increment system at their discretion, and to submit any such alternative program to EPA so that we can determine whether it satisfies the requirements of section 166. In addition, in a separate rulemaking action, we are continuing to develop an alternative regulatory framework that would enable a State to demonstrate that the requirements of section 166 are satisfied by reducing NO_X emissions from existing sources under the CAIR and other similar programs.

b. Area Classifications

Having increments set at different levels for each class of PSD area helps to fulfill two of the factors applicable under section 166(c) of the Act. Under the three-tiered area classification scheme established by Congress, Class I areas are areas where especially clean air is most desirable. The original Class I areas established by Congress included national parks, wilderness areas, and other special areas that require an extra level of protection. It stands to reason that the most stringent increment is imposed in Class I areas. In contrast, Class III areas, which are those areas in which a State wishes to permit the highest relative level of industrial development, have the least stringent increment level. Areas that are not especially sensitive or that do not wish to allow for a higher level of industrial growth are classified as Class II. When Congress established this three-tiered scheme for SO_2 and PM, it intended that Class II areas be subject to an increment that allows ''moderately large increases over existing pollution.'' H.R. Rep. 95–294, 4 LH at 2609. The Petitioners in *EDF* v. *EPA* did not contest EPA's decision in 1988 to employ this same classification scheme in our pollutant-specific PSD regulations for NO_X.

Establishing the most stringent increments in Class I areas helps fulfill EPA's obligation to establish regulations for NO_X that ''preserve, protect, and enhance the air quality'' in parks and special areas. Class I areas are primarily the kinds of parks and special areas covered by section 160(2) of the Act.

With the air quality in Class I areas subject to the greatest protection, this scheme then provides two additional area classifications with higher increment levels to help satisfy the goal in section 160(3) of the Act that EPA ''insure that economic growth will occur in a manner consistent with preservation of clean air resources.'' In those areas where clean air resources may not require as much protection, more growth is allowed. By employing an intermediate level (Class II areas) and higher level (Class III areas), this classification scheme helps ensure that growth can occur where it is needed (Class III areas) without putting as much pressure on existing clean air resources in other areas where some growth is still desired (Class II areas).

By redesignating an existing Class II area to Class III, States may accommodate economic growth and air quality in areas where the Class II increment is too stringent to allow the siting of new or modified sources. The procedures specified by the Act for such a redesignation require a commitment of the State government to the creation of such an area, extensive public review, participation in the SIP area redesignation process, and a finding that the redesignation will not result in the applicable increment being exceeded in a nearby Class I or Class II area. See 42 U.S.C. 7474(a)–(b) (Section 164(a)–(b)). Our 1988 analysis, 53 FR at 3702–05, and the subsequent issuance of PSD permits for major new and modified sources of NO_X since that time [19] tend to confirm that, with the existing increment levels, the three-tiered classification system has allowed for economic growth, consistent with the preservation of clean air resources.

However, we do not believe that this framework alone completely satisfies the factors applicable under section 166(c) of the Act. The increment that is employed for each class of area is also relevant to an evaluation of whether the area classification scheme achieves the goals of the PSD program. We discuss the increments further below.

c. Permitting Procedures

Two of the factors applicable under section 166(c) are fulfilled by the case-by-case permit review procedures that are built into our existing regulations. The framework of our existing PSD regulations employs the preconstruction permitting system and procedures required under section 165 of the Act. 42 U.S.C. 7475. These requirements are generally reflected in sections 51.166 and 52.21 of EPA's PSD regulations in Title 40 of the Code of Federal Regulations. These permitting and review procedures, which we interpret to apply to construction of new major sources and to major modifications at existing sources, fulfill the goals set forth in sections 160(4) and 160(5) of the Act. These goals require that PSD programs in one State not interfere with the PSD programs in other States and that PSD programs assure that any decision to permit increased air pollution is made after careful evaluation and public participation in the decisionmaking process. For the same reasons set forth in our proposal, 70 FR at 8896, we continue to believe these factors are fulfilled by employing the permit review procedures.

d. Air Quality Related Values Review by Federal Land Manager and Permitting Authority

Under an increment approach, we consider the review of AQRVs in Class I areas by the Federal Land Manager (FLM) and State permitting authority to be an additional measure that helps to satisfy the factors in sections 166(c) and 160(2) which require that EPA's PSD regulations for NO_X protect air quality values, and parks and other special areas, respectively. In the 1988 rulemaking addressing PSD for NO_X, EPA extended the AQRV review procedures set forth in sections 51.166(p) and 52.21(p) to cover NO_2. 53 FR at 3704. These AQRV review procedures were established based on section 165(d) of the Act, and they were originally applied only in the context of the statutory increments for PM and SO_2. However, because they also address many of the factors applicable under section 166(c) of the Act, EPA also applied them to NO_X through regulation.

Section 165(d) creates a scheme in which the FLM and permitting authority must review the impacts of a proposed new or modified source's emissions on AQRVs. The Act assigns to the FLM an ''affirmative responsibility'' to protect the AQRVs in Class I areas. The FLM may object to or concur in the issuance of a PSD permit based on the impact, or lack thereof, that new emissions may have on any affected AQRV that the FLM has identified. If the proposed source's emissions do not cause or contribute to a violation of a Class I increment, the FLM may still prevent issuance of the permit by demonstrating to the satisfaction of the permitting authority that the source or modification will have an adverse impact on AQRVs. Section 165(d)(2)(C). On the other hand, if the proposed source will cause or contribute to a violation of a Class I increment, the permitting authority (State or EPA) shall not issue the permit unless the owner or operator demonstrates to the satisfaction of the FLM that there will be no adverse

[19] EPA does not formally track the issuance of PSD permits across the country, but EPA's Regional Offices have confirmed that various PSD permits for sources of NO_X have been issued by many of the States in their respective jurisdictions.

impact on AQRVs.[20] Thus, the compliance with the increment determines whether the FLM or the permit applicant has the burden of satisfactorily demonstrating whether or not the proposed source's emissions would have an adverse impact on AQRVs.[21]

In our February 2005 proposal, we referred to this process as the ''FLM review.'' However, we recognize this term is somewhat of an oversimplification because it fails to account for the role of the State permitting authority. In this final action, we more precisely describe this process as the review of AQRVs by the FLM and permitting authority.

Incorporating these AQRV review procedures into the PSD regulations for NO_X helps to provide protection for parks and special areas (which are generally the Class I areas subject to this review) and air quality values (which are factors considered in the review). As we stated in the proposed rule, we believe the term ''air quality values'' should be given the same meaning as ''air quality related values.'' Legislative history indicates that the term ''air quality value'' was used interchangeably with the term ''air quality *related* value'' (AQRV) regarding Class I lands.[22]

Section 166(d) of the CAA provides that EPA may promulgate measures other than increments to satisfy the requirements of section 166. Legislative history indicates that the AQRV review provisions of section 165(d) were intended to provide another layer of protection, beyond that provided by increments. The Senate committee report stated the following: ''A second test of protection is provided in specified Federal land areas (Class I areas), such as national parks and wilderness areas; these areas are also subjected to a review process based on the effect of pollution on the area's air quality related values.'' S. Rep. 95–127, at 4 LH at 1401.

One commenter asserted that the AQRV review process is not effective in protecting air quality in national parks and wilderness areas because the FLM does not have unilateral authority to prevent the issuance of a permit when it alleges that a proposed new source or modification will have an adverse impact on an AQRV. We recognize that the FLM has the burden to convince the permitting authority that there will be an adverse impact on AQRVs in situations where the proposed project will not cause an increment to be violated. Nevertheless, we do not agree that the effectiveness of this process for reviewing impacts on AQRVs is diminished simply because the ultimate decision to issue or deny a permit does not rest with the FLM in all cases.

While the permitting authority has the discretion to disagree with the FLM's analysis, that discretion is not unfettered. See *In the matter of Hadson Power 14—Buena Vista,* 4 EAD 258, 276 (Oct. 5, 1992) (opinion of EPA's Environmental Appeals Board in PSD Appeal No. 92–3, 92–4, 92–5). The permitting authority must carefully consider the FLM's analysis. If a permitting authority is not convinced that there will be an adverse impact on AQRVs from the proposed facility, the permitting authority must provide a ''rational basis'' for such a conclusion. 50 FR 28549 (July 12, 1985); *Hadson Power* at 276. In addition, our visibility regulations require that States provide an explanation when they disagree with an FLM's conclusion that visibility will be adversely impacted. 40 CFR 51.307(a)(3). The District of Columbia Circuit Court has recently observed that a State must justify its decision in writing when it disagrees with an FLM report finding an adverse impact on visibility. See *National Parks Conservation Ass'n* v. *Manson,* No. 04–5327, slip op. at 8 (D.C. Cir. July 1, 2005).

The value of the FLM review procedure is that it requires a review of impacts on AQRVs by the FLM and permitting authority for each project that may have an adverse impact on AQRVs in a specific, localized area. In those cases where the increment is not violated and the permitting authority agrees that a proposed project will adversely affect AQRVs, the parks and other special areas will be protected by denial of the permit or by requiring the applicant to modify the project to alleviate the adverse impact. Although it is not the final decisionmaker on this question in such a situation, the FLM plays an important and material role by raising these issues for consideration by the permitting authority, which in the majority of cases will be the State.

Furthermore, we have not asserted that the AQRV review process alone is sufficient to satisfy the requirements of section 166(c) for NO_X. As discussed below, we believe the statutory factors are fulfilled when the review of AQRVs is applied in conjunction with increments and other aspects of our PSD regulations.

Several commenters recommended that we improve the FLM review process by providing specific guidance on how to evaluate and manage adverse impacts on AQRVs from NO_X emissions. These commenters called for a more specific framework or systematic approach for conducting the review of impacts on AQRVs and determining whether impacts are adverse. Some requested that EPA provide more definition of the concept of AQRVs and circumstances when an AQRV is adversely impacted.

We recognize that the process of reviewing impacts on AQRVs is somewhat ambiguous because it is loosely defined. The CAA does not define AQRV, except to note that it includes visibility. Section 165(d)(1)(B). Some additional insight can be gained from the following description in legislative history:

> The term ''air quality related values'' of Federal lands designated as class I includes the fundamental purposes for which such lands have been established and preserved by the Congress and the responsible Federal agency. For example, under the 1916 Organic Act to establish the National Park Service (16 U.S.C. 1), the purpose of such national park lands ''is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.''

S. Rep. 95–127 at 36, reprinted at 3 LH at 1410.

However, we are not prepared at this time to provide further definition for these concepts in this rulemaking action for pollutant-specific PSD regulations for NO_X. We believe the existing AQRV review process provides the avenue to satisfy the factors applicable under section 166(c) of the Act in conjunction

[20] Even if such a waiver of the Class I increment is allowed upon a finding of no adverse impact, the source must comply with such emissions limitations as may be necessary to ensure that the Class II increment for SO_2 or PM is not exceeded. Section 165(d)(2)(C)(iv). In 1988, EPA made this provision applicable to the PSD provisions for NO_X, with a cap of 25 $\mu g/m^3$ – the NO_2 Class II increment. 53 FR at 3704; 40 CFR 51.166(p)(4) and 52.21(p)(5).

[21] In response to concerns that Class I increment would hinder growth in areas surrounding the Class I area, Congress established Class I increments as a means of determining where the burden of proof should lie for a demonstration of adverse effects on AQRVs. *See* Senate Debate, June 8, 1977 (3 LH at 725).

[22] *See* S. Rep. 95–127, at 12, reprinted at 3 LH at 1386, 1410 (describing the goal of protecting ''air quality values'' in ''Federal lands—such as national parks and wilderness areas and international parks,'' and in the next paragraph and subsequent text using the term ''air quality related values'' to describe the same goal); *id.* at 35, 36 (''The bill charges the Federal land manager and the supervisor with a positive role to protect *air quality values* associated with the land areas under the jurisdiction of the [FLM]'' and then describing the statutory term as ''air quality related values''). H.R. Report 95–564 at 532 (describing duty of Administrator to consider ''air quality values'' of the tribal and State lands in resolving an appeal of a tribal or State redesignation, which is described in the final bill as ''air quality related values'').

with other aspects of our PSD regulations.

The AQRV review process applies to SO_2 and PM as well, and thus is broader than the scope of this rulemaking for NO_X. We have been engaged in a separate action to consider refinements to the AQRV review process. In 1996, the Agency, among other refinements, proposed the following definition of AQRV:

> * * * visibility or a scenic, cultural, physical, biological, ecological, or recreational resource that may be affected by a change in air quality, as defined by the Federal Land Manager for Federal lands, or by the applicable State or Indian Governing Body for nonfederal lands.

61 FR 38250, 38322 (July 23, 1996). However, we have not reached the closure on the evaluation of these issues. We will continue to work with Federal land management agencies and consult with States and other stakeholder groups on potential reforms to the AQRV review process, including evaluating the potential of a critical loads approach, as discussed in section VII of this preamble.

e. Additional Impacts Analysis

The additional impacts analysis set forth in our regulations also helps fulfill the criteria and goals and purposes in sections 166(c) and 160. The additional impacts analysis involves a case-by-case review of potential harm to visibility, soils, and vegetation that could occur from the construction or modification of a source.

Sections 51.166(o)(1) and 52.21(o)(1) of the PSD regulations require that a permit provide the following analysis:

> an analysis of the impairment to visibility, soils and vegetation that would occur as a result of the source or modification, and general commercial, residential, industrial and other growth associated with the source or modification. The owner or operator need not provide an analysis of the impact on vegetation having no significant commercial or recreational value.

This requirement was based on section 165(e)(3)(B) of the CAA, which provides that EPA establish regulations that require ''an analysis of the ambient air quality, climate and meteorology, terrain, soils and vegetation, and visibility at the site of the proposed major emitting facility and in the area potentially affected by emissions from such facility * * *'' 42 U.S.C. 7475(e)(3)(B).

