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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
AIR AND RADIATION

AUG 23 1991

RE: Navajo Rulemaking

FROM: Thomas Kiernan 
Chief of Staff
to the Assistant Administrator

TO: Jeff Holmstead
Art Fraas
Dennis Underwood
David Rivkin
Nancy Mitchell

Attached is a preliminary draft of the Navajo rulemaking. Since we are still in the public comment period, several sections are incomplete and the remaining sections will be revised subject to the final public comments.

We will schedule a meeting the first week of September to review any comments you may have.

6560-50

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[AD-FRL-]

Approval and Promulgation of Implementation Plans:
Revision of the Visibility FIP for Arizona

AGENCY: U.S. Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This notice revises the Federal implementation plan (FIP) for the State of Arizona to include a sulfur dioxide (SO₂) emission limit of 42 nanograms per Joule (ng/J) [0.10 pounds per million British thermal units (lb/MMBtu)], heat input for the Navajo Generating Station (NGS) to remedy wintertime visibility impairment in the Grand Canyon National Park (GCNP). Compliance with this emission limit will be phased-in by unit in 1997, 1998, and 1999 and determined on a plantwide annual rolling average basis. In addition, NGS will be required to reschedule its maintenance such that 6 unit-weeks of maintenance will be performed during the winter months.

This action is taken pursuant to sections 169A and 110(c) of the Clean Air Act (Act), 42 U.S.C. sections 7491 and 7410(c), which require EPA, upon default by a State, to take appropriate measures to remedy certified visibility impairments in mandatory Class I areas ~~where the impairment~~

is reasonably attributed to a specific source. On September 5, 1989, EPA preliminarily attributed a significant portion of wintertime impairment in GCNP to the NGS (54 FR 36948). On February 8, 1991, EPA proposed to require NGS to meet new emission limits to address that impairment (56 FR 5173), reopened the comment period on EPA's September 5, 1989 preliminary attribution finding and provided an opportunity for public comment on all other issues relevant to the rulemaking proposal. Over 380 comments were received during this initial comment period. In addition to soliciting written comments during the comment period, EPA also held a public hearing on March 18 and 19, 1991, in Phoenix, Arizona. A copy of the transcript of the hearing is in Docket A-89-02A. After the close of the comment period on April 19, 1991, many meetings took place among representatives of Salt River Project (SRP) acting on behalf of the NGS owners, and representatives of the Grand Canyon Trust (GCT) and the Environmental Defense Fund (EDF) acting on behalf of their organizations. In August 1991, representatives of the NGS owners and the environmental groups agreed on an SO₂ control strategy for NGS and recommended that it be adopted by EPA. They have entered into a memorandum of understanding (MOU) memorializing their agreement and recommendation which was submitted (together with associated documents) to EPA. Therefore, EPA reopened the comment period on this action to request comments on the

regulatory option and legal rationale presented in the MOU and associated documents [56 FR 38399 (August 13, 1991)].

The timing of today's action is in accordance with a revised settlement agreement between EPA and the Environmental Defense Fund (EDF) in EDF v. Reilly, No. C82-6850 RPA (N. D. Cal.).

EFFECTIVE DATE: This action will be effective on [30 days from date of publication].

Docket: Pursuant to section 307(d)(1)(B) of the Act, 42 U.S.C. 7607(d)(1)(B), this action is subject to the procedural requirements of section 307(d). Therefore, EPA established Docket A-89-02A for this action. Materials related to the development of this notice have been placed in this docket. Materials related to EPA's preliminary attribution determination [54 FR 36948 (September 5, 1989)] have been placed in Docket A-89-02. For background information, materials related to the development of the visibility protection program (40 CFR 51.300 et seq.) are available in Docket A-79-40. Also, materials related to the development of the visibility new source review (NSR) and visibility monitoring strategies are available in Docket A-84-32. Materials related to the visibility long-term strategy, implementation of control strategy, and integral vista program are available in Docket A-85-26. All dockets are available for public inspection and copying between 8:30 a.m. to 12:00 noon and 1:30 p.m. to 3:30 p.m., Monday

through Friday, at EPA's Central Docket Section, Office of the General Counsel, Room 1500, 401 M Street, S.W., Washington, DC 20460. A reasonable fee may be charged for copies.

FOR FURTHER INFORMATION CONTACT: Mr. David H. Stonefield, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards (MD-15), Research Triangle Park, North Carolina 27711, (919) 541-5350 or FTS 629-5350.

SUPPLEMENTARY INFORMATION:

Background

A. Regulatory Requirements

Section 169A of the Act, 42 U.S.C. 7491, sets as a national goal "the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution." Mandatory Class I Federal areas are certain national parks, wildernesses, and international parks as described in section 162(a) of the Act, 42 U.S.C. 7472(a). Section 169A requires that EPA promulgate regulations to assure reasonable progress toward meeting the national goal for mandatory Class I Federal areas where EPA has determined that visibility is an important value. On November 30, 1979, EPA identified 156 such areas, including the GCNP in Arizona, where visibility is an important air quality-related value (44 FR 69122). Section 169A specifically requires EPA to promulgate

regulations requiring States to amend their State implementation plans (SIPs) to provide reasonable progress toward meeting the national goal for the 156 areas. On December 2, 1980, EPA promulgated the required visibility regulations (45 FR 80084, codified at 40 CFR 51.300 et seq.). In broad outline, the visibility regulations require the 36 States listed in section 51.300(b), including Arizona, to: (1) coordinate SIP development with the appropriate Federal land managers (FLMs), (2) develop a program to assess and remedy visibility impairment from new and existing sources, (3) develop a long-term (10 to 15 years) strategy to assure reasonable progress toward the national goal, (4) develop a visibility monitoring strategy to collect information on visibility conditions, and (5) consider in all aspects of visibility protection any "integral vistas" (important views of landmarks or panoramas that extend outside of the boundaries of the Class I area) identified by the FLM's as critical to the visitors' enjoyment of the Class I areas. The affected States were required to submit revised SIP's satisfying these provisions by September 2, 1981 [see 45 FR 80091, codified at 40 CFR 51.302(a)(1)].

The second and third requirements listed above are of particular relevance to today's action. Pursuant to 40 CFR 51.302(c)(2), each affected State is required to include in its SIP such emission limitations, schedules of compliance,

and other measures as may be necessary to make reasonable progress toward the national visibility goal. Under 40 CFR 51.302(c)(1), an FLM may certify to a State that there exists impairment of visibility in any mandatory Class I Federal area. Such impairment must be addressed in accordance with 40 CFR 51.302(c) which sets forth measures for achieving reasonable progress, including best available retrofit technology (BART) and a long-term strategy (see 40 CFR 51.302(c)(1) and (2), section 169A(b)(2)(A) and (B). Pursuant to 40 CFR 51.302(c)(4)(i), where impairment is certified at least 6 months prior to plan submission, an affected State must identify each existing stationary facility which may "reasonably be anticipated to cause or contribute" to any such impairment which is "reasonably attributable to that existing stationary facility," and analyze for BART any facility so identified. "Reasonably attributable" impairment is impairment "attributable by visual observation or any other technique the State deems appropriate" [40 CFR 51.301(s)]. Where a State defaults on its obligations under the visibility regulations, EPA may act in place of the State pursuant to a FIP under section 110(c) of the Act, 42 U.S.C. 7410(c).¹ In such cases, all

¹Section 110(c) requires EPA to promulgate FIP's whenever a State fails to submit an implementation plan (or portion thereof) which meets the requirements of section 110; the Administrator determines that a plan (or portion) is not in accordance with the requirements of section 110; or the State fails to revise its plan within 60 days after notification by the Administrator in accordance with section 110(a)(2)(H).

of the rights and duties that would otherwise fall to the State accrue instead to EPA. Thus, EPA may utilize attribution techniques it deems appropriate; identify "reasonably attributable" sources of impairment, develop and implement the elements of a long-term strategy, conduct BART analyses, adopt BART requirements, where appropriate; and may promulgate such other control strategies that EPA, in its discretion, deems necessary to make reasonable progress toward the national visibility goal.

The visibility regulations promulgated at 40 CFR 51.302(c)(4)(i) require that once impairment has been certified, a State (or EPA if the State's visibility protection program addressing BART has not been approved and EPA is acting in its place) must analyze for BART any specific existing stationary facility it identifies as a "reasonably attributable" source of the impairment. Pursuant to section 169A(b) of the Act [42 U.S.C. 7491(b)] and 40 CFR 51.302(c)(4)(iii), the emission limitation representing BART for fossil fuel-fired power plants with a generating capacity in excess of 750 megawatts (MW) must be determined pursuant to guidelines promulgated by the Administrator. This statutorily-required procedure for conducting a BART analysis is found in "Guidelines for Determining Best Available Retrofit Technology Analysis for Coal-Fired Power Plants and Other Stationary Facilities"

(EPA-450/3-80-009b) (BART Guidelines). A copy of this document may be found in Docket A-89-02A.

In December 1982, environmental groups, including EDF, filed a citizens' suit in the United States District Court for the Northern District of California alleging that EPA had failed to perform a nondiscretionary duty under section 110(c) of the Act, 42 U.S.C. 7410(c), to promulgate visibility FIP's for the 35 States² that, at that time, had failed to submit SIP's to EPA as called for by the 1980 visibility regulations, EDF v. Reilly, No. C82-6850 RPA (N. D. Cal.). The State of Arizona was one of the 35 States that failed to submit a revised SIP to EPA.

The EPA and the plaintiffs negotiated a settlement agreement for the remaining States which the court approved by order on April 20, 1984. For more information on details of the provisions of the original settlement, including a schedule of actions by EPA, see EPA's announcement of the agreement at 49 FR 20647 (May 16, 1984).