This portion of the additional impacts analysis is especially helpful for satisfying the requirements of section 166(c) in Class II and Class III areas. These areas are not subject to the additional AQRV review that applies only in Class I areas. We agree with the commenter who pointed out that our regulations under section 166 must also provide protection for Class II and Class III areas. While not as intensive a review as the AQRV analysis required in Class I areas, the consideration of impairments to visibility, soils, and vegetation through the additional impacts analysis contributes to the satisfaction of the factors applicable under section 166(c) of the CAA in all areas, including Class II and Class III areas.

f. Installation of Best Available Control Technology

The requirement that new sources and modified sources subject to PSD apply BACT is an additional measure that helps to satisfy the factors in sections 166(c), 160(1), and 160(2) of the Act. This requirement, based on section 165(a)(4) of the CAA, is included in EPA's PSD regulations and thus is also part of the regulatory framework for the Agency's pollutant-specific regulations for NO_X. 40 CFR 52.21(j); 40 CFR 51.166(j). Our existing regulations define ''best available control technology'' as ''an emission limitation * * * based on the maximum degree of reduction for each pollutant subject to regulation under the Act * * * which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source through application of production processes or available methods, systems, and techniques * * *.'' 40 CFR 52.21(b)(12); 40 CFR 52.166(b)(12). This pollutant control technology requirement is rigorous and in practice has required significant reductions in the pollutant emissions from new and modified sources. The control of NO_X emissions through the application of BACT helps to protect air quality values, public health and welfare, and parks and other special areas.

2. Characteristics of Increments for NO_X

Because *EDF* v. *EPA* concerned certain characteristics of the increments for NO_X that we had established in 1988, we sought comments in our proposal on the possible need to (1) create additional increments for forms of NO_X other than NO_2 alone; (2) promulgate additional increments for an averaging period other than the existing annual period, *i.e.*, ''short-term'' increments; and (3) increase the stringency of the existing NO_2 increments by lowering the allowable levels. Several commenters opposed our proposal to retain the annual NO_2 increments at existing levels for all area classifications. However, many commenters supported the existing increments, believing that they provide adequate environmental protection and meet the requirements of section 166(c) of the Act.

The majority of commenters that opposed retaining the existing increments recommended we adopt various alternatives to the existing NO_2 increments, including new short-term increments, increments measured by a different form of NO_X, and the use of critical loads in lieu of the present increment system. A few commenters felt that the existing levels of the increments are not adequate to protect the environment but did not recommend specific ways to change them. One commenter supported the existing increments but recommended that EPA enact additional mechanisms for protecting AQRVs in Class I areas. Two commenters supported revising and retaining the increment system on an interim basis but then emphasized the need for additional studies to ultimately improve the PSD program for NO_X by switching to a critical loads approach.

After considering these comments, we have decided to retain the existing increments for NO_X without any of the changes recommended by commenters. We have not been persuaded by comments (including the information contained in studies provided by the commenters) that there is sufficient basis for EPA to modify the ''safe harbor'' increments. Thus, we are retaining annual NO_2 increments for each area classification with a level based on the same percentages of the NAAQS Congress employed to establish the SO_2 increments. As a result, the Class I increment for NO_2 remains at 2.5 $\mu g/m^3$ (annual average). The Class II increment for NO_2 is 25 $\mu g/m^3$ (annual average) and the Class III increment for NO_2 is 50 $\mu g/m^3$ (annual average).

In evaluating the level, averaging period, and form of increments for NO_X, we applied the following four factors applicable under section 166(c): (1) Protect air quality values; (2) protect public health and welfare from adverse effects from air pollution that occur even when the air quality meets the NAAQS; (3) protect air quality in parks and special areas; and (4) ensure economic growth consistent with preservation of clean air resources.[23]

[23] We have paraphrased these factors here and in other sections to facilitate the explanation of our reasoning. However, we recognize that the statutory language is broader than the shorthand we use here for convenience.

We continue to believe that the other four factors identified in sections 166(c) and 160 of the Act do not relate to the level, time period, and form of the increments and thus are more appropriately considered when determining the overall framework for PSD regulations. Since we believe that those other factors are satisfied by the increment and area classification framework and other measures contained within our PSD regulations, we do not believe that it is necessary to further consider those other four factors when evaluating the characteristics of increments of NO_X.

a. Fundamental Elements of Increments

In the proposal, we described three elements which we believed were fundamental to the PSD increments under the regulatory framework established by Congress. We considered these elements in determining whether to modify the existing increments. First, an increment represents an allowable marginal increase in ambient air pollution concentrations resulting from increases in the emissions of a particular pollutant after the ''baseline'' date in the affected PSD area. Second, increments are not intended to remedy the effects of pre-existing sources of pollution in attainment areas, but rather prevent excessive growth in emissions in these areas that already have ambient air pollution levels below the NAAQS. The third fundamental element of increments is that they are intended to allow the same level of growth in each area with a particular classification and thus should be uniform across the nation for each area classification. Most commenters did not question these fundamental elements of increments, but some concerns were raised.

(1) Marginal level of increase. Increments represent the maximum allowable level of pollutant concentration increase in an area where the air quality is in attainment with the NAAQS or has been designated ''unclassifiable.'' Thus, an increment is essentially a marginal level of increase in air pollution that is allowable for particular areas. The statutory increments are expressed as ambient concentrations rather than mass values. An increment differs from the NAAQS in that an increment is not an absolute air quality ceiling. The pollutant increase allowed by an increment is added to the ''baseline'' air pollution levels existing in an affected PSD area at the time a new or modified major source submits an application for a PSD construction permit. Thus, in applying the factors applicable under section 166(c), we interpreted section 166 of the Act to require an analysis of the impacts on air quality values, health and welfare, and parks and special areas that could occur as a result of some marginal increase in the concentration of air pollution in an area.

As noted earlier, EPA does not interpret the PSD program to require it to set increments at a level where there will be no negative effects from a marginal increase in air pollution in the amount of the increment. Congress did not anticipate that an increment would be a level of increase below which there would be no negative effects. An increment is the level that defines ''significant'' deterioration; it allows some deterioration of air quality. The PSD program allows for some increase in effects when necessary to ensure that economic growth may continue to occur consistent with the preservation of clean air resources.

(2) Increments need not remedy existing air pollution. Because an increment is an allowable level of increase, it does not function to reduce air pollution in existence before the baseline dates. As its name indicates, the PSD program is intended to protect against significant deterioration of the air quality in attainment and unclassifiable areas from the construction and operation of new and modified sources of a particular size. Thus, the PSD program limits increases in emissions of a pollutant (as measured by the increase in ambient concentrations of the pollutant) but does not seek to reduce existing emissions or ambient air pollutant concentrations to a particular level.

Several commenters seemed to suggest that the increment system should somehow be designed to improve the air quality to remedy existing effects. However, we believe it is clear that the increments established by Congress were only intended to define the allowable levels of marginal increase in air pollution above a baseline concentration that are established in each area when the first major source applies for a PSD permit in that area. 42 U.S.C. 7479(4). As a result, we do not believe we are required to set increments at a level intended to alleviate existing negative effects.

When we evaluated the characteristics of increments necessary to prevent significant deterioration of air quality, we also recognized that EPA has adopted several other programs under the CAA that reduce the adverse effects from existing air pollution sources. These programs are designed to reduce emissions from existing sources, while the increments serve the complementary function of limiting increases in emissions from the construction of new major sources and the modification of existing ones. Since our proposal, EPA has taken a series of actions that require States to achieve substantial reductions in NO_X emissions.

On March 10, 2005, EPA finalized the CAIR (70 FR 25162, May 12, 2005), which requires substantial emissions reductions of SO_2 and NO_X from sources in 28 eastern States and the District of Columbia to help downwind $PM_{2.5}$ and 8-hour ozone nonattainment areas achieve the NAAQS. Under this program, emissions of NO_X are regulated as a precursor of either ozone or fine PM, or both. EPA is requiring the affected States to submit revised SIPs that include control measures to reduce emissions of NO_X to assist in achieving the NAAQS.[24] This program is based on State obligations to address interstate transport of pollution under section 110(a)(2)(D) of the Act. The required NO_X reductions must be implemented by the States in two phases, with the first phase beginning in 2009 (covering 2009–2014) and the second phase beginning in 2015. The EPA estimates that the two-phase CAIR program will reduce NO_X emissions by a total of 2 million tons from 2003 emissions levels.

Reduction of NO_X emissions from existing sources is also required under EPA's 1998 NO_X SIP Call, which also addresses State obligations to address interstate transport of pollution. The NO_X SIP Call requires 22 eastern States and the District of Columbia to submit SIP revisions that prescribe NO_X emissions reductions by a specified deadline. The EPA has projected that approximately 900,000 tons of NO_X per ozone season will be reduced as a result of this particular program. While these reductions are intended primarily to improve air quality in the East with respect to ozone, it is clear that the required decreases in NO_X emissions will also decrease acid deposition, nitrogen loadings to aquatic and terrestrial ecosystems, and ambient concentrations of NO_2.

In addition, EPA has taken further action to reduce NO_X emissions from existing sources that contribute to visibility problems, through implementation of the Regional Haze program under sections 169A and 169B of part C.[25] On July 6, 2005, EPA issued

[24] The required reductions in NO_X emissions will also result in substantial visibility improvements and reductions in nitrogen deposition in many parts of the eastern United States.

[25] When the visibility provisions were enacted, the House committee report specifically recognized that the ''visibility problem is caused primarily by emission into the atmosphere of sulfur dioxide,

revised regulations for regional haze, including guidelines for Best Available Retrofit Technology (BART) determinations. The regulations require States to submit SIPs to address regional haze visibility impairment in 156 mandatory Class I Federal areas located throughout the U.S. 70 FR 39104. As required by the Act, the regulations require certain major stationary sources, placed in service between August 7, 1962 and August 7, 1977, and which emit 250 tons or more per year of a visibility-impairing pollutant, including NO_X, to undergo a BART analysis.

The BART requirements are in addition to other elements of the Regional Haze program in regulations that EPA originally promulgated in 1999. 64 FR 35714 (July 1, 1999) (''Regional Haze rule''). The main components of this rule require States to: (1) Submit SIPs that provide for ''reasonable progress'' toward achieving ''natural visibility conditions'' in Class I areas; (2) provide for an improvement in visibility in the 20 percent most impaired days; (3) ensure no degradation in visibility occurs on the 20 percent clearest days; and (4) determine the annual rate of visibility improvement that would lead to ''natural visibility'' conditions in 60 years.

At the time that Congress established the Regional Haze Program, a Congressional committee recognized that the PSD program was not necessarily created to alleviate adverse effects resulting from contributions by existing sources. When it was writing section 169A of the Act at the same time that it established the PSD program, the House recorded the following observations in a committee report:

> [T]he committee recognizes that one mechanism which has been suggested for protecting these areas, the mandatory Class I increments of new section 160 ('Prevention of Significant Deterioration') do not protect adequately visibility in Class I areas. First, inadequately controlled, existing gross emitters such as the Four Corners plant would not be affected by the significant deterioration provisions of the bill. Their emissions are part of the baseline, and would not be required to be reduced by new section 160 of the act.

H. Rep. 95–294, at 205, 4 LH at 2672 (emphasis added). This statement indicates that protection of air quality values under section 166(c) is provided when an increment limits significant deterioration of air quality resulting from increases in emissions after the baseline date, but does not require an increment that addresses adverse impacts on air quality values, such as visibility, that are caused by pre-existing emissions.

In addition, in the 1990 Amendments, Congress enacted title IV to address the problem of acid deposition. We believe this supports an interpretation that the PSD measures called for in section 166 need not address acid deposition impacts that are attributed to emissions that existed prior to the baseline date. When we use an increment approach, our view is that the PSD program is intended to focus on establishing a marginal level of increase in emissions that will prevent significant air quality deterioration and, in conjunction with AQRVs identified by the FLM, provide protection against increases in adverse effects, such as acidification, that may result from emissions increases after the baseline date.

Thus, in areas where the PSD baseline has not yet been established, the emissions reductions achieved by these programs will result in lower PSD baseline concentrations. Then the increments will operate as an allowable level of marginal increase that prevents the significant deterioration of air quality beyond the baseline concentration in these attainment areas. This approach is consistent with Congressional intent that the baseline concentration, representing the air quality in an attainment area subject to PSD, be established on the date of the first application for a permit by a PSD source affecting that area. 42 U.S.C. 7479(4). See also *Alabama Power* v. *Costle*, 606 F.2d 1068, 1088–89 (D.C. Cir. 1979).

(3) Increments should be uniform for each area classification. Several commenters disagreed with our view that the increments should be uniform throughout the U.S. in each area with the same classification. These commenters argued that uniform national standards are not required by the Act. We continue to believe that the PSD program is intended to allow the air quality in each area of the country attaining the NAAQS, and with the same area classification, to ''deteriorate'' by the same amount for each subject pollutant, regardless of the existing air quality when the increment is initially triggered in a particular area, as long as such growth allowed within the constraints of the increment does not cause adverse impacts on site-specific AQRVs or other important values.[26] In this way, the PSD increments avoid having a disproportionate impact on growth that might disadvantage some communities, recognizing that the increments in themselves would not address existing negative impacts but cannot allow significant new adverse impacts. Congress established the foundation for uniform national increments when it created increments for SO_2 and PM under section 165 of the Act.

Thus, when we use the framework of an increment and area classification system in the national PSD regulations for a particular pollutant, we believe that we should establish a single increment for each class of area such that this allowable level of increase applies uniformly to all areas in the nation with that particular classification. This is necessary for EPA to ensure equitable treatment by allowing similar levels of emissions growth for all regions of the country that a State elects to classify in a particular manner. The following statement from the legislative history of the PSD program supports this interpretation of what Congress intended:

> Some suggestions were made that the pollution increments should be calculated as a function of existing levels of pollution in each area. But the inequities inherent in such an approach are readily evident * * *. The committee's approach—increments calculated as a percentage of the national standard—eliminates those inequities. All areas of the same classification would be allowed the same absolute increase in pollution, regardless of existing levels of pollution.

H. Rep. 95–294, at 153, 4 LH at 2620. See also S. Rep. 95–127, at 30, 3 LH at 1404 (''These increments are the same for all nondeterioration areas, thus providing equity for all areas''). This indicates that Congress did not intend to impose more stringent restrictions under the PSD program on particular areas of the country based on their current levels of air pollution, unless, of course, the current levels of pollution concentrations are so near the NAAQS that the full amount of incremental change cannot be allowed.

Instead, Congress provided States with the authority to determine situations when it might be desirable to allow a greater or lesser level of air quality protection in a particular area. Except for certain Federal lands designated as mandatory Class I areas

oxides of nitrogen, and particulate matter * * *'' H.R. Rep. 95–294, at 204, reprinted in 4 LH at 2671. NO_X may result in visibility impairment either locally (a coherent plume effect) or by contributing to regional haze, which has been recognized as primarily a fine particle phenomenon. 1995 Staff Paper for NO_X at 89. For the reasons discussed earlier, we do not believe we need to consider PM effects in this court-ordered reevaluation of the NO_2 increments.

[26] Congress also recognized that some areas may have air pollution levels already near the levels allowed by the applicable NAAQS, whereby the NAAQS would govern and the full amount of increment might not be usable.

that could not be reclassified, Congress classified all other areas as Class II areas and gave the States the power to reclassify these areas to Class I or Class III to provide for greater protection of air quality or allow more growth, depending on the values of the State and the community in that area. The ability to reclassify most areas allows the States to make their own choices about which areas require more protection of air quality and which areas should be allowed more growth consistent with the protection of air quality. See H.R. Rep. 95–294, at 153–154, 4 LH at 2620–2621.

The same equitable considerations are applicable when we establish PSD regulations containing increments and area classifications under section 166 of the Act. Since Congress did not intend for the increments it established to impose a disproportionate impact on particular areas, we do not believe it intended for EPA to do so under section 166 of the Act. Thus, to treat all areas of the country in an equitable manner, it is necessary for us to establish uniform national increments for NO_2 that define a maximum allowable increase for each of the three area classifications. Then, States and tribes in exercising their unique authority to manage their own air quality, in accordance with their own unique and individual goals and objectives, may decide how to best manage their air quality resources by reassigning area classifications within any particular area (other than mandatory Federal Class I areas).

Some of the commenters opposing uniform national increments disagreed with our view that the increments should be uniform because they felt we improperly focused on ''providing equal opportunity for new emission sources without fulfilling [our] statutory duty to protect ecological resources across the country.'' What is required, according to these commenters, is ''the protection of air quality related values and fulfillment of the Act's goals and purposes—which unquestionably include protection of individual parks, wilderness areas, and other areas of important value.'' Moreover, these commenters argued that because of our insistence on the use of uniform increments no amount of information would ever provide a ''nationally applicable'' basis for EPA to revise the NO_2 increments, because, as EPA recognizes, ''the sensitivity of individual ecosystems varies greatly'' across locations.

We do not believe that our position supporting uniform national increments under the national PSD program necessarily conflicts with our responsibility to protect sensitive ecological resources located throughout the U.S. The use of uniform national increments—only one component of the PSD regulations for NO_X—does not mean that the PSD program is not responsive to different levels of adverse effects in particularly sensitive areas, such as Class I areas.

We weighed Congress' goal to treat all areas with a particular classification the same against the unique variability in ecosystem effects that may result from NO_X emissions (described elsewhere in this preamble). We ultimately concluded that multiple goals could be achieved by retaining uniform national increments for NO_2 for each area classification and augmenting them with an additional case-by-case procedural review which can identify and protect against variable effects that could occur in especially sensitive areas, even when the increment is not fully consumed. Indeed, this is what Congress did under its original PSD program requirements for SO_2 and PM.

This approach is embodied in the framework for the PSD regulations for NO_X that we adopted in 1988. As described in section VI.A.1. above, each permit application is subject to an ''additional impacts'' analysis that allows the permitting authority to consider the sensitivity of a particular area. In Class I areas, the AQRV review procedures provide further protection, notwithstanding the allowable amount of pollutant concentration increase allowed by the Class I increment, for the air quality values and the national parks and wilderness areas included in Class I areas. These two sets of special procedures are an important part of the overall regulations for preventing significant air quality deterioration, while retaining the uniform national increments. This approach allows EPA to achieve the equity of setting a uniform increment level for all areas with a particular classification, while directing that permitting authorities conduct a more intensive, site-specific review to identify effects that might occur in a more sensitive area but not necessarily in all areas of the country with that classification.

As noted earlier, we read section 166 of the Act to direct EPA to establish a system of regulations containing provisions that collectively satisfy the content requirements in sections 166(c) and 166(d) of the Act. Thus, we think Congress contemplated that we would consider all the provisions in our regulations as a group when establishing particular aspects of those regulations. As a result, we believe it is appropriate and consistent with our statutory obligations to consider the protection provided by the additional impacts analysis and the review of AQRVs in Class I areas when establishing increments.

We also believe that the factors applicable under section 166(c) of the Act are met when we establish a uniform national increment for NO_2 for each class of area and augment the increment system with an additional case-by-case procedural review to identify and protect against variable adverse effects that could occur in especially sensitive areas before the amount of pollutant increase defined by the increment is reached.

We, nevertheless, understand the commenters' concern over our position that the increments should be uniform, when they conclude that no amount of evidence concerning ecological effects will be useful for revising the increments, because of the highly variable sensitivity of ecosystems throughout the U.S. While we have indicated that it would be very difficult to use such variable data to modify the increments as uniform increments, we believe it may be possible to develop uniform increments that provide for a reasonable level of protection in most areas if sufficient national critical loads data are available to determine the range of adverse effects that must be considered. Clearly, such extensive data are not available at this time.

Some commenters argued that we should establish local standards under section 166 to address the known variable effects from NO_X. For the most part, however, the comments related to the use of a critical loads approach rather than a set increment or variable increments for NO_X. In either case, however, because of the equitable considerations and State prerogatives to classify areas described above, we do not believe that Congress intended for EPA to create a federally imposed system of regional or locally based increments or to authorize EPA to do so to address any variability in potential effects. Likewise, we do not believe it is permissible or appropriate for us to establish uniform increments at levels so stringent that they prevent any adverse impact on the most sensitive receptors in any part of the U.S. Although such an approach might achieve uniformity across all areas, it would unduly restrict growth in those areas of the country where adverse effects may not occur at the levels where the adverse effects occur in more sensitive areas.

Furthermore, our regulations also provide protection against localized impacts by requiring each new or

modified source subject to PSD to apply BACT. The BACT requirement provides for a case-by-case State determination, taking into account energy, environmental, and economic impacts and other costs to determine the best method for minimizing a source's emissions. See section 169(3) of the Act.

b. Analytical approaches for establishing increments. Mindful of the above considerations about the characteristics of the increments, we reviewed the scientific and technical evidence available for the 1996 review of the NO_2 NAAQS in order to determine whether, and to what extent, the ''safe harbor'' increments should be modified to satisfy sections 166(c) and 160 of the Act. As summarized in section V of this preamble, EPA's conclusions about whether nitrogen at levels at or below the NAAQS caused negative environmental impacts were mixed, but included findings that negative effects associated with nitrogen deposition (1) did not likely exist (*e.g.*, eutrophication of freshwater systems); (2) were insignificant (*e.g.*, impacts on terrestrial vegetation); or (3) not clearly understood (*e.g.*, chronic and episodic acidification). There was some evidence that at levels below the NAAQS, nitrogen was at least in part contributing to known negative environmental effects. Ultimately, we tried two different analytical approaches—a quantitative and a qualitative evaluation—to reach our decision about whether we had a basis for modifying the safe harbor NO_2 increments so that the increments themselves could provide greater protection against such adverse effects. These approaches and the relevant findings are described below.

(1) Quantitative Evaluation. An increment is not like the NAAQS in that it does not set a uniform pollutant concentration ''ceiling'' against which potential negative ecosystem responses could be evaluated. Instead, an increment allows a uniform allowable pollutant concentration increase above a baseline concentration in an area. Therefore, we evaluated how protective the existing NO_2 increments are by trying to compare the maximum pollutant concentration increases allowed by the NO_2 increments against the pollutant concentrations at which various environmental responses occur. See 70 FR 8900.

Unfortunately, this quantitative approach was hindered because the available evidence we reviewed typically was inconclusive regarding the pollutant concentrations at which negative environmental responses associated with NO_X could be expected to occur. As described in section V, in many instances, there was uncertainty about the specific relationship between the pollutant, NO_2, and its precise role in causing a particular negative response to an environmental receptor.

The Agency encountered the same problem in the past during the last periodic review of the NO_2 NAAQS. Because of our inability to derive from the available evidence a way to quantify how much of a contribution atmospheric deposition of nitrogen is making to negative environmental effects and what levels of reduction are necessary to remedy the situation, we were precluded from recommending secondary (welfare-based) NAAQS for NO_X. See 1995 Staff Paper for NO_X, vol. 1, pp. 91–95. For similar reasons, we could not quantitatively identify the level of increase in NO_X emissions at which significant negative environmental effects occur. Thus, we do not have a quantitative way to determine whether or how to modify the existing NO_2 increments in order to prevent significant deterioration.

Recognizing the inconclusive nature of the scientific and technical evidence contained in the 1993 Criteria Document, we looked beyond that information to later studies that might provide the information we needed to determine the quantitative dose-response relationships associated with NO_X in the atmosphere. We found that later studies enable us to better understand N deposition trends, the mechanisms by which NO_X contributes to N deposition, and the ways in which sensitive ecosystem resources respond to excess nitrogen. However, even in the later studies, there continues to be significant uncertainty about the quantitative dose-response relationships that we need to evaluate the effectiveness of the existing NO_2 increments.

Some commenters saw the later studies, which provide evidence of increased levels of N deposition in some areas of the U.S., and scientific findings more closely linking nitrogen deposition to observed negative ecosystem responses as ''proof'' that the existing NO_2 increments are ineffective. We disagree with the commenters' claims that evidence of localized impacts in specific sensitive areas, as reflected in later studies, necessarily proves that the existing NO_2 increments across the U.S. are ineffective. It is not clear at this time whether a lower, more stringent increment level that we might select for the national uniform increments would prevent the adverse effects that are currently being observed in a particular park or sensitive area of the U.S. We have already acknowledged that increments are not intended to prevent all negative impacts in all areas, and that the PSD regulations for NO_X contain other mechanisms for protecting sensitive resources where the increment alone does not do so.

We cannot deny the commenters' claims that some areas of the U.S. (primarily in the West) have continued to experience increased rates of N deposition, as studies have shown. However, such information does not change the fact that we are currently unable to find sufficient evidence upon which to establish a dose-response relationship associated with NO_X so that we can scientifically support more stringent numerical levels for the NO_2 increments should we otherwise conclude that a modification is appropriate. Instead, as mentioned above, most published studies have still largely focused on documenting the adverse effects and making links to N deposition as a primary cause. These studies typically fall short of defining a quantitative relationship between emissions of NO_X, N deposition rates, and the negative responses being observed.

There are many recent studies that examine the various sources of the nitrogen input (industry, transportation, agriculture), N deposition budget, geographical location of different nitrogen loadings, and trends in deposition rates, as well as the specific effects of nitrogen deposition on specific ecosystems. These studies in general emphasize the importance of reducing current emissions of NO_X as part of a strategy for reducing observed impacts and promoting ecosystem recovery. However, such studies are not yet able to provide the information needed to identify the dose-response relationships associated with NO_X.

There are several key difficulties associated with the ability to establish a quantitative relationship between NO_X and the negative environmental responses to which nitrogen compounds are known to contribute. Below, we summarize some of the key areas of difficulty for which a better understanding is needed.

(1) Relationship between NO_X emissions and N deposition. It is generally recognized that reducing NO_X emissions will result in reductions in N deposition as well. However, the quantitative relationship between the two is complex and still uncertain. Some recent studies attempt to address the various parameters that together could help to establish this relationship. For example, some recent study results provide evidence of a quantitative

relationship between NO_X emissions and precipitation (wet deposition) NO_3 in the eastern U.S. However, the results of efforts to establish a quantitative relationship between NO_X emissions and total (wet and dry) nitrogen deposition have thus far been inconclusive (Butler, 2000, 2003). These studies point to the reactive nature of components of NO_X as being part of the problem. Besides producing nitric acid or nitrate aerosols, both components of N deposition, NO_X can also result in the formation of peroxyacetyl nitrates (PAN), ozone and other oxidant species. Also, it has been observed that high year-to-year variability in N deposition does not match the relatively small total NO_X emissions changes in the eastern U.S.

(2) Nitrogen deposition budget. Another complication is that total N deposition typically includes the combined contributions of emissions from NO_X (which form nitrates and nitric acid in the atmosphere) and ammonia (ammonium). Emissions of ammonia can be converted to any other nitrogen species and can contribute to all nitrogen-related inputs. (Ammonia Workshop, 2003.) Ammonia and ammonium found in the atmosphere, and in the soil, are generally the result of agricultural activities that are neither regulated directly by the PSD program nor counted towards the consumption of the NO_2 increment (and would not be counted against the increment for NO_X measured as any other form of NO_X). In order to better understand the relationship between the different sources of nitrogen and the ecosystems affected, it is important to also recognize contributions from ammonia and ammonium.