B. Settlement Agreement

To remedy the States' failure to submit the necessary SIP revisions during the time specified by the regulations, the settlement agreement replaced the original regulatory deadlines for visibility SIP provisions with a rulemaking schedule agreed to by the parties and approved by the court.

²The State of Alaska had submitted a SIP which was approved on July 5, 1983 at 48 FR 30623.

This schedule required EPA to review the existing SIP's to determine any deficiencies, allow the States to cure those deficiencies, and to promulgate FIP's on a specified schedule for those States that still did not submit visibility SIP revisions to EPA. Specifically, the first part of the agreement required EPA to promulgate FIP's which cover the monitoring and NSR provisions of 40 CFR 51.305 and 51.307. The EPA promulgated its monitoring strategy for 23 States and its NSR provisions for 21 States, including Arizona, at 50 FR 28544 (July 12, 1985), 51 FR 5504 (February 1, 1986), and 51 FR 22937 (June 1986). In separate notices, EPA approved the SIP's of the other States with respect to monitoring and NSR.

The second part of the settlement agreement required EPA to determine the adequacy of the SIP's to meet the remaining provisions of the visibility regulations and gave the States until December 1986 to submit additional measures that would avoid the need for a FIP. These provisions are the general plan provisions, including BART and other implementation control strategies (section 51.302), integral vista protection (section 51.302-307), and long-term strategies (section 51.306) for achieving reasonable progress toward the national visibility goal. The settlement agreement required EPA to promulgate FIP's to remedy any deficiencies on a specified schedule.

Pursuant to 40 CFR 51.302(c)(1), on November 14, 1985, the Department of the Interior (DOI) certified the existence of visibility impairment in all Class I areas within its jurisdiction in the lower 48 States.

On January 23, 1986, EPA determined that the SIPs of 32 States (including Arizona) were deficient with respect to the remaining visibility provisions (51 FR 3046) and offered the States an opportunity to submit corrective SIP revisions. Thereafter, EPA and the plaintiffs negotiated revisions to the settlement agreement which extended the deadlines for State action or, if the States failed to respond, Federal action proposing FIP's to remedy these deficiencies. The court approved these revisions by its order of September 9, 1986.³

On March 24, 1986, the DOI sent letters to EPA which supplemented its earlier certification of visibility impairment. The letter addressed the GCNP and identified the NGS, a coal-fired power plant located near Page, Arizona, as a probable source of impairment in this Class I area. A copy of this letter may be found in Docket A-89-02.

Thirty-two affected States failed to submit visibility SIP revisions in response to the notice of deficiency. Consequently, in accordance with the revised settlement agreement, on March 12, 1987 (52 FR 7802), EPA proposed to

³A copy of the settlement agreement and revisions is available in docket A-85-26 at the address given at the beginning of this notice.

disapprove the SIP's of 32 States, including Arizona, for failing to meet the remaining provisions of the visibility regulations, including general plan requirements to achieve reasonable progress toward the national visibility goal (which in turn includes BART, long-term strategies, and other control strategies). Also in accordance with the agreement, on November 24, 1987 (52 FR 45132), EPA took final action disapproving the affected SIP's, again including Arizona. In that action, EPA also promulgated, as FIP measures under section 110(c), general plan requirements for these States. The EPA also determined that BART was unnecessary in 28 States because it could not reasonably attribute any part of the impairment to specific sources. In addition, under the revised agreement, EPA deferred until August 31, 1988 a decision regarding the need for BART or other control measures in the FIP's for the States of Arizona, Maine, Minnesota, and Utah to address certified visibility impairments in seven Class I areas in these States which potentially could be reasonably attributed to a specific source, pending acquisition and evaluation of additional technical information regarding the potential sources of impairment. The EPA needed additional information to determine whether any part of the impairment in any of these Class I areas is "reasonably attributable" to an existing stationary facility, and to enable a BART analysis for any source so identified as causing or

contributing to visibility impairment [40 CFR 51.302(c)(4)(i)].

Because all of the additional information needed by EPA was forthcoming but still not available by August 1988, the Agency sought and received a second extension, until August 31, 1989, of the deadline for issuing a rulemaking proposal regarding the need for BART or other control measures to remedy visibility impairments in three of the remaining Class I areas (Moosehorn Wilderness, GCNP, and Canyonlands National Park). With regard to the impairment in the GCNP, EPA delayed action in order to allow the National Park Service (NPS) time to analyze the data from a 1987 winter visibility attribution study, termed the Winter Haze Intensive Tracer Experiment (WHITEX), conducted in the Colorado Plateau where the GCNP is located. In the meantime, on May 19, 1989 (54 FR 21904), in accordance with the second revision to the settlement agreement, EPA promulgated final decisions concerning certified visibility impairments in four of the seven Class I areas. Based on monitoring conducted in these areas, EPA found that no part of the visibility impairments were reasonably attributable to any specific source at that time. Therefore, EPA determined that it was not necessary at that time to revise the FIP's for the States of Maine, Minnesota, and Arizona to include BART or other control strategies to remedy impairments in Roosevelt Campobello International Park

(Canada), Voyageurs National Park (Minnesota), Saguaro Wilderness (Arizona), and Petrified Forest National Park (Arizona).

In April 1989, EPA received a draft report on WHITEX from the NPS.⁴ Because of the delay in receiving this report, EPA believed that it lacked sufficient time to complete all actions in determining whether impairment in the GCNP was reasonably attributable to a specific source, conduct a BART analysis, and issue a proposal regarding BART or other control strategies by the August 31, 1989 deadline. Accordingly, EPA and EDF filed a joint motion to revise the settlement agreement for a third time, which was approved by order of the court dated July 6, 1989. Under this revision, there was no change in the deadlines for proposed action regarding Canyonlands National Park or Moosehorn Wilderness. As to GCNP, the third revision to the settlement agreement divided EPA's duty into two parts. The EPA would proceed, on a preliminary basis, to issue a finding on reasonably attributable impairment by the August 31, 1989 deadline. However, if EPA did provisionally identify a specific source of impairment, it would solicit comments on that finding and would have additional time to conduct a BART analysis. The EPA was to issue a rulemaking proposal on the need for BART by February 1, 1990 unless, in response to comments, EPA

⁴Malm, et al., "The National Park Service Report on WHITEX Draft Final Report" (April 7, 1989).

rejected its proposed identification and instead determined that BART was unnecessary.

In accordance with the third revision to the settlement agreement, EPA published a notice of proposed rulemaking on September 5, 1989 (54 FR 36948). Regarding Moosehorn Wilderness, EPA identified a source of the certified impairment, but proposed that BART was unnecessary at this time because the impairment would be adequately remedied by the retirement of certain existing emission units and the addition of pollution controls on other units pursuant to a permit issued under the Act's prevention of significant deterioration provisions. As to Canyonlands National Park, EPA could not reasonably attribute the certified impairment to a specific source at that time and so proposed that BART was unnecessary. On June 13, 1990 (55 FR 24060), EPA issued final decisions that BART was not necessary at that time to address impairment in either the Moosehorn Wilderness or the Canyonlands National Park.

Regarding the GCNP, in the September 5, 1989 notice, EPA preliminarily attributed a significant portion of wintertime visibility impairment to emissions from the NGS. The EPA reviewed the draft NPS report on WHITEX and concurred with the findings of the NPS that NGS is a substantial contributor to the wintertime visibility impairment. The EPA solicited comments on the merits of its preliminary attribution finding.

On _____, 1989, the SRP, et al., and Alabama Power Company, et al., intervenors in EDF v. Reilly, filed a motion requesting a 1-year delay in the rulemaking schedule so that, among other things, the intervenors could conduct their own studies of the visibility impairment in the GCNP. By order dated January 9, 1990, the court granted the intervenors' motion to extend the deadlines. This order set February 1, 1991, as the new deadline for EPA to propose whether or not to require BART emission limits for the NGS to remedy winter visibility impairment. The order also extended the deadline for final action on any proposal regarding BART until October 1991 (6 months after the close of the comment period).⁵

C. Navajo Generating Station

The NGS is a 2250 MW coal-fired power plant located near Page, Arizona, approximately 20 kilometers from the northern boundary of the GCNP. The NGS is a baseload generating station consisting of three 750 MW units which became operational between 1974 and 1976. The SRP is the operating agent for NGS which is jointly owned by the U.S. Bureau of Reclamation, the SRP, the Los Angeles Department

⁵EDF has appealed the extension of rulemaking deadlines in this case EDF v. Reilly, No. 90-15264 (9th Cir.). That appeal is pending. In an MOU, discussed below, parties to this litigation have agreed to petition (a) the Ninth Circuit to vacate the judgment below and remand the matter to the court below with instructions to dismiss and (b) the District Court for the Northern District of California to dismiss EDF v. Reilly, No. C82-6850.

of Water and Power, the Arizona Public Service Company, the Nevada Power Company, and the Tucson Gas and Electric Company. Existing pollution control equipment at NGS include electrostatic precipitators for particulate matter (PM) removal and specific burner design for nitrogen oxides (NO_x) control.

D. February 8, 1991 Proposal

On February 8, 1991, EPA proposed to revise the FIP for Arizona to include emission limits to address the visibility impairment observed in GCNP. The following is a summary of the main issues discussed in the proposal notice:

1. Emission limitation

The EPA proposed to adopt a continuous SO₂ emission limitation of 0.30 lbs/MMBtu. Compliance would be determined on a 30-day rolling average and would be phased in between 1995 and 1999. Because of the uncertainty in determining the improvement in visibility expected as a result of reducing emissions at the NGS, EPA solicited comments on three specific alternative emission limitations at NGS:

a. A continuous SO₂ emission limitation of 0.50 lbs/MMBtu. Compliance would be determined on a 30-day rolling average and would be phased in between 1995 and 1999.

b. A continuous SO₂ emission limitation of 0.10 lbs/MMBtu. Compliance would be determined on a 30-day rolling average and would be phased in between 1995 and 1999.

c. A January 10, 1991, proposal submitted by SRP under which it would test alternating control technologies and if one of the technologies met a minimum removal efficiency at a set cost the NGS would install that technology and operate it in the wintertime. If none of the technologies met the test criteria, NGS would reduce its emissions by 70 percent (0.30 lbs/MMBtu emission limit) measured on an annual basis by the year 2000.