One challenge with understanding the contributions from different nitrogen species is that the mix of pollutant inputs that affect sensitive ecosystems is dynamic. A 2005 report using data from the National Atmospheric Deposition Program National Trends Network has shown that from 1985 to 2002 marked changes in concentrations of sulfate, nitrate and ammonium in wet deposition have occurred. The reported trends indicate ''changes in the mix of gases and particles scavenged by precipitation, possibly reflecting changes in emissions, atmospheric chemical transformations, and weather patterns.'' (Lehmann, 2005.)

In some areas of the country, for example, it is reported that emissions of ammonia are increasing at a greater rate than emissions of NO_X. At the same time, atmospheric ammonium concentrations in wet deposition are increasing at a greater rate than are nitrate concentrations (Fenn, 2003a). The same study indicated that NO_X emissions in the western U.S. are projected to decrease 28 percent by 2018, while ammonia emissions are projected to increase by 16 percent. Another study reports the occurrence of significant increases of ammonia and dissolved inorganic nitrogen in much of the U.S., while reporting regionally significant increases and decreases in nitrate. (Lehmann, 2005.)

Another challenge is that in many areas, particularly in the West, the accuracy of the inventory for ammonia is very uncertain, and historic deposition monitoring (collected mainly in the form of wet deposition) typically has not included the ammonia component. (Fenn, 2003a.) This leads to problems in estimating total N deposition.

We believe that a better understanding of ammonia emissions and the ammonia levels in the atmosphere, and their contribution to total N deposition, is also needed in order to obtain a more complete picture of the atmospheric partitioning of N emissions and total mass of N deposition. This will help us better understand the dose-response relationships between the different sources of nitrogen and the ecosystems affected by them.

Finally, the N deposition budget and associated deposition rates are determined by a complex interaction of multiple processes. Modeling efforts to simulate the formation and deposition of nitrogen species in the West involve a number of data inputs including emissions of nitrogen from various sources of NO_X and ammonia, meteorological parameters, chemical transformation and partitioning of nitrogen species, aerosol dynamics, and rates of wet and dry deposition. (Fenn, 2003a.)

(3) Ecosystem variety and sensitivity. Even if a particular threshold value could be identified to quantifiably relate ambient NO_X concentrations to an adverse effect in a given ecosystem and location, the same threshold is not likely to apply to similar ecosystems throughout the U.S. In our most recent review of the NO_2 NAAQS, we observed that ''a great degree of diversity exists among ecosystem types, as well as in the mechanism by which these systems assimilate nitrogen inputs.'' 60 FR 52831, October 11, 1995 at 52881. As a result, we concluded, ''the relationship between nitrogen deposition rates and their potential environmental impact is to a large degree site- or region-specific and may vary considerably over broader geographical areas or from one system to another because of the amount, form, and timing of nitrogen deposition, forest type and status, soil types and status, the character of the receiving waterbodies, the history of land management and disturbances across the watersheds and regions, and exposure to other pollutants.'' *Id.*

A 2005 paper describes the progress being made by FLMs in identifying the resources that are at risk or sensitive to air pollution in the parks and wilderness areas under their jurisdiction. (Porter, 2005.) Reportedly, the FLMs have also completed qualitative descriptions of the various resources. It is noted that such information is ''specific to each wilderness area or park, because of the tremendous diversity in ecosystem characteristics, sensitivities, and stressors on federal lands.''

Thus, for example, ecosystems in the Northeast have been more strongly affected by acid deposition than have ecosystems in the western U.S. On the other hand, the problem of greater concern in the West results from nitrogen enrichment, which includes nitrogen saturation, eutrophication and alterations in biological communities. In addition, some areas in the West are noted for their sensitivity to relatively low doses of N deposition, particularly at higher elevations.

In addition to the difficulties described above, there are other considerations that add to the complexity of determining dose-response relationships for NO_X. These include: (1) In addition to multiple nitrogen compounds that must be identified, the observed ecosystem responses to pollutant deposition can also be the result of combined pollutant impacts, such as the acidification of lakes from both sulfur and nitrogen deposition; (2) short-term increases of nitrates in streams have occurred in the absence of concurrent increases of N deposition but have been positively correlated with mean annual air temperatures (Murdoch, 1998), and high levels of nitrogen have occurred in the absence of anthropogenic sources; and (3) it may take years before certain ecosystems come into balance with the cumulative amounts of nitrogen inputs (making it difficult to determine the level at which recovery begins).

The difficulty of establishing the dose-response relationships associated with NO_X is further illustrated by EPA's experience in evaluating the feasibility of setting an acid deposition standard. Under section 404 of the 1990 Amendments, Pub. L. 101–549, Congress directed EPA to conduct a study of the feasibility and effectiveness

of an acid deposition standard(s), to report to Congress on the role that a deposition standard(s) might play in supplementing the acidic deposition program adopted in title IV, and to determine what measures would be needed to integrate an acid deposition standard with that program.

The EPA completed this study, ''Acid Deposition Feasibility Study, Report to Congress'' (1995), which concluded that current scientific uncertainties associated with determining the level of an acid deposition standard(s) are significant, and did not recommend setting an acid deposition standard. See *State of New York* v. *Browner*, 50 F. Supp. 2d 141, 149 (N.D.N.Y. 1999) (rejecting States' claim that section 404 required that the report include a deposition standard that would be sufficient to protect sensitive aquatic and terrestrial resources, and affirming EPA interpretation that duty was limited to ''consideration of a description'' of such standards).

While EPA has recognized that programs, such as the CAIR (70 FR 25162, May 12, 2005), that are intended to achieve NO_X emissions reductions pursuant to other statutory provisions will help mitigate acid deposition problems, none of those programs purport to set an acid deposition standard.

We note that one particular study, cited by two commenters, did include a ''conservative recommendation'' for a threshold level (*i.e.*, critical load) for nitrogen deposition based on ''wetfall for Class I areas in the central Rocky Mountains.'' (Williams, 2000.) In addition, it is reported that other efforts are underway by scientists using empirical studies and modeling to estimate critical loads for other areas of the U.S. Also, the NPS has spent considerable time evaluating the effects of both sulfur and nitrogen deposition in several national parks, and has estimated critical loadings associated with some of their important natural resources. (Porter, 2005.)

We have considered whether the concept of a ''critical load'' could be used to identify an alternative increment level. At this time, we do not believe that the current status of such research can be used as a basis for us to establish national increments, or other measures of NO_X, that could be applied throughout the U.S. We do, however, provide further discussion in section VII concerning the critical load concept and its potential for being an effective air quality management tool.

As discussed in the welfare effects section (V.D.2), although we are seeing effects at current nitrogen deposition rates, for the above reasons we believe that it is not technically or practicably feasible to identify a quantitative basis for concluding that the existing NO_2 increments are inadequate to provide protection against the types of adverse effects on ecosystems that may occur in some areas notwithstanding compliance with the NAAQS. In particular, it is not possible to determine a different level of increment protection that would define a significant deterioration level for ecosystem effects associated with emissions of NO_X. Thus, currently available information does not provide a nationally applicable, quantitative basis for revising the existing NO_2 increments.

(2) Qualitative Evaluation. As explained above, the available scientific and technical data do not yet enable us to adequately relate ambient concentrations of NO_X to ecosystem responses. Without such key information, it is difficult to quantitatively evaluate the effectiveness of the ''safe harbor'' increments for protecting air quality values, health and welfare, and parks while ensuring economic growth consistent with the preservation of clean air resources. Alternatively, we must make a qualitative judgment as to whether the existing NO_2 increments or some alternative increments meet the applicable factors.

In this situation, we believe that determining the increment levels that satisfy the factors applicable under section 166(c) is ultimately a policy choice that the Administrator must make, similar to the policy choice the Administrator must make in setting a primary NAAQS ''with an adequate margin of safety.'' See *Lead Industries Ass'n* v. *EPA*, 647 F.2d 1130, 1147 (D.C. Cir. 1980) (where information is insufficient to permit fully informed factual determinations, the Administrator's decisions rest largely on policy judgments). Using a similar approach is warranted because both section 109 and section 160(1) direct the Administrator to use his or her judgment in making choices regarding an adequate margin of safety or protecting against effects that may still occur notwithstanding compliance with the NAAQS—both areas of inquiry characterized by great uncertainty. Thus, in the process for setting NAAQS, the Administrator looks to factors such as the uncertainty of the science, the seriousness of the health effects, and the magnitude of the environmental problem (isolated or commonplace). *E.g.*, 62 FR 38652 (July 18, 1997) ($PM_{2.5}$ NAAQS).

Bearing on this policy decision for increments are various considerations, based on the available information and the factors applicable under section 166(c). The factors establishing particular environmental objectives (protecting air quality values, health and welfare, and parks) might suggest that, in some areas, we permit no or minimal increases in NO_X emissions or establish an increment for another form of NO_X because there are data indicating that an effect may be attributable to NO_X emissions. However, as explained earlier, we do not believe that Congress intended for the PSD program to eliminate all negative effects. Thus, rather than just seeking to eliminate all negative effects, we must attempt to identify a level of increase at which any additional effects beyond existing (or baseline) levels would be ''significant'' and protect against those ''adverse'' effects. Furthermore, we need to ensure that our increments provide room for some economic growth. Congress intended for EPA to weigh these considerations carefully and establish regulations that balance economic growth and environmental protection.

Since we are unable to establish a direct, widely applicable, quantitative relationship between particular levels of NO_X and specific negative effects, we give particular weight to the policy judgment that Congress made when it set the statutory increments as a percentage of the NAAQS and created increments for the same pollutant form and time period that was reflected in the NAAQS. In section 166 of the Act, Congress directed that EPA study the establishment of PSD regulations for other pollutants for which Congress did not wish to set increments at the time.

Congress' own reluctance to set increments to prevent significant deterioration of air quality due to emissions of NO_X, and the provisions ensuring time for Congressional review and action, suggest that Congress intended for EPA to avoid speculative judgments about the science where data are lacking. Thus, in the absence of specific data showing that a marginal increase of a particular level below the ''safe harbor'' would better protect health, welfare, parks, and air quality values, while simultaneously maximizing opportunities for economic growth, we give weight in our qualitative analysis of the factors applicable under section 166(c) to the method that Congress used to establish the statutory increments.

In making this qualitative judgment, we also consider the overall regulatory framework that we have established in the PSD regulations for NO_X. This

framework includes a case-by-case analysis of each permit application to identify additional impacts (*e.g.*, soils and vegetation), a special review by the FLM and State permitting authority of potential adverse effects on air quality values in parks and special areas, and a requirement that all new and modified sources install BACT. In addition, the area classification system ensures that there will be economic growth in particular areas that are consistent with the values of each State and individual communities within States.

c. Three characteristics of increments for NO_X.

(1) Form of increment. A significant issue in the *EDF* v. *EPA* case was EPA's action in 1988 to establish an increment for only one form of NO_X, *i.e.*, NO_2. We promulgated increments for NO_2 in 1988 because NO_2 was the only form of NO_X for which we had established a NAAQS at that time. However, the court held in *EDF* v. *EPA* that section 166(c) of the Act ''commands the Administrator to inquire into a pollutant's relation to the goals and purposes of the statute, and we find nothing in the language or legislative history suggesting that this duty could be satisfied simply by referencing the ambient standards.'' 898 F.2d at 190. As a result, in this rulemaking action on remand, we weighed the relevant evidence to determine whether the data supported the potential use of other forms of NO_X to serve as measures for the increments and, if so, what numerical levels would be appropriate.

We requested comment on whether we should adopt increments for other forms of NO_X and received several comments recommending that EPA do so. Some of these commenters claimed that the statute requires EPA to examine and regulate nitrogen compounds other than NO_2, to protect the air quality, especially in Class I areas. Therefore, these commenters called upon EPA to develop increments that accounted for other forms of NO_X, such as nitric acid, nitrate, ammonium nitrate, and for ozone. Some commenters recognized the complexity of the total nitrogen deposition problem and recommended that EPA revise and retain the existing increments on an interim basis, while undertaking the necessary steps to study the full scope of the problems associated with NO_X and revising the PSD regulations for NO_X accordingly. For the reasons discussed below, we have decided not to add any additional increments based on other forms of NO_X to the existing increments for NO_2.

Under the ''contingent safe harbor'' approach discussed above, we began our analysis with ''safe harbor'' increments that address increases in ambient NO_2 concentrations. Since 1988, EPA has not identified a basis upon which to establish a NAAQS for any form of NO_X other than NO_2. Thus, it remains the case today that the only NAAQS established for NO_X are the current NO_2 NAAQS which have not changed since 1971. We believe that increments based on the same pollutant for which we have a NAAQS are the ''safe harbor'' for the purposes of this rulemaking.

Establishing increments for this form of NO_X is ''at least as effective'' as the statutory increments in section 163 of the Act. Congress established statutory increments in section 163 for only those forms of PM and sulfur oxides for which we had promulgated a NAAQS.[27] As discussed above, the need for an increment necessarily derives from the establishment of a NAAQS, which is the basic measure of air quality under the CAA. Thus, an increment based on this basic measure of air quality is ''at least as effective'' as the statutory increments in section 163 of the Act. The court in *EDF* v. *EPA* rejected the argument that increments based on the same form of NO_X as the NAAQS were not ''as effective as'' the increments in section 163. 898 F.2d at 190.

We acknowledge that the available scientific and technical evidence indicates that the range of adverse effects being observed in the various ecosystems studied are the result of contributions from several forms of NO_X other than NO_2. We noted earlier in this preamble that seven species of oxides of nitrogen are known to occur in the atmosphere. However, anthropogenic emissions of NO_X predominantly originate as NO and quickly oxidize into NO_2. As described in section V of the preamble, under the discussion of environmental effects, many of the negative effects indirectly related to emissions of NO and NO_2 are caused (or contributed to) largely by nitrogen compounds (*e.g.*, nitrates, nitric acid) which result from chemical transformations of NO_2 in the atmosphere.