In addition, EPA requested comment on whether another emission limitation or a different averaging period may be more appropriate.

2. Attribution

As part of the February 8, 1991 proposal, EPA reopened the comment period on its September 5, 1989, preliminary finding that a significant portion of wintertime impairment in the GCNP was reasonably attributable to NGS. The EPA again noted that the finding was not based on any single analytical technique in the WHITEX report, but rather on the collection of techniques performed by the NPS using WHITEX and other data. In detail, EPA explained that all of the techniques used by the NPS support the conclusion that for most days which tracer data are available, NGS is a

significant contributor to visibility impairment in the Grand Canyon during the winter months. Also, in some detail, EPA discussed the National Academy of Science's (NAS') review of the WHITEX study and discussed other visibility studies performed subsequent to WHITEX.

The National Research Council of the NAS reviewed and reported on the scientific methods used in the WHITEX report. The qualitative assessment in the NAS report entitled "Haze in the Grand Canyon; An Evaluation of the Winter Haze Intensive Tracer Experiment" (October 1990) supports EPA's finding that, on some days, NGS contributes significantly to haze in the GCNP. The NAS report has been placed in the rulemaking docket.⁶ The report also found that the data base and data analyses techniques in the WHITEX report reviewed by NAS, were not, standing alone, sufficient to ascertain the quantitative NGS contribution to haze at any given time.

The SRP has conducted another study known as the Navajo Generating Station Visibility Study (NGSVS). That study attempted to measure the degree of contribution by the NGS to visibility impairment in the GCNP during the 1989-1990 winter season and to assess the level of improvement expected as a result of reducing the SO₂ emissions at NGS. The SRP submitted a draft report describing that study and

⁶Additional copies of this report are available from the National Academy Press, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.

its results⁷ during the public comment period on EPA's February 8, 1991 proposal.

3. BART Analysis

In light of its attribution finding, EPA conducted an analysis in accordance with the BART Guidelines (EPA-450/3-80-009b) and 40 CFR 51.301(c)(4)(iii).⁸ That analysis included consideration of the following: the costs of compliance, the energy and nonair quality environmental impacts, any existing pollution control technology in use at the facility, the remaining useful life of the source, and the degree of improvement in visibility anticipated to result from application of controls.

Considering the requirements found in BART Guidelines, EPA divided its analysis into two major parts. In the first part, EPA identified the SO₂ emission controls that are readily available to the source, the costs of such controls, and other impacts of installing and operating the controls. In the second part of the analysis, EPA attempted to define the source-impairment relationship which was then used to predict the improvements in visual air quality that can reasonably be expected to occur as a result of installing and operating the controls defined in the control technology

⁷Sonoma Technology Inc. "Navajo Generating Station Visibility Study", Draft Number 2, April 16, 1991.

⁸U.S. EPA, "Draft Report on Best Available Retrofit Technology (BART) Analysis for the Navajo Generating Station in Page, Arizona," January 1990. A copy this document has been placed in Docket A-89-02A.

analysis. Because EPA was faced with some uncertainties in each of the parts of the analysis, EPA bounded its results by giving low and high estimates. A detailed discussion of this analysis for NGS was provided in EPA's February 8, 1991 proposal.

To estimate the cost of controlling the SO₂ emissions at NGS, EPA used the Integrated Air Pollution Control System (IAPCS) cost model to predict the capital and operating cost estimates for 0.10, 0.30, and 0.50 lbs/MMBtu control levels.⁹ The results from IAPCS indicated that wet flue gas desulfurization (FGD) achieving a 0.3 lbs/MMBtu emission limit for all three units was estimated to have total capital cost requirements of between \$245.9 million and \$402 million with total levelized annual costs (including amortized capital, interest, operating, and maintenance costs) estimated to be between \$91.9 million and \$128.3 million.¹⁰

In its February 8, 1991 proposal, EPA also estimated the potential costs to residential electricity customers serviced by the NGS participants as well as the potential costs to Central Arizona Project customers. One of the more complicated tasks in the BART analysis was defining the relationship between the SO₂ emissions at NGS and the

⁹Integrated Air Pollution Control System Costing Program, Version 3.0, copyright PEI and Associates, Inc., 1989.

¹⁰All dollar amounts were measured in 1988 dollars.

visibility impairing sulfate in the GCNP. This relationship had to be addressed in order to estimate the degree of improvement in visibility that could be anticipated to result from the use of the alternative SO₂ control systems.

Because of the complex terrain in and around the GCNP, EPA defined the source/impairment relationship using the ratio of SO₂ emissions at NGS to sulfate in the GCNP attributable to NGS as found in the final WHITEX report. Using this ratio, EPA then applied a linear rollback model. However, in light of the uncertainties surrounding these analyses EPA considered a broad range of source-impairment relationships. In addition, EPA developed and applied a nonlinearity factor to the rollback model to estimate the improvements in visibility that would result from reductions in SO₂.

Because no single standard method exists for measuring improvements in visibility, the EPA employed two of the most widely used techniques to define the improvements in visibility expected to occur in the GCNP.

One of the methods used to estimate the visibility improvements in the GCNP was analyzing the changes in contrast expected to occur as a result of reducing SO₂ emissions at NGS. The EPA stated in the proposal that this method is particularly relevant because human observers use contrast to make judgments of how color and atmospheric clarity changes with pollutant concentration. The contrast

is defined as the percent difference between the brightness of a scenic element and its background.

Using the information obtained during the WHITEX study and extrapolating it to a period from November 1 through March 31 based on historic particle composition data (and applying the nonlinearity factor), EPA estimated the number of days with a "perceptible" change in the visibility conditions (4 percent change in contrast), a "quite noticeable" change in visibility conditions (10 percent change in contrast), and a "very apparent" change in visibility conditions (20 percent change in contrast) which would occur if NGS SO₂ emissions were reduced to 0.30 and 0.10 lbs/MMBtu.

In addition to analyzing the changes in contrast in order to describe the improvement in seasonal average visibility expected to occur as a result of controlling SO₂ emissions at NGS, the EPA also estimated the improvements in visual range expected to occur at 0.10 and 0.30 lbs/MMBtu SO₂ emission limits. In its proposal, EPA estimated that the average wintertime visual range would improve 11 percent if NGS had to meet a 0.30 lbs/MMBtu emission limitation and would improve 14 percent if NGS had to meet a 0.10 lbs/MMBtu emission limit.

Although not specifically addressed in the proposal, it was noted that EPA and NPS suspected that NGS emissions may contribute to visibility impairment in the GCNP during other

seasons of the year and in other Class I areas in the region. Thus, EPA sought comment on other potential visibility impairment caused by NGS.

The EPA noted in the proposal notice that it was not required as a part of its analysis to estimate monetary benefits associated with improving visibility in the GCNP. However, as a check of reasonableness for its approach, EPA evaluated and considered the benefit analysis developed as a part of the Regulatory Impact Analysis (RIA) (as required by Executive Order 12291) for the proposed rule. This analysis also satisfied the requirements of section 317 of the Act regarding economic impact assessments.

In September 1990, EPA received a draft report of a new SRP-funded benefits study on improving visibility in the GCNP.¹¹ The report details the methodology and results of a pilot contingent valuation willingness-to-pay study conducted on behalf of SRP in 1990. The draft report concluded that the benefits of reducing sulfur emissions from the NGS are substantially lower than those in EPA's draft RIA. The EPA requested comments on this new information on benefits, as well as on the benefits analysis developed as part of the RIA.

5. Control of Particulate Matter and Nitrogen Oxides

¹¹Development and Design of a Contingent Value Survey for Measuring the Public's Value for Visibility Improvements at the Grand Canyon National Park: Revised Draft Report," September 1990, Decision Focus, Inc.

In the February 8, 1991 proposal, EPA noted that two other pollutants emitted by NGS, NO_x and PM, are known to contribute to visibility impairment in some circumstances.¹² The current emissions of NO_x and PM from NGS were not identified as significantly contributing to the visibility impairment in the Grand Canyon. However, EPA expressed concern based upon its technical judgment regarding the behavior of the pollutants as potential contributions to visibility impairment as a general matter, upon the amount of the pollutants emitted by NGS, upon the proximity of NGS to the GCNP and upon the characteristics of the NGS plume shown by WHITEX and other studies, that increased emissions of these pollutants could result in impairment in the GCNP. The EPA noted that although the NGS is not subject to any NO_x emission limitations, SRP has stated that NGS currently emits NO_x at a rate of 0.4 to 0.5 lbs/MMBtu. Therefore, EPA proposed an NO_x emission limit consistent with NGS's existing emission rate, as well as the rate at other similar plants, of 0.5 lbs/MMBtu.

The EPA noted that particulate matter (PM) emissions for the NGS are currently limited in two ways. The Arizona SIP has both an emission rate limitation of 0.06 lbs/MMBtu and an opacity limit of 40 percent for NGS. The SRP has stated that NGS currently emits PM at a rate of 0.03 lbs/MMBtu with an opacity of between 10 and 15 percent.

¹²See, e.g., BART Guidelines at 12-13.

Thus, the opacity limit of 40 percent is well above the NGS existing emissions. Therefore, EPA proposed a 20 percent opacity limitation consistent with current NGS emissions opacity in order to preclude any visibility deterioration that would be caused by an increase in PM emissions.

The EPA requested comments on whether NO_x and PM emission limits would be appropriate for NGS.