In particular, nitrates (NO_3^-), primarily in the form of nitric acid (HNO_3) and nitrate aerosols such as ammonium nitrate (NH_4NO_3), are primary constituents of nitrogen deposition and can play a significant role in producing welfare effects that are indirectly attributable to emissions of NO and NO_2. As a result, we examined the feasibility of establishing numerical increments that would include measurement of nitrates.

In the February 2005 proposal, we noted several reasons why we believed that it was not necessary to adopt individual increments for nitrate. First, the existing NO_2 increments, which limit the allowable increase of NO_2 in a given area, serve also to limit the amount of nitrate in the atmosphere.[28] That is, by limiting the allowable increase in ambient concentrations of NO_2 in the immediate area surrounding a proposed new or modified PSD source, some limit can effectively be placed on downwind formations of nitrate compounds as well.

We also noted that ambient nitrate often exists in the atmosphere in particulate form, *e.g.*, ammonium nitrate and nitrate salts formed from nitric acid. These forms are known to contribute to regional haze. Based on this, we indicated our belief that nitrates could be more effectively regulated under our national PM program.

Notwithstanding these reasons for not needing a nitrate-based increment, we further explained that the available scientific and technical evidence available for our consideration did not exist (1) to adequately establish a quantifiable relationship between NO_X emissions (NO/NO_2) and nitrogen deposition products, including nitrates, or (2) to set numerical levels for such increments.

Some of the commenters who supported the need for increments based on a broader measure of NO_X referenced more recent studies which point to the worsening trends of nitrogen deposition, and observations of adverse effects, in various areas of the country as evidence that the existing NO_2 increments are ineffective. On this basis, the commenters claimed that the existing NO_2 increments did not satisfy sections 166(c) and 160 of the Act. While we do not discount the findings contained in these studies, we do not believe that these more recent studies provide the necessary information either to establish broader nitrogen-based increments or to indicate that the NO_2 increments are ineffective.

As was the case with the more recent studies that we reviewed, the studies cited by commenters are based on observations of adverse ecological effects in specific localized areas where sensitive ecosystem receptors are known to exist. Such studies clearly have

[27] Since that time, we have refined the original NAAQS for PM (then measured as TSP) to focus on coarse (PM_{10}) and fine ($PM_{2.5}$) particulate matter. We subsequently established increments for PM_{10} in accordance with section 166(f) of the Act. 58 FR 31622 (June 3, 1993). We are considering establishing increments for $PM_{2.5}$.

[28] Another source of nitrates, not associated with emissions of NO_X, is the nitrification of ammonium by bacteria in stream beds.

enhanced our ability to understand the mechanics of the pollutant deposition process, identify deposition trends, and document the adverse effects to which nitrogen deposition contributes. Yet the same studies in most cases continue to fall short of enabling us to quantify the levels of deposition responsible for the recorded changes. In fact, many of these studies conclude by calling for additional research to collect the data necessary to quantify the dose-response relationships associated with nitrogen.

Even considering more recent evidence, we continue to believe that it is not feasible to develop broader-based increments for NO_X at this time, and the nitrate deposition effects in local areas where sensitive ecosystems exist will be more effectively addressed via the broader set of PSD regulations for NO_X and by various PM control programs that will apply in those local areas.

Finally, with regard to commenters' recommendations that we establish increments to address the effects of ozone, we indicated earlier that we do not believe Congress intended for us to consider the effects of other regulated pollutants, such as ozone, when establishing increments for NO_X. We continue to believe that the increments for NO_X need only consider effects resulting from ambient NO_2 and other forms of NO_X (resulting from the transformation of NO_2 in the atmosphere), rather than secondary pollutants for which Congress expected separate PSD regulations, including increments. See relevant comments concerning increments for secondary pollutants associated with NO_X and our responses to those comments in section V.D. of this preamble.

A key problem that we have already discussed, however, is that studies of nitrogen deposition indicate that the nitrogen input from total atmospheric nitrogen deposition is not simply the result of emissions of NO_X, but of other nitrogen compounds as well, including ammonia and ammonium. For example, when ambient concentrations of ammonia and nitric acid are sufficiently high, ammonium nitrate can be formed and both the ammonium and the nitrate become components of nitrogen deposition contributing nitrogen to an ecosystem. For these reasons, we do not believe it is feasible to adopt an additional increment for another form of NO_X to protect air quality values, health and welfare, and parks and special areas, from NO_X emissions increases associated with new and modified PSD sources. Thus we are adopting the ''safe harbor'' increments and retaining the existing increments for NO_2. Under these circumstances, the NAAQS provides a reasonable benchmark for identifying the pollutant to be used in an increment.

Section 160(1) of the Act is expressed by using the NAAQS as a benchmark and also uses standards that mirror the standards applicable to the NAAQS-setting process— ''protect public health and welfare.'' The court in *EDF* v. *EPA* rejected use of the NAAQS as the ''sole basis'' for deriving the increments for NO_X but did not preclude EPA from adopting only increments based on the same pollutant as the NAAQS when EPA has determined that additional increments are not needed after considering the factors applicable under section 166(c) of the Act. See 898 F.2d at 190. As we have explained earlier, several of the ''other forms of NO_X'' that commenters recommend be included in the increments for NO_X are more appropriately addressed under programs for other criteria pollutants, as well as some of the multi-pollutant emissions reductions programs that have been established across the U.S.

(2) Increment averaging periods. The existing NO_2 increments, promulgated in 1988, are based on an annual averaging period, consistent with the NO_2 NAAQS. In the 1988 rule, EPA did not set short-term NO_2 increments because a short-term NAAQS for NO_2 that would define short-term air quality for NO_2 did not exist. However, the court directed us to evaluate whether, considering the factors applicable under section 166(c), we should promulgate additional increments for short-term averaging times. 898 F.2d at 190. Thus, we have evaluated and requested comment on the need to promulgate additional NO_2 increments based on a short-term averaging time to satisfy section 166(c) of the Act. Several of the commenters that opposed EPA's proposed decision to retain the existing increments without modifying them argued that short-term increments were needed to meet our responsibility to provide health and welfare protection under the requirements of section 166(c) of the Act.

However, for the reasons discussed below, we are not persuaded that short-term NO_2 increments are necessary to satisfy the factors applicable under section 166(c).

Under the ''contingent safe harbor'' approach discussed above, we began our analysis with the ''safe harbor'' increments that are based on the same annual averaging time used in the NAAQS. Since 1988, EPA has not found cause to promulgate a NAAQS for any averaging period other than the annual average. Thus, since this is the only averaging time used in the current NAAQS, we consider an increment that employs this averaging time to be a ''safe harbor'' that is ''at least as effective'' as the statutory increments in section 163 of the Act. The increments listed in section 163 of the Act are based on the same averaging times that were contained in the NAAQS at the time Congress adopted this provision. The NAAQS are the basic measure of air quality under the CAA. Therefore, an increment that uses this standard as a benchmark is ''at least as effective'' as the statutory increments in section 163 of the Act. The court in *EDF* v. *EPA* rejected the argument that an increment based on the same averaging time as the NAAQS was not ''as effective as'' the increments in section 163. 898 F.2d at 190.

We reviewed the scientific and technical evidence available in the 1993 Criteria Document for NO_X in light of the section 166(c) criteria to determine whether it justified the need for a short-term increment, even though no short-term NO_2 NAAQS existed from which to derive a short-term safe harbor increment. As we indicated in the February 2005 proposal, the available evidence did not identify any adverse health effects from short-term exposure to ambient NO_2 concentrations in areas with air quality meeting the NO_2 NAAQS. Thus, we proposed to find that a short-term increment was not needed to provide any additional health protection beyond assuring that the existing increments would keep ambient NO_2 concentrations at levels below the NO_2 NAAQS.

Some commenters disagreed with us and expressed the need for a 1-hour NO_2 increment for health-related purposes. Some of these commenters urged us to consider recent health data and the fact that California has adopted a short-term health standard for NO_2 exposure. However, we continue to believe, based primarily on the evidence in the 1993 Criteria Document and 1995 Staff Paper for NO_X, that there is insufficient evidence to justify a national short-term NO_2 increment to provide additional health protection. As mentioned above, as part of the last review of the NO_2 NAAQS in 1996, EPA did not find adequate evidence that health effects from short-term exposure NO_2 occurred in areas where air quality levels met the NO_2 NAAQS.

The Administrator concluded from that review that the annual standard of 0.053 parts per million (ppm) NO_2 provides ''substantial protection'' against the identified health effects (mild changes in pulmonary function or airway responsiveness in sensitive individuals) associated with short-term

peaks occurring in the range of 0.2 to 0.5 ppm—almost one order of magnitude higher than the annual standard. 60 FR 52875, 52879–80 (October 11, 1995). The adequacy of the annual standard to protect against these potential short-term effects was further supported by the absence of documented effects in some studies at higher concentrations (3 ppm to 4 ppm).

We continue to believe that the existing primary annual NO_2 NAAQS provides sufficient protection against the likelihood of short-term NO_2 concentrations that would cause adverse human health responses in most areas of the U.S. We have no evidence at this time showing that there is a problem from a national perspective concerning short-term NO_2 concentrations that would represent a threat to human health, and the commenters have not provided information indicating a national problem for us to consider. We do know that high maximum 1-hour NO_2 concentrations have been measured in a few locations, including California—the only State that has adopted a short-term air quality standard for NO_2 (0.25 ppm, 1-hour).[29]

We have reviewed NO_2 air quality data collected from 592 monitoring site locations nationally from EPA's Air Quality System to determine how effective the current primary annual NO_2 NAAQS is in preventing high short-term NO_2 concentrations. These data show that, since 1999, only 14 sites (a few with multiple occurrences) across the U.S. have recorded peak 1-hour concentrations exceeding 0.25 ppm NO_2. Only one monitoring site recorded such peaks from 2003–2004. Thus, from a national perspective, we do not find support for a short-term NO_2 increment to provide health protection beyond that being provided by the existing annual primary NO_2 NAAQS.

We are aware of the fact that later studies have been published concerning human responses to short-term exposure to ambient NO_2 concentrations. These studies will be considered in the Agency's next periodic review of the NO_2 NAAQS. To the extent that any new relevant information is incorporated into the Criteria Document for oxides of nitrogen, we will carefully evaluate such evidence under the rigorous process described earlier in this preamble, involving CASAC and a public review process, to determine whether it is appropriate to adopt a short-term primary NO_2 NAAQS. In accordance with the requirements of section 166 of the Act, following promulgation of any revised NAAQS for NO_X, based on the same body of scientific and technical evidence, we will also review that evidence against the requirements of section 166(c) to determine the need to modify the existing NO_2 increments. However, at this time we do not believe there is a need to modify the existing NO_2 increments to provide a nationwide level of health protection beyond what is being provided by the primary annual NO_2 NAAQS.

In addition, the information that we reviewed concerning welfare effects associated with short-term exposure to NO_X did not convince us that there was a justification for a short-term increment to provide additional protection against adverse welfare effects. The available information indicated that known impacts were insignificant in some cases (*e.g.*, effects on terrestrial vegetation), while in other cases (*e.g.*, chronic acidification of surface waters) insufficient information existed to quantify how much of a contribution nitrogen deposition was making to the problem and what levels of reduction would be needed to remedy the negative impact. The effects that we reviewed are summarized in greater detail below and in section V of this preamble.

Two commenters recommended that we adopt a 1-hour NO_2 increment to prevent coherent plume (discoloration) visibility impairment. We do not believe that a short-term NO_2 increment for such purposes is supported by the available evidence. As we indicated in our description of welfare effects in section V of this preamble, NO_2 can cause a discoloration effect in a plume resulting in potential visibility impairment. However, the evidence also indicates that the presence of particulate in the plume can result in similar discoloration. Thus, the problem is not exclusively caused by NO_2. Moreover, the 1995 Staff Paper for NO_X noted that despite the known light-absorbing qualities of NO_2, ''there are relatively little data available for judging the actual importance of NO_2 to visual air quality.''

Visibility impairment associated with coherent plumes is currently addressed as part of the requirements for the AQRV review and the additional impacts analysis. This methodology measures visibility impairment resulting from multiple pollutants. The test for visibility impairment of this type is typically applied to sources locating less than 50 kilometers from a Class I area, and involves modeling the potential plume impacts to calculate 1-hour impacts within the elevated plume based on the concentrations of fine primary particulates and NO_2 emitted by the source. The effects of secondarily formed sulfates can also be considered, where applicable and appropriate, in the modeling procedure.

We do not believe it would be appropriate to establish a short-term NO_2 increment to address this visibility impairment problem when it is known that the problem is associated with multi-pollutant impacts. The problems associated with coherent plumes are currently addressed through protection of AQRVs and the ''additional impacts'' analysis. (Congress explicitly identified visibility as an example of an AQRV.) We believe that this is the most effective way to address this multi-pollutant problem.

Some commenters recommended short-term increments to protect against the increasing NO_X pollution impacts. In this regard, we do not find a justification to establish a short-term increment for either NO_2 or any other form of NO_X. In the latest review of the NO_2 NAAQS, the Administrator concluded that the impact on terrestrial vegetation from short-term exposures to NO_2 under existing ambient levels is insignificant and did not warrant a short-term standard (1995 Staff Paper for NO_X, p. 91). The Administrator also considered the welfare impacts from nitrate deposition during the last review of the NO_2 NAAQS. The evidence indicated, however, that none of the welfare impacts from nitrates were directly attributed to short-term ambient nitrate concentrations. In those cases where nitrogen deposition was shown to cause episodic or ''short-term'' effects, such as episodic acidification of streamwaters, the problem was typically the result of a long-term accumulation of nitrogen compounds that were released suddenly to the ecosystem (*e.g.*, snowmelt runoff to lakes and streams) rather than the direct result of short-term concentrations of nitrates being transferred from the atmosphere.

The ability to quantitatively relate N deposition to episodic acidification conditions is further hampered by evidence indicating that, because of conditions of nitrogen saturation, episodic acidification of surface waters and increased loadings to estuaries could worsen even without concurrent increases in N deposition. Later studies have verified this situation and have indicated that temperature change, among other things, rather than direct changes in the N deposition rate, can be

[29] It should be noted, however, that California's standard was not established on the basis of new information since our last periodic review of the NO_2 NAAQS. California established an ''Adverse Level'' for NO_2 (0.25 ppm, 1-hour) in 1962. In 1969, the California Air Resources Board set a short-term air quality standard for NO_2 using the original alert level.

more influential in the increased acidification conditions. One later study we reviewed subsequent to the proposal revealed a positive correlation between short-term increases in stream nitrate concentrations and mean annual air temperature (affecting nitrogen movement in a watershed), while finding no statistically significant correlation between deposition and stream nitrate concentrations. (Murdoch, 1988.)

One commenter recommended a short-term ammonium nitrate increment to address visibility problems associated with regional haze. However, we do not believe it is necessary to address this pollutant through our PSD regulations for NO_X. Ammonium nitrate is a form of PM (*i.e.*, nitrate particulate), and we already addressed the contribution of ammonium nitrates to total ambient PM levels and their effects on visibility (regional haze) under the PM program.[30] In revising the NAAQS for PM in 1997, EPA considered the welfare effects of PM, including nitrates, on visibility impairment in considering the need to revise the secondary PM standards. In doing this, we considered the pertinent scientific and technical information contained in the current Criteria Document for PM and Staff Paper for PM to determine what an appropriate level would be for a secondary standard to address adverse effects of PM on visibility. We concluded from that process that a 24-hour $PM_{2.5}$ primary standard in conjunction with a national regional haze program would be the more effective way to address regional variations in the adverse effects of fine particulate on visibility than by establishing national secondary standards for PM that would be lower than the $PM_{2.5}$ primary standards. See 62 FR 38652, July 18, 1997 at 38679–38683.

An important consideration in arriving at this decision was that there were significant differences in then-current visibility conditions in different areas of the country that could not effectively be addressed by a uniform national standard. Because our national control strategy for PM will include consideration of ammonium nitrate particles, we find no basis for establishing a short-term increment for ammonium nitrate to protect against visibility impairment as part of the PSD regulations for NO_X.

EPA has also recognized that NO_X results in the formation of ozone and nitrate particulates under certain conditions. Although ozone, PM_{10}, and $PM_{2.5}$ have short-term NAAQS to protect against public health effects associated with short-term exposure to these pollutants, EPA does not consider the impacts from these criteria pollutants, because it interprets section 166 to require consideration of these criteria pollutants separate and distinct from the duty to consider NO_X.

Based on these considerations, we believe that an annual average increment for NO_2, coupled with the requirements for the ''additional impacts'' and AQRV protection in Class I areas, is sufficient to protect air quality values, health and welfare, including the sensitive ecosystems in parks and other special areas. Thus, we revert to the ''safe harbor'' of the existing annual NO_2 increments and decline to adopt additional increments for shorter averaging periods under this final action.

(3) Level of NO_2 increment. Having concluded from the available scientific and technical evidence that additional increments based on other forms of NO_X or other averaging periods are either not necessary or not feasible, the remaining issue we evaluated in response to the court remand was whether there was a need for lower annual NO_2 increments. Our review of the applicable scientific and technical evidence provided no basis for us to propose modifying the levels of the existing NO_2 increments.

As part of our proposal, the analysis of the appropriate levels for NO_2 increments began by establishing a ''safe harbor'' increment level that was ''at least as effective as'' the increments established by Congress in section 163 of the Act. 42 U.S.C. 7476(d). Under our interpretation of the Act, we preliminarily concluded that these ''safe harbor'' levels established the minimum stringency levels (or highest marginal increase in concentration levels) that we may use as the increments for NO_2 for each class of area.

The court in *EDF* v. *EPA* recognized that the ''at least as effective'' standard in section 166(d) of the Act is satisfied when we establish increments using the percentage-of-NAAQS approach that Congress used to establish the statutory increments. See 898 F.2d at 188. This approach involves using the same percentages that Congress used to calculate the PM and SO_2 increments from the NAAQS in effect at that time for these pollutants. Because Congress used different percentages to calculate the Class I increments for PM and SO_2, we had to decide which of these percentages was appropriate for the Class I NO_2 increment. For the reasons described in the 1988 NO_2 increment rulemaking, we considered it appropriate for NO_2 increments to be derived using the same percentages that Congress used for SO_2 because NO_2 more closely resembles SO_2 than PM in its characteristics and sources. See 53 FR 3698, 3700 (February 8, 1988).

Because the NO_2 increments have not changed since 1988, the percentage-of-NAAQS approach yields the same levels that we derived in 1988. Thus, using this approach, the ''safe harbor'' level for the Class I NO_2 increment was calculated as 2.5 $\mu g/m^3$ (annual average), a level equal to 2.5 percent of the NO_2 NAAQS. For the Class II NO_2 increment, the ''safe harbor'' level is 25 $\mu g/m^3$—25 percent of the NO_2 NAAQS. For the Class III NO_2 increment, the ''safe harbor'' level is 50 $\mu g/m^3$—50 percent of the NO_2 NAAQS.

Our next step was to consider the factors applicable under section 166(c) and evaluate whether we needed to revise the ''safe harbor'' level to satisfy these factors. To the extent we were to find that the marginal increase in concentration allowed by the ''safe harbor'' level did not adequately protect against these effects and ensure economic growth consistent with preservation of clean air resources, we were obligated to attempt to identify an alternative level of marginal increase that would satisfy the factors applicable under section 166(c).

In order to identify the appropriate level of increase for ambient NO_2 concentrations, we attempted to establish a quantitative relationship between the emissions of NO_2 and potential adverse effects. Unfortunately, this approach was hindered for several reasons. First, the available evidence we reviewed was inconclusive regarding the pollutant concentrations at which the effects may occur. As previously described, in some instances, the available scientific and technical evidence revealed no significant effects, while in other cases the evidence revealed uncertainty about the direct relationship between the pollutant and its precise role in causing the effect. This requires an understanding of the intermediate transformation processes and the deposition patterns and total quantities of those nitrogen compounds which may contribute to the known or observed effects, as well as the nitrogen contribution to ecosystems from natural geobiochemical processes.

Second, since many of the negative effects were associated with total nitrogen deposition (indirectly associated with NO_2), *i.e.*, caused by NO_X compounds which have been transformed from NO_2 in the

[30] ''Impairment of visibility in multi-State regions, urban areas, and Class I areas is clearly an effect of particulate matter on public welfare.'' OAQPS Staff Paper for Particulate Matter, July 1996 at p. VIII–15.

atmosphere, it was also necessary to attempt to understand the quantitative relationship between emissions of NO_2 (the regulated form of the increment) and the observed negative environmental effects. Such relationships could not be sufficiently identified from the available evidence.

As a result of these findings, we proposed to find that the necessary scientific evidence was not yet available to determine that the existing safe harbor NO_2 increments are not adequately protective for purposes of defining ''significant deterioration.'' Therefore, we proposed to retain the existing NO_2 increments to limit allowable increases in ambient pollution associated with NO_X emissions and protect against health and welfare effects that might occur in areas where the air quality is better than the NO_2 NAAQS.

Some commenters objected to this proposed decision to retain the existing increments, although most of them generally did not suggest ways to revise the existing levels (other than to recommend short-term NO_2 increments) to make them more protective. For the most part, the studies and information provided by these commenters advance the knowledge about N deposition trends and how nitrogen inputs adversely affect sensitive resources at various locations, but they also support our original conclusions in the February 2005 proposal that there is not yet sufficient evidence to quantify a dose-response relationship between NO_X and the various negative effects being observed and reported.

We could establish more stringent increments simply by setting the allowable levels of pollutant increases at lower numerical values; however, we can find no basis for determining what particular lower values would provide the ''correct'' level of protection against the types of effects that have been identified. Consequently, we believe it would be inappropriate to arbitrarily select more stringent values for the NO_2 increments that are not supported by the available scientific and technical evidence.

Lacking a clear quantitative basis for establishing lower increment levels, we conducted a qualitative evaluation of the safe harbor increments in light of the considerations discussed above. To achieve equity and protect against effects that are variable across regions of the country, we believe each of the NO_2 increments should be set at a level that reasonably protects air quality values, health and welfare, and parks and special areas across the country, while also balancing the need to allow economic growth.

We continue to believe our ultimate obligation under section 166 of the Act is to establish a set of regulations for NO_X which contain provisions that collectively satisfy the content requirements in sections 166(c) and 166(d) of the Act. Thus, we think Congress contemplated that we would consider the entire set of regulations when we establish specific aspects of those regulations. As a result, we believe it is appropriate and consistent with our statutory obligations to consider the protection provided by the additional impacts analysis and the FLM review of AQRVs when evaluating the level of NO_2 increments that defines ''significant deterioration.''

Thus, based on the overall insufficiency of the available scientific and technical evidences to enable us to define a quantitative dose-response relationship, we believe the ''safe harbor'' approach for setting the increment levels is sufficient to satisfy the factors applicable under section 166(c), when coupled with the overall framework of PSD regulations applicable to NO_X. This approach generally maximizes opportunities for economic growth while ensuring that each area receives a sufficient level of protection against ''significant deterioration'' of air quality consistent with Congressional policy. To the extent necessary, the case-by-case additional impact analysis (in Class I and II areas) and AQRV review (in Class I areas) will provide additional protection in particular areas that may be more sensitive to nitrogen loadings resulting from NO_X emissions. Under these circumstances, we can find no basis for modifying the safe harbor increments, based on the approach established by Congress for the statutory increments. Thus, we retain the existing NO_2 increments that were established at the ''safe harbor'' level using the statutory ''percentage-of-NAAQS'' approach.

Several commenters seemed to suggest that we should no longer be relying on increments promulgated in 1988 to protect the environment and that it was time to update them. However, the Act does not provide a mechanism for periodically reviewing the increments for a particular pollutant. EPA's statutory responsibility for developing increments is linked to its responsibility for promulgating NAAQS. Section 166 requires EPA to promulgate increments for a pollutant following the promulgation of NAAQS for that pollutant. While the Act is silent in section 166 on how EPA is to respond to future revisions to existing NAAQS, we believe there may be certain circumstances when it is appropriate to review the increments for certain types of NAAQS revisions. For example, should EPA determine as part of a periodic review of the NO_2 NAAQS to promulgate a new, short-term NAAQS, then we believe it may be appropriate to consider the promulgation of a short-term increment as well. Nevertheless, this final action being taken today regarding the NO_2 increments is not a periodic review of the increments but a response to a court order requiring us to demonstrate the adequacy of the NO_2 increments, which we promulgated in 1988, in accordance with the relevant requirements that Congress provided for promulgating pollutant-specific PSD increments under section 166 of the Act.

d. Future considerations.

We agree with the commenters who have recognized the complexity of the total nitrogen deposition issue and suggested that it will take time to better understand the problems and solutions. The Act does not authorize EPA to reevaluate or upgrade the increments periodically, but generally requires new PSD regulations, which may include increments, following the promulgation of NAAQS.[31] Thus, as new information comes along to better document the dose-response relationships between NO_X and the various health- and welfare-related effects, we are not necessarily obligated to revise the existing increments for NO_X unless such information results in changes to the NAAQS. Hence, after any changes to the NAAQS, we would likely evaluate the PSD regulations for NO_X to determine what modifications, if any, are appropriate to meet the requirements of section 166 of the Act.

This is not to say, however, that the advance of relevant scientific and technical evidence could not be used to establish more effective mechanisms as part of the PSD regulations where we deem them to be appropriate. An example of this would be the use of the critical loads concept. In the February 2005 proposal, we proposed not to incorporate a critical loads approach as part of the national increment system (see 70 FR at 8914). We continue to believe that it would not be appropriate to do so at this time. Therefore, in today's final action, we are not adopting a critical loads approach in lieu of the existing NO_2 increments, nor are we at

[31] Section 166(a) of the Act requires in part that ''In the case of pollutants for which national ambient air quality standards are promulgated after the date of enactment of this part, he [the Administrator] shall promulgate such regulations not more than 2 years after the date of promulgation of such standards.''

this time incorporating a critical loads approach into the overall PSD regulations for NO_X. However, we remain interested in the concept and recognize its potential for addressing the adverse effects of nitrogen deposition. We discuss the critical loads approach more in section VII of this preamble.

Yet, we recognize that we may be obligated to consider modifications to the existing increments as new scientific and technical information becomes available, and when revisions to the existing NO_2 NAAQS are made. However, even as threshold levels of adverse impact are able to be defined for individual ecosystems, the diverse range of responses of nitrogen to different ecosystem as well as the number of factors (and interactions of those factors) which determine the response of ecosystems to anthropogenic nitrogen input will make it very difficult to establish uniform national increments which, by themselves, provide both an adequate level of protection in the most sensitive areas and a reasonable measure of ''significant'' deterioration in less sensitive areas.

B. State Option To Employ Alternatives to Increment

We are amending our regulations to explicitly give States the option to continue implementing the NO_2 increment program or to design an alternative approach as part of its SIP and submit this program to EPA for approval. If any States wish to pursue the latter option, EPA will review State requests on a case-by-case basis to determine if the State alternative program satisfies the requirements of sections 166(c) and 166(d) of the CAA and prevents significant deterioration of air quality from emissions of NO_X.

We are not establishing any specific regulatory criteria to govern the review and approval of such a program other than what is already contained within section 166 of the CAA. EPA is not prepared at this time to conclude that any particular type of program other than the existing increment framework meets the requirements of sections 166(c) and 166(d) of the CAA. However, as discussed in section IV above, we continue to believe EPA's obligation under section 166 to promulgate pollutant-specific regulations for NO_X can be satisfied by allowing States to demonstrate that ''other measures'' besides increments will prevent significant deterioration of air quality due to an increase in emissions of NO_X, as long as those measures are consistent with the requirements of sections 166(c) and 166(d) of the Act.