6. Compliance Schedule

The EPA proposed to require that the emission limitation be achieved in three phases. Specifically, EPA proposed that the final emission limitation would need to be met on one unit by January 1, 1995; on two units by January 1, 1997; and on all three units by January 1, 1999. The EPA solicited comments on whether the phased-in compliance schedule proposed was appropriate as a matter of law or policy, and, as noted, on the January 1991 SRP proposal that a final emission limitation not become effective before January 1, 2000.

7. Use of Seasonal Controls

Part of the SRP proposal called for the use of seasonal controls. Therefore, EPA solicited comment on the use of seasonal controls. In the February 8, 1991 proposal notice, EPA noted that such controls would have to be both technically and legally justified before they could be used.

8. Other Issues

In the February 8, 1991 proposal, EPA also specifically solicited comments on the following:

- Use of continuous emission monitoring systems for compliance determinations,
- Plantwide averaging of the emission limitations, and
- Other available technologies which can reduce SO₂ emissions at NGS to achieve the proposed or alternative limits and which may require less capital investment and/or operating expenses than those technologies evaluated in the BART analysis.

In addition to soliciting written comments during the comment period, EPA held a public hearing on March 18 and 19, 1991 in Phoenix, Arizona. A copy of the transcript of the hearing is in Docket A-89-02A. As a result of the comment period and public hearing EPA received over 400 comments on its proposal. All the comments have been placed in Docket A-89-02A.

Because of the differences in views of the data and analyses submitted to EPA during the comment period, EPA sponsored a technical review meeting on April 25 and 26, 1991. The EPA invited the NGS owners and the environmental groups to send technical representatives to the meeting to discuss the interpretation of the available data. The meeting was open to the public and a summary of it is included in Docket A-89-02A.

E. New Information After the Close of the Comment Period

After the comment period closed on April 19, 1991, at the recommendation of EPA, representatives of SRP, GCT, and EDF met to discuss alternative approaches to EPA's February 8, 1991 proposal. In August 1991, the outside parties reached agreement and together recommended that EPA adopt an alternative control for NGS consisting of a 0.10 lb/MMBtu SO₂ emission limitation (approximate to a 90 percent control level) based on a rolling annual average and phased in by unit in November 1997, November 1998, and August 1999. In addition, under the agreement, NGS would shift its maintenance schedule such that six unit-weeks of planned maintenance would occur between November 1 and March 15 each year. Under specific conditions, the Administrator of EPA may allow NGS to shift the maintenance schedule outside of that period or not to conduct scheduled maintenance in a given year.

Representatives of EPA participated in many of the meetings with the parties and provided technical assistance. Representatives of the State of Arizona also attended several of the meetings and provided additional technical support. New technical materials and cost information, including adjustments of the potential control costs were exchanged between the parties and EPA. Summaries of the meetings and significant conversations in which EPA was involved and copies of the new material and information

which were submitted to or developed by EPA have been included in Docket A-89-02A.

The outside parties memorialized their agreement in a Memorandum of Understanding (MOU) which they submitted to EPA along with recommended regulatory requirements for EPA's final rulemaking action. The SRP estimated (in 1992 dollars) a capital cost of \$430 million and a total levelized annual cost of \$89.6 million for this alternative SRP also estimated a capital cost of \$510 million and total levelized annual cost of \$106 million to meet alternative EPA proposed in February 1991.

Noting that the alternative incorporated in the MOU would provide more visibility protection for the GCNP at a lower cost for NGS and its customers, EPA, on August 8, 1991, reopened the comment period on its February 8, 1991 proposed action (56 FR 38399, August 13, 1991). In the notice EPA stated that it was giving serious consideration to the control option recommended by the outside parties and incorporated in an appendix to the notice a memorandum from EPA's Office of General Counsel concluding that the outside parties' legal rationale in support of their recommended control option was meritorious.

The EPA reopened the comment period until September 9, 1991. Where addresses were available, commenters on the February 8, 1991 proposal were notified by mail of the

reopened comment period in order to facilitate their ability to comment.

TODAY'S ACTION

In today's action EPA is promulgating its final determination on the attribution to NGS of visibility impairment in GCNP and is promulgating federal revisions to the visibility implementation plan for Arizona to address that impairment. As discussed below, EPA has concluded that visibility impairment of GCNP is "reasonably attributable" to NGS and that NGS is a significant contributor to certain visibility episodes. The EPA also concludes today that a 0.10 lb/MMBtu SO₂ emission limitation (approximate to a 90 percent control level) based on a rolling annual average and phased in by unit in November 1997, November 1998 and August 1999, in addition to scheduled winter maintenance at NGS affords greater visibility improvement at less cost than the alternative advanced in EPA's February 1991 proposal because it will reduce by two-thirds the amount of pollution allowed under the proposed rule. In addition, EPA expects that the final rule will be significantly less costly than the proposal. Consequently, EPA further concludes that today's final action will provide a greater degree of "reasonable progress" toward the national goal of remedying such impairment than would be provided by the February 1991 proposal. See section 169A(b)(2) of the Clean Air Act, 42 U.S.C. §7491(b)(2).

In EPA's supplemental notice requesting comment on the rulemaking alternative largely adopted in final form today, the Agency noted that SRP, GCT and EDF had recommended that the legal rationale in support of this alternative be the requirement in section 169A(b)(2) of the Act that implementation plan revisions addressing visibility impairment achieve "reasonable progress" toward the national visibility goal. The supplemental notice also indicated that EPA's Office of General Counsel had reviewed the matter and concluded, subject to any significant points that may be raised in the reopened comment period, that EPA could rely on the reasonable progress provisions as the basis for this alternative. No significant adverse comments were received on this issue. Accordingly, EPA is adopting this rationale as discussed in the supplemental notice.

A. Attribution

The EPA regulations promulgated on December 2, 1980 "[r]equire the control of impairment that can be traced to a single existing stationary facility or small group of existing stationary facilities . . . " (45 FR 80085). Accordingly, EPA's regulations currently cover existing sources "which may reasonably be anticipated to cause or contribute to impairment of visibility in any mandatory class I Federal area" where the impairment is "reasonably attributable" to that source by visual observation or other techniques deemed appropriate by the State. EPA, acting for

the State under section 110(c) of the Act, deems the techniques in the WHITEX report, the NGSVS report and other data and analyses in the docket appropriate techniques for determining reasonable attribution for the following reasons:

1. The unique tracers, deuterated methane (CD_4) used in the WHITEX study and perfluorocarbons used in the NGSVS, injected into the emissions of NGS were observed at Hopi Point during periods of episodic visibility impairment;
2. Sulfur dioxide released by a power plant converts into sulfates through chemical transformation in the atmosphere;
3. NGS is the predominate source of SO_2 in the region;
4. Sulfates are the major contributor to visibility impairment in GCNP; and
5. Meteorological data shows that the NGS plume easily can, and frequently does, travel to GCNP.

The EPA recognizes that NGS is not the only source of visibility impairment at GCNP. Under the applicable statutory provisions and regulations, however, this is not determinative.¹³ See generally section 169A of the Act

¹³ For example, under section 169A(b)(2) of the Act EPA is authorized to require visibility implementation plans containing "emission limits, schedules of compliance and other measures" necessary to make reasonable progress toward meeting the national visibility goal. See also 40 CFR 51.302(c). The national visibility goal, in turn, calls for the remedying of "any" manmade visibility impairment in class I areas. See section 169A(a)(1) and 40 CFR 51.300(a); see also section 169A(c) of the Act (authorizing an exemption from control requirements only

and 40 CFR 51.300-307. Moreover, even though WHITEX and NGSVS contain some scientific uncertainty, they are technically adequate for the regulatory purposes at hand, as they both showed that a significant portion of the visibility impairment in the GCNP can be reasonably attributed to NGS. Accordingly, EPA concludes today that visibility impairment of the GCNP is "reasonably attributable" to NGS and NGS is a significant contributor to certain visibility episodes. Notwithstanding that other sources also may contribute to the impairment of GCNP, EPA concludes that the addition of emissions controls at NGS alone will result in a significant improvement in visibility at GCNP and will make "reasonable progress" toward meeting the national visibility goal.

B. Control Technology

As part of the BART analysis¹⁴ for the February 1991 proposal, EPA reviewed the available control technologies including the environmental impact of the use of such technologies and the estimated costs of installing and operating such equipment. As a result of new information provided by SRP, EPA has revised and updated its cost

where a plant does not "by itself or in combination with other sources" emit pollution "which may reasonably be anticipated to cause or contribute to significant impairment of visibility in any area" and affirms, by negative inference, EPA's broad rulemaking authority) (emphasis added).

¹⁴U.S. EPA "Draft Report on Best Available Retrofit Technology (BART) Analysis for the Navajo Generating Station in Page, Arizona" January 1990.

estimates for the installation and operation of a wet FGD system to meet the emission limitation promulgated today.¹⁵ The EPA now estimates, in 1992 dollars, that the capital cost for procuring and installing the system will be approximately \$430 million and that the total levelized annual cost will be \$89.6 million. Although not considered in these cost estimates, EPA expects that NGS will be able to recoup a portion of its cost by the sale of excess marketable allowances which it will receive as part of the allowance trading program that EPA is establishing under Title IV of the Act.