1. States May Adopt ''Other Measures'' That Fulfill Section 166 of the Act

In options 2 and 3 of the proposal, we proposed to address the requirements of section 166 of the CAA for NO_X through the review and approval of State programs that employed alternative approaches to fulfill the requirements of sections 166(c) and 166(d) of the Act. We are codifying only this core principle in our regulations today without identifying any specific type of alternative program that would meet these requirements. EPA is postponing decisions on adequacy of specific elements of a State's alternative approach until such time as the State submits its plan to EPA in a case-by-case SIP approval process. We believe this less prescriptive approach may allow some States to employ an alternate approach sooner and more efficiently, without waiting for EPA to develop a comprehensive one-size-fits-all program through additional rulemaking.

Accordingly, we are amending our PSD rule at § 51.166 to reflect that an alternative approach to maximum allowable pollutant concentrations or increments for NO_2 that meet the requirements of section 166 of the Act may be employed upon approval by the Administrator. We are requiring that a State's alternative approach meet three broad criteria, which will be explored in more detail on a case-by-case basis. The approach must: prevent significant deterioration of air quality due to emissions of NO_X; fulfill requirements of section 166 of the Act; and be demonstrated in the SIP. We are not establishing criteria, other than the requirements of the Act itself, by which to review a State's submittal, and we are not defining any particular type of alternative approach for States to use as a substitute for the NO_X increments. Rather, we are simply making clear in the regulations that States have the flexibility to employ an alternative approach to the NO_X increments.

2. EPA Is Not Adopting Elements of Option 3

Although this approach of allowing States to submit alternative programs has some similarities to our proposed option 3, we are not adopting several of the elements that we proposed as part of option 3 (the State planning approach). When we proposed option 3, we envisioned that the EPA could establish a specific planning goal for States, or require each State to establish one, and then provide a process by which States would demonstrate how the measures in their SIPs would achieve this goal. One specific planning goal we proposed was to keep statewide emissions of NO_X from all sources below 1990 levels.

Several commenters expressed concerns that option 3 of the proposal did not include sufficient detail. We agree with the commenters that there were numerous specific elements of the State planning approach that we had not fully addressed in our proposal. The unresolved issues related to option 3 included the following: (1) Timing of the SIP approval with discontinuation of NO_X increment tracking; (2) a State plan's failure to prevent significant deterioration due to NO_X emissions; (3) periodic assessment of PSD cumulative increment impacts; (4) additional measures (backstops); (5) potential for localized adverse impacts; and (6) effects of an alternative approach on air quality in neighboring States.

Because we have not yet resolved these issues, we have decided to codify only the core element of options 2 and 3—the principle that a State may employ alternatives to increment upon a proper demonstration. Thus, instead of seeking to resolve these issues for every State in advance through a rulemaking action, we will consider these types of issues on a case-by-case basis during review of individual State plans. At this time, we believe we can more effectively consider and address such issues in the context of specific plan approvals.

Although option 3 of our proposal lacked detail, several commenters tentatively supported the flexibility provided by option 3. Some commenters preferred a case-by-case approach to having ''one-size-fits-all'' criteria applicable to each State. Several commenters encouraged flexibility to acknowledge the differences in the air quality and types of sources among western and eastern States.

Other commenters opposed giving States flexibility on the grounds that this would result in a lack of uniformity nationwide. One commenter was concerned that State-to-State levels of NO_X protections would vary, resulting in an uneven playing field for regulated sources.

We recognize there are reasons to support flexibility and reasons to support uniform treatment. We addressed the juxtaposition of these issues in evaluating the increment system and related provisions, as discussed in more detail above. Our conclusion for those circumstances was that we could to some extent balance these concerns by combining a uniform increment system with a case-by-case review of additional impacts and

AQRVs. We believe we can also consider the need for a level playing field and the need to address regional variability when reviewing individual State alternatives. Thus, we do not believe we should foreclose permanently the option for States to demonstrate that they can design an alternative program. We favor giving States the option to experiment and consider approaches that are uniquely suitable to a particular area, provided that such approaches do not result in imbalances in NO_X regulation across the country.

Some commenters were against option 3 because they believed EPA might require States to develop an alternative to increments. Our final action today does not require a State to develop an alternative to the NO_2 increments. States have the flexibility to continue implementing the NO_2 increments or to pursue approval of other measures besides increments that achieve the same objectives.

Several commenters opposed option 3 on the grounds that it would not provide adequate protection for parks and AQRVs. These commenters were concerned that option 3 did not account for a source's distance and direction from a Class I area. The commenters indicated that these variables could have a major effect on whether a source's NO_X emissions adversely impact AQRVs. A State will be required to demonstrate that any alternative approach to increments protects parks and AQRVs. In addition, we recognized that an unresolved issue under our option 3 was the potential for localized adverse impacts. We will ensure that these issues are addressed before approving an individual program submission.

One commenter suggested that State planning approach be used as the foundation of a broader regional strategy to address air quality impacts of NO_X, and not only NO_2. The commenter believed that larger regional issues could not be addressed under option 3, as proposed, given the increased population growth projected for western States and attendant growth of urban areas. Our intent with this regulation is to provide for the review of alternatives on a State-by-State basis. However, to the extent that groups of States wish to develop regional strategies, EPA will consider them to determine if they meet the requirements of the Act. In addition, we will continue to evaluate EPA's options for promulgating regional strategies to address the commenter's concerns.

Tribal commenters were concerned that allowing States to implement alternatives to increment could threaten the tribes' abilities to regulate their own environmental quality and expose tribal environmental resources to greater risk of pollution. These commenters also expressed a concern that such alternatives would be inconsistent with the Federal government's trust responsibility to tribes. We do not believe this option will infringe the tribes' abilities to regulate their environments, harm tribal environmental resources, or overlook the Federal government's trust responsibility to federally-recognized tribes. At this point, it is difficult to determine whether a specific alternative program may affect adjacent areas, such as areas of Indian country. We want to emphasize, however, that any State's alternative program will be carefully evaluated to address potential concerns that affected entities may have, whether it be another State, a tribal governing body, or an FLM for a nearby Class I area. Each State alternative program will be evaluated on a case-by-case basis and subjected to public review and comment as part of the SIP review and approval process. We believe that it is reasonable to expect that States will communicate and cooperate with other potentially affected governing entities as part of the process of developing an alternative program. In addition, any such alternative program would need to be approved by EPA. In determining whether to approve such programs, EPA would act consistent with the Federal government's trust responsibility, including conducting appropriate consultation with tribes to help ensure that the interests of the tribes are considered in this process. Although no specific process has been established for tribes to consult with EPA on SIP approvals on a government-to-government basis, we will endeavor to provide additional opportunities for consultation and continue to carefully consider comments submitted by tribal officials. This process should help ensure that all concerns are considered and that environmental resources are protected prior to approval of an alternative program through the SIP submittal process.

3. Benefits of an Alternative Approach

States have always had the option to submit alternative approaches in their SIPs that can be shown to be more effective than the minimum program elements established by EPA, but States may not have recognized that a system other than increments may be utilized to prevent significant deterioration from emissions of NO_X. The alternative approach provides States with the flexibility to employ a program that may be more effective than increments in preventing significant deterioration of air quality from emissions of NO_X. For example, a State could adopt an emissions reduction plan for NO_X, under authority other than the PSD program, that limits NO_X emissions from particular sources to a greater extent than would occur under an increment approach that focuses on marginal increase in emissions.

In addition, although we believe the increment program is effective at limiting emissions increases, the process of tracking consumption of increment and modeling changes in emissions concentrations can be time-consuming and resource-intensive. A State that employs an EPA-approved alternative approach to the NO_2 increments program would not be required to maintain an NO_2 increment inventory. In addition, PSD permit applicants in the State would not be required to conduct an individual analysis to demonstrate that they do not cause or contribute to a violation of the increments. Other measures would be used to fulfill the requirements of the Act.

4. Future Actions Regarding Alternatives

Although we are not outlining a specific alternative program at this time, we continue to see promise in using a cap and trade approach modeled on the CAIR to reduce NO_X emissions in order to meet the goals of the PSD program for NO_X. As a result, we intend to publish a supplemental notice of proposed rulemaking that will explore this option further. This notice will build on proposed option 2 and provide more details on how a State that achieves the NO_X emissions reductions required under CAIR can fulfill the objectives of the PSD program, satisfy the statutory requirements of section 166 of the Act, and obviate the need to implement the NO_2 increments program.

VII. Measures Not Proposed as Options

In the February 2005 proposal, we proposed not to use a ''critical load'' as a means of identifying an alternative increment level or to incorporate the concept of critical loads into the PSD regulations for NO_X at the present time. Critical loads can be defined as ''quantitative estimates of an exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge.'' See 1995 Staff Paper for NO_X at xi–xii.

Our proposal not to incorporate critical loads into our pollutant-specific PSD regulations for NO_X was based largely on our preliminary conclusion that the scientific basis for developing and applying critical loads was still emerging. We also raised an issue about critical loads that related to the possible use of critical loads to identify an alternative level for the existing NO_2 increments. Because of the vastly differing sensitivities and potential effects associated with ecosystem resources in different regions of the United States, we expressed our belief that critical loads do not represent an appropriate tool for setting a single, uniform, national standard, such as a PSD increment level.

We did acknowledge, however, that States could propose to use a critical loads concept. For example, where adequate information might be available, States could use critical loads as part of their own air quality management approaches, and EPA would consider it when determining whether the overall air quality management approach satisfied the PSD requirements. See 70 FR at 8914.

Five commenters agreed with our assessment that it would not be appropriate at this time to use critical loads as part of the PSD regulations for NO_X. These commenters generally agreed that the critical loads concept was not ready to be used for PSD purposes. In addition, some felt that it would be inappropriate for EPA to use critical loads as non-uniform national standards. One argued that the use of critical loads would improperly prohibit economic growth.

On the other hand, nine commenters responded to our proposal by opposing our decision not to use critical loads in some way under the PSD regulations for NO_X. These commenters recommended using critical loads as either complete replacements for the existing NO_2 increments or as a supplemental measure for the increment approach. The comments recommending the use of critical loads as a supplemental measure suggested that critical loads could augment the proposed uniform NO_X increment approach by providing a tool through which permitting authorities could consider ecosystem changes in more sensitive areas. In such areas, they believed a critical load could provide a science-based target for protection.

We agree that critical loads represent a promising mechanism for addressing environmental impacts associated with atmospheric nitrogen deposition. For example, once further developed, the critical load concept could potentially be used as a location-specific means to determine the goals of emissions control and management practices related to ecosystem protection. Clearly, the ''critical loads'' concept is one way to describe the level at which a specific natural area or system is negatively impacted by air pollution. With sufficient information, critical load determinations for nitrogen deposition can be related to location-specific indicators of ecological change, such as episodic and chronic acidification of streams and rivers, chemical changes in soils, or nutrient enrichment and eutrophication.

Over the past 20 years, the scientific community has gained increasing knowledge regarding the impacts of atmospheric emissions of certain criteria pollutants (NO_2, SO_2, and ozone) on natural systems. Studies that we reviewed as part of this rulemaking to determine the adequacy of the existing NO_2 increments illustrate that scientists now understand that both ambient exposure to and deposition of various nitrogen compounds have gradually changed the ecological balance of natural systems in many areas of the United States. Detailed descriptions of the ecological effects of nitrogen deposition can be found in many of the studies that we examined as part of the review of the existing NO_2 increments (see section V of this preamble), but in most every case it is not yet possible to quantify the levels of deposition responsible for such changes.

Commenters did not provide any information to show us that sufficient information is available at this time to use the critical load concept as part of the national PSD program for NO_X. Moreover, we believe that from the information that is available, because ecological systems are quite heterogeneous, critical loads would not serve as an appropriate replacement for the uniform national NO_2 increments. However, if the science is further developed, we do agree with those commenters who suggest that location-specific critical loads could be used effectively to augment the existing increment system for NO_X at those locations.

Two of the commenters supporting critical loads indicated that we should revise the existing NO_2 increments and continue using the increment system as an interim approach, while studying the critical load concept for future implementation as part of the PSD program. These commenters agreed that ultimately the critical loads approach was the most effective way to protect the environment from the adverse effects of nitrogen deposition. Several other commenters also urged EPA to further study the critical loads concept by initiating pilot projects or a demonstration critical loads program by working with States, FLMs, tribes, and others to select natural areas where existing information is adequate to do so.

We agree with the commenters recommending that the current increment system should continue to be applied under the PSD regulations for NO_X. However, as explained in section VI, we do not agree that there is sufficient basis for modifying the existing NO_2 increments. Therefore, under today's final action, we are not modifying the existing NO_2 increments, but retaining them at their existing levels and form.

We do agree with commenters that further research is necessary and appropriate to further evaluate the critical loads concept. As mentioned above, in recent years, ecosystems research has produced findings that are sufficient to identify changes to many sensitive elements of the environment at specific locations resulting from atmospheric nitrogen deposition in its various forms. Nitrogen impacts have been documented in areas ranging from East Coast estuaries to high-elevation systems in the Colorado Front Range to southern California chaparral communities. Nitrogen deposition in these areas impacts diverse ecological communities ranging from fisheries to alpine lakes to grasslands.

Even with advances in our understanding of nitrogen cycling in the environment, scientific challenges remain in relation to setting scientifically valid critical loads. These challenges include the following:

• *Data requirements and availability*: Critical loads for acidification and nutrient-related ecosystem changes for sensitive aquatic and terrestrial systems depend on many ecosystem characteristics, compounded by the fact that these characteristics are heterogeneous across space. Such characteristics include topography, elevation, slope, bedrock geology, soil characteristics, soil chemistry, land use history, water body and watershed surface area, surface water chemistry, meteorology, climate, plant species composition, biomass, and plant nutrient concentrations. Depending on the critical loads calculation method used, some or all of the data described above are necessary inputs for establishing critical loads. Clearly, establishing critical loads is a very data-intensive exercise. The challenge will be to determine the amount and types of data that are necessary and available for

calculating critical loads at local to regional scales.