C. Control Strategy

The EPA has adopted the combination of a higher level of control, an annual averaging period and scheduled winter maintenance as a control strategy for NGS--the alternative recommended to the Agency by GCT, EDF and SRP and identified in EPA's August 1991 supplemental notice--because it better addresses the two visibility effects of concern than the proposal in EPA's February 1991 notice. Essentially, the sulfur dioxide emissions from NGS can contribute to two types of visibility impairment. The major impact of NGS is

¹⁵ In today's action EPA is not requiring the use of any particular control technology. Rather, EPA is establishing an emission limitation for NGS. However, as a practical matter, EPA has assumed that a wet FGD system will be the control technology used at NGS because it is the only proven readily available technology EPA is aware of that can achieve a 90 percent reduction in emission at a coal-fired plant of this size and type.

its contribution to episodic visibility impairment events, usually during the winter. This impact has been observed in winter studies (WHITEX and NGSVS) as well as intense aerosol monitoring within the Canyon since 1989. The other concern addressed by the control strategy in today's action is the less intense impairments which (1) occur at the Grand Canyon during seasons other than winter, and (2) occur at other nearby class I areas.¹⁶

The lower level of NGS SO₂ emissions required by the 0.10 lbs/MMBtu emission limitation adopted today will afford greater protection from episodic events than an emission limitation which allows significantly more SO₂ emissions but is averaged over a shorter period, such as the 0.30 lb/MMBtu emission limitation proposed by EPA in its February 1991 notice. The limited probability of high NGS contribution to severe episodic sulfate impairment events is keyed to the known design reliability of current technologies which will achieve the required 0.10 lb/MMBtu emission limitation as well as the scheduled winter maintenance requirement. Thus, EPA believes that despite the use of an annual averaging time, the control level, expected reliability of the control technology, and winter maintenance, taken together, will for the most part prevent continuation of severe winter episodes

¹⁶ See, e.g., "Haze Impacts on the Golden Circle of National Parks of Sulfur Dioxide Emission from Navajo Generating Station: Haze Puff Model Calculations for 1986-90."

caused by NGS. At the same time, the annual average lowers the costs of compliance.

With respect to long-term visibility impacts on the Golden Circle area (the other class I areas in the Colorado Plateau) there is little doubt that the lower emission rate over a year's average will reduce NGS's contribution to sulfate-caused impairment more than the control level proposed by EPA in February. Given NGS's central location in relation to many class I areas, no matter what meteorological events occur over a multi-year period, sulfates originating from NGS in surrounding class I areas over that period likely will be reduced in proportion to the difference in emission limitations, i.e., to one-third of the levels in the February proposal.

Accordingly, the control scheme adopted today for NGS is appropriate for addressing the winter episodic visibility impairment observed at the GCNP as well as the long-term, long-range impairment caused by NGS emissions during other seasons at GCNP and at other nearby class I areas.¹⁷

¹⁷ As noted, section 169A of the Act establishes a national visibility goal, not an air quality standard or a specific emission standard. While the objective is to attain the goal, EPA's mandate from Congress only is to make reasonable progress toward the goal. For these reasons, EPA has more flexibility in selecting a control strategy to meet the visibility reasonable progress requirements than it does when a health-based air quality standard or specific emission standard must be met. Thus, in determining reasonable progress, EPA by law must consider the costs of compliance, the time necessary for compliance, and the energy and nonair quality environmental impacts of compliance. See section 169A(g)(1) of the Act. Consideration of the pertinent statutory scheme and these

D. Emission Limitation

After reviewing the option recommended by SRP, EDF and GCT in their MOU, EPA has determined that such a control strategy will provide a substantially greater degree of emissions reduction, and a correspondingly greater degree of visibility improvement, at a substantially lower cost than the alternative proposed in February 1991. For these reasons, EPA also concludes that this option will make additional reasonable progress towards attainment of the national visibility goal in comparison to the February 1991 proposal. Thus, in today's action EPA is promulgating an SO₂ emission limitation of 42 ng/J (0.10 lbs/MMBtu) heat input, to be phased in by unit in November 1997, November 1998, and August 1999, with compliance determined on a rolling annual average basis.

Under today's final action, compliance with the annual rolling average will be determined on a daily basis by computing a weighted plant-wide average of the SO₂ emission rate based on the daily SO₂ emission rate and the electric energy generated for the previous 365 boiler operating days

specific factors has informed several aspects of today's action. Thus, for the policy and legal reasons stated, an annual rolling average emission limitation is acceptable for this case. However, it would not be appropriate, for example, for an emission limitation designed to address short-term or acute health effects. Moreover, while this emission limitation is not expected to interfere with attainment of any other requirement of the Act, its adoption does not relieve NGS of any responsibility for meeting any air quality standard, emission standard, or other requirement of the Act.

for each unit. EPA was concerned that the plant-wide average reflect the actual release of emissions at the plant. Therefore, after consultation with representatives of SRP and environmental groups, EPA settled on a methodology that appropriately weights the emissions from each unit before calculation of the plant-wide average. The EPA has used the daily electric energy generated as a weighting factor because that information is readily available for each unit and in this case is proportional to the heat input to the boilers. Specifically, compliance will be determined as follows:

1. For each unit that has accumulated at least 365 boiler operating days since the passage of the starting date applicable to it:

- a. Its previous 365 boiler operating days will be identified.

- b. For each such day:

- i. the SO_2 emission rate will be computed using the data from the required continuous emission monitoring system (CEMS) for the unit and using method 19, Appendix A, 40 CFR 60.

- ii. the electric energy generated, in megawatt-hours, will be recorded from the megawatt-hour meter for the unit.

- iii. the product of the SO_2 emission rate and the electric energy generated will be computed.

c. The products computed in 1.b.iii. above will be added to produce a unit-specific sum for the preceding 365 boiler operating days.

d. The electric energy generated for the preceding 365 boiler operating days will be added to produce a unit-specific sum.

2. The unit-specific sums of the product of the SO_2 emission rate and the electric energy generated computed in 1.c. above will be added to produce an aggregated plant-wide sum.

3. The unit-specific sums of the electric energy generated computed in 1.d. above will be added to produce an aggregated plant-wide sum.

4. The aggregated plant-wide sum of product of the SO_2 emission rate (computed in 2 above) and the electric energy generated (computed in 3 above) will be divided by the aggregated plant-wide sum of the electric energy generated (computed in 4 above) to produce the weighted annual average SO_2 emission rate for comparison with the emission limitation to determine compliance.

For each unit, in determining compliance with the annual average emission limitation during the first year of operation of the control equipment installed to comply with this emission limitation, periods during which one of the following conditions are met will be excluded:

1. Equipment or systems do not meet designer's or manufacturer's performance expectations.

2. Field installation including engineering or construction precludes equipment or systems from performing as designed.

The periods to be excluded will be determined by the Administrator of EPA based on periodic reports of compliance with this emission limitation which must identify the times proposed for exclusion and provide the reasons for the exclusion, including the reasons for the outage of the control system. The report also must describe the actions taken to avoid the outage, to minimize its duration, and to reduce SO₂ emissions at the plant to the extent practicable while the control system was not fully operational.

Whenever the time to be excluded exceeds a cumulative total of 30 days for any control system, the NGS owner or operator must file a report within 15 days addressing the history of and prognosis for the performance of the control equipment.

In addition to the foregoing, the Administrator will exclude from the compliance determination for a unit any periods of emissions from a unit for which the Administrator finds that the control equipment is out of service because of catastrophic failure of any control system which occurred for reasons beyond the control of the NGS owners and operators and could not have been prevented by good engineering practice. The Administrator will not exclude

the period if the equipment failure was a consequence of a lack of appropriate maintenance, or of intentional or negligent conduct or omissions of the NGS owners or operators or the control system design, construction, or operating contractors.

The final regulation requires that all equipment needed to comply with this regulation to be optimally operated consistent with good engineering practice to keep emissions at or below the emission limitation. The regulation also requires that following any control system outages, the system must be returned to full operation as expeditiously as practicable.

The final regulation provides that continuous emission monitors must be installed to determine compliance with the emission limitation. This equipment must meet the specifications listed in Appendix B of 40 CFR Part 60 and the quality assurance procedures found in Appendix F of 40 CFR Part 60. The NGS is required to report emissions and maintain records accordance with the procedures found in 40 CFR 60.7. In addition, EPA is establishing special notification procedures when an outage of a control system occurs. The NGS must notify the Administrator by telephone or by writing within one business day of any outage of the control system needed for compliance with the emission limitation and must submit a follow-up written report within 30 days of the repairs stating how the repairs were

accomplished and justifying the amount of time taken for the repairs.

Although, as noted previously, this regulation does not require the use of any particular control technology to meet the emission limitation, the proven readily available technology that will achieve the required SO₂ reduction will not increase existing particulate matter or nitrogen oxide hourly emission rates from NGS. In addition, NGS is a baseload plant already operated at a high capacity factor and EPA has determined that the installation of control equipment will not cause operations at NGS to increase. Accordingly, EPA has determined that compliance with today's SO₂ emission limitation will not result in an increase in overall emissions of nitrogen oxides or particulate matter. Thus, EPA finds no need to include additional emission limitations for these pollutants at this time in order to prevent increased emissions of those pollutants.

E. Source/Impairment Relationship

As noted in the February 8, 1991 proposal, EPA provided calculations of the relationship between reductions in SO₂ emissions from NGS and the visibility at the GCNP. The calculations were based on the overall findings of the WHITEX report which used several techniques to apportion NGS's contribution to sulfates and the resulting haze. The EPA's calculations used to estimate the distribution of days when the reduction in SO₂ emissions from NGS would result in

perceptible, quite noticeable, and very apparent change in visibility conditions in GCNP were in error because the final contrast assessment did not take into account natural (Rayleigh) atmospheric scattering of light. The seasonal visual range changes in the February 1991 proposal which were based on data collected during the WHITEX study period did not include this error and thus, accurately reflect estimates of the seasonal visual range changes. Those calculations showed that an approximate 14 percent improvement in seasonal average visual range should result from NGS with a 0.10 lbs/MMBtu SO₂ emission limitation.

During the comment period on EPA's February 1991 proposal, SRP submitted the results and analyses of the NGSVS which included estimates of NGS' contribution to seasonal average visibility impairment in GCNP, specifically focused on Hopi Point. The general conclusion of the NGSVS was that a SO₂ emission limitation of 0.10 lbs/MMBtu would result in approximately a 2 percent improvement in the seasonal average visual range.

Another study [cite] submitted during the comment which was based on modelling of NGS' emission over a long time period indicated average wintertime improvements in the range of 4 to 8 percent if NGS emissions are reduced. This study is not based on any specific monitoring period.

The two intensive studies, WHITEX and NGSVS, included detailed aerosol, wind flow, and tracer analyses. They

represent snap shots of NGS's impacts for their respective study periods. Based solely on wind flow analysis during these periods, these studies varied significantly in concluding how often NGS emissions would be transported directly to the Hopi Point, the common GCNP monitoring site for both studies.

A new aerosol monitoring site established after the WHITEX study at Indian Gardens 4000 feet below the rim of the canyon, has provided information since 1988 which indicates that the transport and conversion processes below the rim of the canyon are sometimes decoupled from the processes above the rim and represented by the Hopi Point site used for analyses in WHITEX and NGSVS. Data submitted during the comment period show that visibility below the rim is impaired more often and to a greater degree than is the visibility above the rim at Hopi Point. [cite]

Using the data collected from both studies as well as other monitoring information at GCNP from long-term monitoring, EPA calculated that reducing SO₂ emissions from NGS to 0.10 lbs/MMBtu would improve the winter seasonal average visibility above the rim of the canyon between 6 and 8 percent. Analyses of peak in-canyon sulfate levels during winter inversion episodes have led EPA to conclude that reductions in NGS SO₂ emissions may well contribute to greater than a 6 to 8 percent improvement in the seasonal average visibility below the rim of the canyon. However,

EPA did not quantify the expected visibility improvement below the rim of the canyon due to the limited amount of data and understanding of the air transport mechanisms below the rim of the canyon.

F. Monetary Benefits of Control

[WRITE-UP TO BE UPDATED WHEN L. DECK RETURNS FROM VACATION]

G. Schedule of Compliance

Compliance with the emission limitation will be phased-in by unit on the following schedule:

- One unit by November 19, 1997
- Two units by November 19, 1998
- All units by August 19, 1999.

The phasing in of the emission limitation will allow NGS to initiate operation of the control systems one at a time.

To ensure that NGS complies with the emission limitation by the dates specified, EPA has established a schedule of compliance containing interim deadlines as follow:

Date of binding contract for Architectural/ Engineering firm to design and procure the control system needed for compliance.	6/92
Start of on-site construction of the control system for the first unit.	1/95
Initiation of start-up testing first unit	5/97
second unit	5/98

third unit

2/99

The Administrator may extend the interim deadlines if NGS can demonstrate that compliance with the final deadlines for compliance, stated above, will not be affected.

H. Maintenance Schedule

The final regulation provides that by March 16, 1993 the NGS owner or operator will prepare a long-term maintenance plan for NGS that maximizes winter down-time while accommodating the maintenance requirements for the other generating facilities on the NGS grid. The plan will cover the period from March 16 to March 15 of the next year and must provide at least a full six unit-weeks of maintenance for NGS in the November 1 to March 15 period, except as provided below, to further reduce SO₂ emissions during the winter. The plan will be developed consistent with the criteria established by the Western States Coordinating Council of the North American Electric Reliability Council to ensure adequate reserve margin. The full six unit-weeks of winter maintenance need not occur if any of the following circumstances arise:

1. There is no need for six unit-weeks of scheduled periodic maintenance in the March 16 - March 15 year covered by the plan.
2. The reserve margin on any electrical system served by NGS would fall to an inadequate level, as defined by the criteria referenced above. In such case, the scheduled

maintenance may be moved out of the November 1 to March 15 period.

3. The cost of compliance with this provision would be excessive. Costs of compliance would be considered excessive when the economic savings to the owners of moving NGS' maintenance out of the November 1 to March 15 period exceeds \$50,000 per unit-day of maintenance moved.

4. A major forced outage at a unit occurs outside the winter months, and necessary periodic maintenance occurs during the period of forced outage.

The NGS owner or operator must demonstrate to the satisfaction of the Administrator that one or more of the events listed above render unnecessary or unreasonable a full six-unit weeks of scheduled maintenance during the specified winter period. Where six unit-weeks of scheduled maintenance is unnecessary or unreasonable, the NGS owner or operator must nevertheless make best efforts to conduct as much scheduled maintenance as practicable during the winter period.

When maintenance is being conducted on a unit, the unit will not be in operation and therefore not emitting SO₂. Thus, the shifting of NGS maintenance to the wintertime period will further reduce NGS SO₂ emissions during the period when NGS is suspected to have its greatest impact on the GCNP. Further, because the scheduled winter maintenance requirement will be implemented in the winter of 1993-1994

it will have the effect of making a degree of reasonable progress toward the national visibility goal before final compliance with the emission limitation is required. Because NGS must, for normal operation, conduct this maintenance, rescheduling it in the wintertime period should have little economic impact on NGS.

I. Air Quality Review

The installation and operation of a wet FGD unit will lower the exhaust gas temperature from the stacks and could reduce the plume rise above the NGS stacks. The EPA and the Arizona Department of Environmental Quality reviewed the need to reheat the exhaust gases to ensure appropriate plume rise with the lower gas exit temperatures associated with meeting a 0.10 lbs/MMBtu emission limitation using wet FGD and found that reheating of the exhaust gas will not be necessary to prevent a violation of any national ambient air quality standard. If the exhaust gas is not reheated the control cost will be reduced significantly.

RESPONSE TO COMMENTS

[Because the public comment period on this action has not closed the response to comments section is very preliminary and may be substantially revised. Further, EPA's final rule may be revised in light of any public comments received before the close of the comment period.]

The September 5, 1989, February 8, 1991, and August 13, 1991 notices requested comment on a variety of issues

relating to attribution of impairment, cost of controls, and the benefit expected from the controls. In addition, EPA held a public hearing on March 18 and 19, 1991 during which EPA received comments on its February 1991 proposal.

Under section 307(d) of the Act, today's action must be accompanied by a response to each of the significant comments, criticisms, and new data submitted in written or oral presentations during the comment period. EPA has carried out this duty. Moreover, modifications to the proposed rule have been made in response to public comments. EPA's final control strategy for NGS largely embodies public comments received from representatives of GCT, EDF and SRP which, in turn, were subject to public comment.¹⁸ See, e.g., 56 FR 38399 (August 13, 1991).

During the public comment period EPA received over 400 comments, including the public hearing transcript. A summary of the significant comments, criticisms, and new data submitted in written or verbal presentations during the public comment period, and EPA's responses are provided below. Documents containing a more thorough listing of the

¹⁸ The agreement among the NGS owners, GCT and EDF to support the rulemaking alternative that, in material part, is adopted today has the effect of mooted earlier comments by these parties that disagreed in various respects with EPA's February 1991 proposed rule and the studies underlying it. Accordingly, at this juncture EPA has no obligation to respond to previous comments from these parties that are inconsistent with their subsequent MOU and associated regulatory recommendations to EPA, which embody the parties' current position on this rulemaking.

comments, along with EPA's responses, have been placed in Docket A-89-02A.^{19, 20}

A. Seasonal Controls

In the February 1991 proposal EPA requested comment on whether it should and could allow the use of seasonal controls in establishing emission limitations representing BART. The EPA noted that seasonal controls would have to be both technically and legally justified before it could allow their use.

During the comment period the GCT and its consultants presented analyses demonstrating that NGS's emissions have the potential for significantly impacting the visibility year round at the Grand Canyon as well as other Class I areas in the region. While the analyses were based on limited modeling, they did demonstrate that the plume from NGS could impact surrounding class I areas between 60 and 80 percent of the time year round. Since seasonal control are not technically justified in this case, it is not necessary to address the legal questions about use of seasonal controls in this rulemaking.

B. BART Guidelines

In the February 1991 proposal (56 FR 5178 col. 1) EPA requested comments on two potential revisions to the BART

¹⁹JCM Environmental.

²⁰ See "Response to Public Comments, Proposed Revisions to Arizona Visibility FIP," U.S. EPA, September 1991.

Guidelines. First, EPA requested comment on the continued use of the New Source Performance Standards as a base for the BART analysis. Second, EPA requested comment on whether it should include the consideration of the value of marketable allowances when estimating the cost of control systems. In making its final determination on today's action neither of these issue were significant issues. Therefore, EPA is not making a final decision on them at this time.

EDF v. Reilly

Today's action regarding NGS completes EPA's obligations under the settlement agreement in EDF v. Reilly, No. C82-6850 (N.D. Cal.), and under the first round of SIP/FIP planning called for in the visibility regulations.

NONPRECEDENTIAL EFFECT OF THIS ACTION

Today's promulgation is limited to the rulemaking requiring an SO₂ emission limitation for NGS in order to remedy visibility impairment in the GCNP. As such, it has no direct precedential effect on any other rulemaking action EPA might undertake in the future regarding other existing sources or class I areas. This is so because the outcome of this rulemaking has been highly dependent upon facts and circumstances that are unique to this proceeding and thus may not be decisive for other cases. For example, the tracer studies and other analyses contained in the WHITEX

and NGSVS reports that are keyed to NGS are not necessarily determinative in any other rulemaking addressing other potential sources of visibility impairment. Should EPA or State agencies conduct visibility rulemakings regarding other class I areas and other existing sources of pollution in the future, they will need to rely on studies and analyses tailored specifically to the circumstances of those other areas and sources in order to make reasoned regulatory decisions. They will not be able to rely solely on WHITEX or NGSVS findings that specifically address the GCNP and NGS to determine the existence of impairment that is reasonably attributable to any such other source. Likewise, the final emission limit being promulgating today will not have direct precedential effect elsewhere. The statutory requirement that EPA weigh various factors before reaching a decision is by nature a case-specific process.