• *Multiple methods and models*: In addition to data issues, the current multiplicity of methods for calculating critical loads poses a practical challenge that may complicate application of the critical loads approach for air quality management. At least three approaches are currently employed for calculating critical loads: empirical approaches in which critical loads are based on the relationship between an observed detrimental ecological effect and the deposition level at which the effect occurred; steady-state approaches using simple mass-balance models; and dynamic modeling approaches. While each approach has advantages and disadvantages, the National Research Council recently stated that reliance on steady-state models can introduce uncertainty into critical loads calculations and observed that ''the numerous methods for calculating both critical loads and exceedance levels allow for inconsistency in implementation'' (NRC, 2004). Model comparison efforts will help to resolve issues regarding critical load calculation approaches and enable evaluation of the data needs and relative applicability of steady-state and dynamic modeling approaches.

• *Critical load variations*: Critical load values vary depending upon factors such as the ecosystem response of interest or the spatial context. At a given location, for example, critical loads can vary depending upon the ecosystem response indicator of interest—critical loads for soils are often different than critical loads for freshwater systems. Similarly, critical loads for an ecosystem response indicator may vary across local to regional spatial scales. The challenge will be to integrate local-scale critical loads (*e.g.*, for a Class I area) and regional-scale critical loads when implementing air quality management programs for ecosystem protection at multiple scales.

We are aware that Federal land management agencies, other Federal and State agencies, and the scientific community have developed a substantial body of information related to nitrogen impacts for a limited number of site-specific ecosystems around the country. EPA will continue working to further develop the latest scientific research results and information to explore the critical loads approach to better manage air resources.

We agree with commenters that it is possible that a critical load program could be developed by working collaboratively with States, tribes, and FLMs to implement ''pilot projects'' in selected areas where there may be sufficient information on nitrogen deposition and ecosystem effects to establish critical loads. Under this final rule, the Agency encourages States, tribes and FLMs to join with EPA in exploring the voluntary use of critical loads as a basis to address effects of nitrogen deposition on ecosystems for such areas. With appropriate public input, cooperative critical load projects could lead to implementation plans that demonstrate protection against deterioration of AQRVs from nitrogen impacts, eliminate the need for NO_2 increment tracking, and reduce the extent of assessments needed for permitting new sources that may impact AQRVs in Class I areas. In addition, such an approach may fit within the structure of existing requirements.

EPA will work with interested States, tribes, Federal land management agencies and others to identify the components needed to develop and implement cooperative projects to explore the feasibility and usefulness of a critical loads approach. EPA believes such projects are a means through which to explore whether a critical loads approach could be an efficient approach to ensure protection of ecosystems and other AQRVs as part of the existing increment system, and also meet other purposes of the Act. Such an approach could reduce the administrative burden on States and new sources. Collaborative efforts to explore a critical loads approach for nitrogen would provide insight into the general role of critical loads in future air quality management programs.

The statutory PSD provisions authorize Federal land management agencies, including NPS and the U.S. Forest Service, to play a special role in protecting AQRVs in their Federal Class I lands.[32] In this context, the FLMs are also responsible for identifying AQRVs in Class I areas and assessing whether they might be adversely impacted. For many Class I area parks and wilderness areas, FLMs have already identified the resources at risk from or sensitive to air pollution. In conjunction with this effort, FLMs recently have explored the use and setting of critical loads as a management tool to characterize the risk from air pollution emissions and deposition to ecological systems on Class I areas and Federal lands. (Porter, 2005.) For example, they have used research on critical loads to assess ecosystem risk and to inform air quality management decisions related to new source permit reviews and comments on SIP pollution control strategies. These efforts could serve as the basis for continuing review and evaluation by a cooperative agreement with EPA, States and other interested parties.

One commenter believed that EPA should elaborate on the way we envision States' using critical loads within their State PSD programs. This commenter further believed that States should be encouraged to consider critical load data where such data indicate that the current NO_2 increments and current permitting procedures are not providing adequate environmental protection.

In our February 2005 proposal, we indicated that States, considering the state of the science, may propose use of critical load information as part of their air quality management approach. If such a proposal were made, EPA would consider it in determining whether the State's approach satisfied its PSD requirements. We envision the development of critical loads to be a phased, ongoing process. As critical loads are calculated for specific receptors in a particular area, such as forest soils, or surface waters, using a dose-response relationship, and such critical loads are adequately peer-reviewed, we encourage affected States to consider working closely with the applicable FLM to establish agreements and procedures for incorporating the critical load concept into their PSD permit process for protecting AQRVs.

VIII. Statutory and Executive Order Reviews

A. Executive Order 12866—Regulatory Planning and Review

Under Executive Order 12866 (58 FR 51735, October 4, 1993), the Agency must determine whether the regulatory action is ''significant'' and therefore subject to review by the Office of Management and Budget (OMB) and the requirements of the Executive Order. The Order defines ''significant regulatory action'' as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees,

[32] Section 165(d)(2)(B) places an affirmative responsibility on FLMs to protect the AQRVs in Federal Class I areas.

or loan programs, or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, it has been determined that this rule is a ''significant regulatory action'' because the State planning option in the proposal raises novel legal and policy issues. As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations will be documented in the public record.

B. Paperwork Reduction Act

This action does not impose any new information collection burden. Under this final action, we are retaining the existing increments and regulatory framework of the PSD regulations for NO_X. The Office of Management and Budget (OMB) has previously approved the information collection requirements contained in the existing regulations (40 CFR parts 51 and 52) under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501, *et seq.*, and has assigned OMB control number 2060–0003, EPA ICR number 1230.17. A copy of the OMB-approved Information Collection Request (ICR) may be obtained from Susan Auby, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW., Washington, DC 20460, or by calling (202) 566–1672.

As an alternative to the existing increments, the State has discretion in developing an alternative option that satisfies both the requirements of the statutory PSD program requirements for NO_X and the State's air quality management goals. It is not possible to determine at this time what additional burdens, if any, a State alternative program may entail.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations in 40 CFR are listed in 40 CFR part 9.

C. Regulatory Flexibility Act (RFA)

EPA has determined that it is not necessary to prepare a regulatory flexibility analysis in connection with this final rule.

For purposes of assessing the impacts of today's final rule on small entities, small entity is defined as: (1) A small business as defined by the Small Business Administration's (SBA) regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; or (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of today's final rule on small entities, EPA has concluded that this action will not have a significant economic impact on a substantial number of small entities. We are imposing no new requirements on small entities. We are retaining existing regulations without change and thus imposing no new requirements on small entities. Optionally, we allow States to adopt alternative programs to relieve the burden of conducting specific ambient air quality and increment analyses under the PSD program. However, States do not meet the definition of a small entity under the RFA.

D. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Pub. L. 104–4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with ''Federal mandates'' that may result in expenditures to State, local, and tribal governments, in the aggregate, or to the private sector, of $100 million or more in any one year.

Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective, or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted.

Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

Today's final action contains no Federal mandates (under the regulatory provisions of Title II of the UMRA) for State, local, or tribal governments or the private sector. The final rule imposes no enforceable duty on any State, local or tribal governments or the private sector.

We are retaining existing requirements and do not impose any new Federal mandates. New rule language authorizes States to adopt an alternative approach to meeting some of the rule's requirements, but States have had such authority under the CAA and are not required to adopt an alternative approach if they choose to continue implementing the existing program provisions. In any event, EPA has determined that this final rule does not contain a Federal mandate that may result in expenditures of $100 million or more for State, local, and tribal governments, in the aggregate, or in the private sector in any one year. Thus, today's final rule is not subject to the requirements of sections 202 and 205 of the UMRA.

Because we have not required any new Federal mandates, EPA has also determined that this rule contains no regulatory requirements that might significantly or uniquely affect small governments.

E. Executive Order 13132—Federalism

Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' ''Policies that have

federalism implications'' is defined in the Executive Order to include regulations that have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.''

This final rule does not have federalism implications. The rule will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. If the existing regulations for increments are retained, no new regulatory requirements will be imposed on States. Optionally, this final action permits States to obtain relief from certain regulatory requirements by adopting alternative programs but does not necessarily require adoption of a new program in that a State may rely on a program that is already in place or that is required by other EPA requirements. Direct compliance costs associated with today's rule could be incurred when States incorporate any changes into their SIPs, but these direct compliance costs would not be significant. Thus, Executive Order 13132 does not apply to this final rule.

F. Executive Order 13175—Consultation and Coordination With Indian Tribal Governments

Executive Order 13175, entitled ''Consultation and Coordination with Indian Tribal Governments'' (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure ''meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.'' This final rule does not have tribal implications, as specified in Executive Order 13175. No tribes are currently implementing the PSD program. Furthermore, this final rule does not impose any new regulatory restrictions. In this final action, EPA is retaining the existing NO_2 increments and making explicit that States implementing the PSD program have the option to seek EPA approval of an alternative program that meets the objectives of the PSD program without using increments. At the time it reviews any alternative PSD program for NO_X submitted by a State, EPA will assess whether such program has tribal implications. However, the final action we are taking today does not have a substantial direct effect on tribes. Thus, Executive Order 13175 does not apply to this final rule. Although Executive Order 13175 does not apply to this rule, EPA has considered comments submitted by several tribal officials. A summary of the concerns raised in these comments and EPA's response to those concerns is provided in EPA's Comment-Response Document located in the docket for this rule.

G. Executive Order 13045—Protection of Children From Environmental Health and Safety Risks

Executive Order 13045, ''Protection of Children from Environmental Health Risks and Safety Risks'' (62 FR 19885, April 23, 1997), applies to any rule that: (1) Is ''economically significant'' as defined under Executive Order 12866; and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This final rule is not subject to the Executive Order because it is not economically significant as defined in Executive Order 12866, and because the Agency does not have reason to believe the environmental health or safety risks of NO_X addressed by this action present a disproportionate risk to children. The final rule retains existing regulations and does not impose any new regulatory requirements. States may obtain relief from certain regulatory requirements by choosing to adopt alternative programs.

H. Executive Order 13211—Actions That Significantly Affect Energy Supply, Distribution, or Use

This rule is not a ''significant energy action'' as defined in Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use'' (66 FR 28355, May 22, 2001), because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. The final rule retains existing regulations and does not impose any new regulatory requirements. States may obtain relief from certain regulatory requirements by choosing to adopt alternative programs. This option does not impose any new requirements but rather allows States to obtain regulatory flexibility by implementing alternative requirements. Further, we have concluded that this rule is not likely to have any adverse energy effects.

I. National Technology Transfer and Advancement Act

As noted in the February 2005 proposal, section 12(d) of the National Technology Transfer and Advancement Act of 1995 (''NTTAA''), Pub. L. 104–113, 12(d) (15 U.S.C. 272 note), directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (*e.g.*, materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards. This final rule does not involve technical standards. Therefore, EPA did not consider the use of any voluntary consensus standards.

J. Executive Order 12898—Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12898 requires that each Federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionate high and adverse human health or environmental effects of its programs, policies, and activities on minorities and low-income populations. The EPA concluded that this final rule should not raise any environmental justice issues.

K. Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. A major rule cannot take effect until 60 days after it is published in the **Federal Register**. This action is not a ''major rule'' as defined by 5 U.S.C. 804(2). Therefore, this action will be effective November 14, 2005.

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List of Subjects in 40 CFR Part 51

Environmental protection, Administrative practices and procedures, Air pollution control,

Intergovernmental relations, Nitrogen oxides, Ozone, Particulate matter, Reporting and recordkeeping requirements.

Dated: September 29, 2005.

Stephen L. Johnson,

Administrator.

■ For the reasons set out in the preamble, title 40, chapter I of the Code of Federal Regulations is amended as follows:

PART 51—[AMENDED]

■ 1. The authority citation for part 51 continues to read as follows:

Authority: 23 U.S.C. 101; 42 U.S.C. 7401–7671 q.

Subpart I—[Amended]

■ 2. Section 51.166 is amended by revising paragraph (c) to read as follows:

§ 51.166 Prevention of significant deterioration of air quality.

* * * * *

(c) *Ambient air increments and other measures.* (1) The plan shall contain emission limitations and such other measures as may be necessary to assure that in areas designated as Class I, II, or III, increases in pollutant concentrations over the baseline concentration shall be limited to the following:

Pollutant	Maximum allowable increase (micrograms per cubic meter)
Class I	
Particulate matter:	
PM_{10}, annual arithmetic mean	4
PM_{10}, 24-hr maximum	8
Sulfur dioxide:	
Annual arithmetic mean	2
24-hr maximum	5
3-hr maximum	25
Nitrogen dioxide:	
Annual arithmetic mean	2.5
Class II	
Particulate matter:	
PM_{10}, annual arithmetic mean	17
PM_{10}, 24-hr maximum	30
Sulfur dioxide:	
Annual arithmetic mean	20
24-hr maximum	91
3-hr maximum	512
Nitrogen dioxide:	
Annual arithmetic mean	25
Class III	
Particulate matter:	
PM_{10}, annual arithmetic mean	34
PM_{10}, 24-hr maximum	60
Sulfur dioxide:	
Annual arithmetic mean	40
24-hr maximum	182
3-hr maximum	700
Nitrogen dioxide:	
Annual arithmetic mean	50

For any period other than an annual period, the applicable maximum allowable increase may be exceeded during one such period per year at any one location.

(2) Where the State can demonstrate that it has alternative measures in its plan other than maximum allowable increases that satisfy the requirements in sections 166(c) and 166(d) of the Clean Air Act for nitrogen oxides, the requirements for maximum allowable increases for nitrogen dioxide under paragraph (c)(1) of this section shall not apply upon approval of the plan by the Administrator.

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