Classification

Executive Order No. 12291 requires each Federal agency to determine if a regulation is a "major" rule as defined by the order and "to the extent permitted by law," to prepare and consider an RIA in connection with every major rule. Major rules are defined as those likely to result in:

- 1) an annual cost to the economy of \$100 million or more; or
- 2) a major increase in costs or prices for consumers or individual industries; or

3) significant adverse effects on competition, employment, investment, productivity, innovation, or international trade.

The EPA judged the February 1991 proposed regulation for NGS to be a major rule based on projected annualized costs potentially in excess of \$100 million. The EPA then prepared a preliminary RIA that included estimates of costs, benefits, and net benefits for three control options. The preliminary analysis, titled "Regulatory Impact Analysis of a Revision of the Federal Implementation Plan for the State of Arizona to Include SO₂ Controls for the Navajo Generating Station," and an addendum, titled "Addendum to the Regulatory Impact Analysis of a Revision of the Federal Implementation Plan for the State of Arizona to Include SO₂ Controls for the Navajo Generating Station" are available in Docket A-89-02A.

In a second addendum addressing today's action, EPA used the cost analysis provided by SRP to estimate in 1992 dollars the capital cost and total levelized annual cost of meeting a 0.10 lbs/MMBtu emission limitation with compliance determined on a rolling annual average basis which is phased in by unit in 1997, 1998, and 1999. As stated earlier, the capital cost would be \$430 million and the total levelized annual cost would be \$89.6 million. Since the total levelized annual cost figures are near (and less than) those

presented in support of the February 1991 proposal, EPA did not recalculate the economic impacts.

With implementation of this regulation, the cost of power generation at NGS will increase. The projected cost increase is estimated to raise the average cost of power generation by less than 5 percent for utilities using NGS power. The cost impacts could be lower if the acid deposition allowances are sold. In particular, the cost increase would be partially offset by revenue earned through the sale of SO₂ marketable allowances.

The RIA and addendums were submitted to the Office of Management and Budget (OMB) for review under Executive Order 12291. Written comments from OMB and written EPA response to these comments are available for public inspection at the docket office cited above.

Paperwork Reduction Act

This rule will impose a modest reporting burden on the owners of the NGS to enable EPA to ensure compliance with the emission limits. Because the reporting burden affects only a single source, it is not subject to OMB review under the Paperwork Reduction Act.

Section 317(c) Economic Impact Assessment

The economic impact assessment required by section 317(c) of the Act is incorporated in the RIA.

Regulatory Flexibility Act

Under the Regulatory Flexibility Act (RFA), an agency proposing or promulgating a rule must determine if the rule will have a significant impact on a substantial number of small entities. If a significant impact on a substantial number of small entities is anticipated, an RFA must be prepared. None of the owners of the NGS are classified as small according to guidelines developed by the Small Business Administration.

For most of the utilities using NGS power, the impact on utility rates will be substantially less than 5 percent which applies to the most affected utility (Nevada Power Company).

Accordingly, I hereby certify that the proposed regulation will not have a significant impact on a substantial number of small entities. Therefore, this proposed regulation does not require an RFA.

List of Subjects in 40 CFR Part 52

Air pollution control, Nitrogen dioxide, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides.

Date

Administrator

1. The authority for Part 52 continues to read as follows: Authority: 42 U.S.C. 7401-7642.

2. Section 52.145 is amended by adding paragraph (d) to read as follows:

Section 52.145 Visibility Protection

* * * * *

"(d) This paragraph is applicable to the fossil fuel-fired, steam-generating equipment designated as Units 1, 2, and 3 at the Navajo Generating Station in the Northern Arizona Intrastate Air Quality Control Region (§81.270 of this chapter).

(1) Definitions

"Affected Unit(s)" means the boiler unit(s) at the Navajo Generating Station subject to the emission limitation in paragraph 2 below and that has accumulated at least 365 boiler operating days since the passage of the date defined in paragraph (6) below applicable to it.

"Administrator" means the Administrator of EPA or his/her designee.

"Boiler Operating Day" for each of the boiler units at the Navajo Generating Station is as defined in 40 CFR section 60.41a.

"Owner or Operator" means the owner or operator of the Navajo Generating Station to which this paragraph is applicable.

"Unit-Week of Maintenance" means a period of 7 days during which a fossil fuel-fired steam generating unit is under repair and no coal is combusted in the unit.

(2) Emission Limitation. No owner or operator shall discharge or cause the discharge of sulfur oxides into the atmosphere in excess of 42 ng/J [0.10 pounds per million British thermal units (lbs/MMBtu)] heat input.

(3) Compliance Determination. Until at least one unit qualifies as an affected unit no compliance determination is appropriate. As each unit qualifies for treatment as an affected unit it shall be included in the compliance determination. Compliance with this emission limit shall be determined daily on a plant-wide rolling annual basis as follows:

(i) For each affected unit as defined in subparagraph 1 above:

(a) Identify the previous 365 boiler operating days.

(b) For each such day:

(i) compute the SO₂ emission rate using the data from the continuous emission monitoring system, required subparagraph 4 below, for the unit and by using method 19, Appendix A, 40 CFR 60.

(ii) record the electric energy generated (in megawatt-hour) as measured by the megawatt-hour meter for the unit.

$$\sum_{u=1}^3 [\sum_{d=1}^{365} (S \times E)_{(d)}]_{(u)}$$

$$WAE = \frac{\sum_{u=1}^3 (\sum_{d=1}^{365} E_{(d)})}{\sum_{u=1}^3 (\sum_{d=1}^{365} E_{(d)})}$$

$$\sum_{u=1}^3 (\sum_{d=1}^{365} E_{(d)})$$

WAE = Weighted plant-wide annual average SO₂ emission rate

u = Affected units as defined in subparagraph 1 above

d = Previous boiler operating days as identified by subparagraph 3(i)(a) above

S = Daily SO₂ emission rate as computed in subparagraph 3(i)(b)(i) above

E = Daily electric energy generated as recorded in subparagraph 3(i)(b)(ii) above

The weighted plant-wide annual average SO₂ emission rate shall be used to determine compliance with the emission limitation in subparagraph 2 above. Except as provided in subparagraphs 9 and 10 below, all of the preceding 365 boiler operating days will be used for compliance determinations.

(4) Continuous Emission Monitoring. The owner or operator shall install, maintain, and operate continuous emission monitoring systems to determine compliance with the emission limitations in paragraph (2) and as calculated in paragraph (3) above. This equipment shall meet the

specifications listed in Appendix B of 40 CFR Part 60. The owner or operator shall comply with the quality assurance procedures for continuous emission monitoring systems found in Appendix F of 40 CFR Part 60.

(5) Reporting Requirements. The owner or operator:

(i) shall notify the Administrator of the SO₂, oxygen and carbon dioxide emissions according to the procedures found in 40 CFR §60.7.

(ii) shall notify the Administrator of the daily electric energy generated in megawatt-hours.

(iii) shall maintain records according to the procedures in 40 CFR §60.7.

(iv) shall notify the Administrator by telephone or in writing within one business day of any outage of the control system needed for compliance with the emission limitation in paragraph 2 above and shall submit a follow-up written report within 30 days of the repairs stating how the repairs were accomplished and justifying the amount of time taken for the repairs.

(6) Compliance Dates. The requirements of this paragraph shall be applicable to one unit at the Navajo Generating Station beginning November 19, 1997, to two units beginning November 19, 1998, and to all units beginning on August 19, 1999.

(7) Schedule of Compliance. The owner or operator shall take the following actions by the dates specified:

(i) By June 1, 1992, award binding contracts to an architectural and engineering firm to design and procure the control system needed for compliance with the emission limitation in paragraph 2 above.

(ii) By January 1, 1995, initiate on-site construction or installation of control system for the first unit.

(iii) By May 1, 1997 initiate start-up testing of the control system for the first unit.

(iv) By May 1, 1998 initiate start-up testing of the control system for the second unit.

(v) By February 1, 1999 initiate start-up testing of the control system for the third unit.

The interim deadlines will be extended if the owners or operators can demonstrate to the Administrator that compliance with the deadlines in subparagraph 6 above will not be affected.

(8) Reporting on Compliance Schedule. Within 30 days after the specified date for each deadline in the schedule of compliance (subparagraph 7 above), the owner or operator shall in writing notify the Administrator whether the deadline was met. If it was not met the notice shall include an explanation why it was not met and the steps which shall be taken to ensure future deadlines will be met.

(9) Exclusion for Equipment Failure during Initial Operation. For each unit, in determining compliance for the first year that such unit is required to meet the emission

limitation in subparagraph 2 above, periods during which one of the following conditions are met shall be excluded:

(i) Equipment or systems do not meet designer's or manufacturer's performance expectations.

(ii) Field installation including engineering or construction precludes equipment or systems from performing as designed.

The periods to be excluded shall be determined by the Administrator based on the periodic reports of compliance with this emission limitation which shall identify the times proposed for exclusion and provide the reasons for the exclusion, including the reasons for the control system outage. The report also shall describe the actions taken to avoid the outage, to minimize its duration, and to reduce SO₂ emissions at the plant to the extent practicable while the control system was not fully operational. Whenever the time to be excluded exceeds a cumulative total of 30 days for any control system, the owner or operators shall submit a report within 15 days addressing the history of and prognosis for the performance of the control system.

(10) Exclusion for Catastrophic Failure. In addition to the exclusion of periods allowed in subparagraph 9 above, any periods for which the Administrator finds that the control equipment or system is out of service because of catastrophic failure of the control system which occurred for reasons beyond the control of the owner or operators and

could not have been prevented by good engineering practices will be excluded from the compliance determination. Catastrophic failures cannot be the consequence of lack of appropriate maintenance or of intentional or negligent conduct or omissions of the owner or operators or the control system design, construction, or operating contractors.

(11) Equipment Operation. The owner or operator shall optimally operate all equipment or systems needed to comply with the requirements of this paragraph consistent with good engineering practices to keep emissions at or below the emission limitation in subparagraph 2 above; and following outages of any control equipment or systems the control equipment or system will be returned to full operation as expeditiously as practicable.

(12) Maintenance Scheduling. On March 16 each year starting in 1993, the owner or operator shall prepare and submit to the Administrator a long-term maintenance plan for the Navajo Generating Station, which accommodates the maintenance requirements for the other generating facilities on the Navajo Generating Station grid, covering the period from March 16 to March 15 of the next year and showing at least 6 unit-weeks of maintenance for the Navajo Generating Station during the November 1 to March 15 period, except as provided in subparagraph 13 below. This plan shall be developed consistent with the criteria established by the

Western States Coordinating Council of the North American Electric Reliability Council to ensure an adequate reserve margin of electric generating capacity.

(13) Exceptions for Maintenance Scheduling. The owner or operator shall conduct a full 6 unit-weeks of maintenance in accordance with the plan required in subparagraph 12 above unless the owner or operator can demonstrate to the satisfaction of the Administrator that a full 6 unit-weeks of maintenance during the November 1 to March 15 period should not be required because of the following:

(i) There is no need for 6 unit-weeks of scheduled periodic maintenance in the year covered by the plan;

(ii) The reserve margin on any electrical system served by the Navajo Generating Station would fall to an inadequate level, as defined by the criteria referred to in subparagraph 12 above;

(iii) The cost of compliance with this requirement would be excessive. The cost of compliance would be excessive when the economic savings to the owner or operator of moving maintenance out of the November 1 to March 15 period exceeds \$50,000 per unit-day of maintenance moved; or

(vi) A major forced outage at a unit occurs outside of the November 1 to March 15 period, and necessary periodic maintenance occurs during the period of forced outage.

If the Administrator determines that a full 6 unit-weeks of maintenance during the November 1 to March 15

period should not be required, the owner or operator shall nevertheless conduct that amount of scheduled maintenance that is not precluded by the Administrator. Generally, the owner or operator shall make best efforts to conduct as much scheduled maintenance as practicable during the November 1 to March 15 period.

average visibility above the rim of the canyon ^{of approximately} ~~between 6 and~~ 8 percent. Analyses of peak in-canyon sulfate levels during winter inversion episodes have led EPA to conclude that reductions in NGS SO₂ emissions may well contribute to greater than a 6 to 8 percent improvement in the seasonal average visibility below the rim of the canyon. However, EPA did not quantify the expected visibility improvement below the rim of the canyon due to the limited amount of data and understanding of the air transport mechanisms below the rim of the canyon.

F. Monetary Benefits of Control

As noted in the February 1991 proposal, EPA is not required to estimate the monetary benefits associated with improving visibility in the Grand Canyon. However, as a check of the reasonableness of its approach, EPA evaluated and considered the benefit analysis developed as a part of the RIA. Due to the uncertainty inherent in estimating monetary benefits of goods not sold in conventional markets, a range of benefit estimates were presented.

As noted above, EPA estimated that reducing SO₂ emissions from NGS to 0.10 lbs/MMBtu would improve the seasonal average visibility above the rim of the Canyon between 6 and 8 percent. Using the same approach to estimating monetary benefits as was used in the February 1991 proposal, EPA estimates the average United States household in the year 2000 would be willing to pay on the

order of \$0.75 to \$1.75 per year.²⁶ Therefore, national total benefit estimates in the year 2000 range from \$90 million to \$200 million. Benefits are expected to increase over time due to increasing population and income. For instance, in 2005 national total benefit estimates range from \$125 million to \$235 million.

The actual monetary benefits of reducing SO₂ emissions from NGS may well be greater than the above ranges. If improvements in in-canyon sulfate levels during winter inversion episodes contribute to greater than a 6 to 8 percent improvement in the seasonal average visibility below the rim of the canyon, monetary benefits would increase as well. In addition, the monetary benefit estimates omit the value of visibility improvements at the Grand Canyon in the non-winter months, or of any visibility improvements at other nearby Class I areas.

G. Schedule of Compliance

As noted above, compliance with the emission limitation will be phased-in by unit on the following schedule:

- One unit by November 19, 1997
- Two units by November 19, 1998
- All units by August 19, 1999.

The phasing in of the emission limitation will allow NGS to initiate operation of the control systems one at a time.

²⁶The estimated benefits were updated to 1992 dollars to be consistent with the estimated cost figures.

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01. Memo	From Gregory B. Foote to William G. Rosenberg RE: Legal Rationale for Rulemaking Alternative in Grand Canyon Visibility Proceeding (4 pp.)	08/02/91	P-5	

Collection:

Record Group: Bush Presidential Records
Office: Counsel to the President, Office of
Series: Holmstead, Jeffrey
Subseries: Miscellaneous Subject Files
WHORM Cat.:
File Location: Environmental Protection Agency/Clean Air Act/Grand Canyon Visibility [4]

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Date Closed: 8/12/2002	OA/ID Number: 45145-005
FOIA/SYS Case #: 2001-1865-F	
Re-review Case #:	
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MR Case #:	Appeal Case #:
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P-1 National Security Classified Information [(a)(1) of the PRA]
 P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
 P-3 Release would violate a Federal statute [(a)(3) of the PRA]
 P-4 Release would disclose trade secrets or confidential commercial or
 financial information [(a)(4) of the PRA]
 P-5 Release would disclose confidential advice between the President
 and his advisors, or between such advisors [(a)(5) of the PRA]
 P-6 Release would constitute a clearly unwarranted invasion of
 personal privacy [(a)(6) of the PRA]

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 (b)(2) Release would disclose internal personnel rules and practices of an
 agency [(b)(2) of the FOIA]
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 (b)(4) Release would disclose trade secrets or confidential or financial
 information [(b)(4) of the FOIA]
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 2 1991

MEMORANDUM

OFFICE OF
GENERAL COUNSEL

SUBJECT: Legal Rationale for Rulemaking Alternative
in Grand Canyon Visibility Proceeding

FROM: Gregory B. Foote *Gregory B. Foote*
Assistant General Counsel

TO: William G. Rosenberg
Assistant Administrator
for Air and Radiation

INTRODUCTION

You have requested my opinion regarding a possible legal rationale in support of a rulemaking alternative for the February 1991 proposal to establish, under section 169A of the Clean Air Act, sulfur dioxide emission limitations at the Navajo Generating Station (NGS) in order to remedy visibility impairment at Grand Canyon National Park. In particular, you have asked that I review a joint letter dated July 30, 1991 from Patrick M. Raher, representing the Grand Canyon Trust and the Environmental Defense Fund (GCT/EDF), and Henry V. Nickel, representing the Salt River Project (SRP). The Raher/Nickel letter recommends that, in the event EPA adopts a final rule for NGS requiring a 0.10 lbs./mmBtu emission limitation on a rolling annual average, phased in by unit in 1997, 1998, and 1999, EPA should also adopt the legal rationale described in the July 30 letter in support of such a final rule.

At the outset, I note that General Counsel Don Elliott recently responded to Messrs. Raher and Nickel by letter dated August 2, 1991 (copy attached). Don Elliott's letter reminded those parties that EPA must at all times retain full discretion in deciding on both the substantive content of and legal rationale for its final rulemaking actions. Thus, although the General Counsel assured Raher and Nickel that EPA would carefully consider their views, he made it clear that EPA could give no assurance that those views would be adopted. The General Counsel's letter did not address the merits of the Raher/Nickel letter, a subject that I will address below.

BRIEF ANSWER

In brief, the Rahe/Nickel letter would focus on the "reasonable progress" requirement in section 169A(B)(2) as the basis for EPA's final action on the NGS rulemaking. That general approach is basically sound and could, in my opinion, provide the core of a defensible rationale in support of the prospective final rule in question. My views on this rulemaking alternative are set forth in greater detail below. Please note that I have not yet discussed those views in detail with the General Counsel. Once he has reviewed them, however, this memorandum could form part of the basis for a supplemental notice advising the public that EPA is considering the specific regulatory option in question, and soliciting comment on that option.

DISCUSSION

Section 169A(b)(2) of the Clean Air Act requires that visibility implementation plans contain such emission limits, schedules of compliance and other measures as may be necessary to make reasonable progress toward the national visibility goal. These plan provisions include, as appropriate, BART (section 169A(b)(2)(A)), and a long-term strategy (section 169A(b)(2)(B)). Thus, "reasonable progress" is the overarching requirement that implementation plan revisions under section 169A(b)(2) must address, while subparagraphs (A) and (B) are more specific expressions of rulemaking authority that are incorporated into the parent subsection (b)(2). In crafting the visibility reasonable progress requirements, Congress did not explicitly address, and apparently did not even consider, whether there could be greater visibility improvement at a lower cost in furtherance of the national goal through an implementation plan provision that relied more generally on subsection (b)(2), rather than on the specific provisions of subparagraph (A) and/or subparagraph (B). Where Congress has not directly spoken to the precise question at issue, EPA may make a reasonable construction of the statute that is appropriate in the context of the particular program at issue. Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc., 467 U.S. 837, 842-45 (1984).

In the notice of proposed rulemaking published in the Federal Register on February 8, 1991 (56 Fed. Reg. 5173), EPA proposed a 0.30 lbs/MMBtu emission limitation for NGS, to be determined on a 30-day rolling average and to be phased in by unit in 1995, 1997 and 1999. EPA explicitly requested comment on other control options permitted under the Act including, inter alia, the following rule elements and specific regulatory alternatives:

(1) emission limitations, including a limitation of 0.10; (2) averaging times, including an annual averaging period; and (3) implementation schedules, including a schedule that extended to 2000. EPA also solicited comment generally on regulatory issues raised by interested parties. In my opinion, the specific rulemaking alternative now under consideration is within the scope of the February 1991 proposal. However, in order to insure full public consideration of this alternative, I strongly recommend that EPA issue a supplemental notice providing a further opportunity for public comment.

As you know, the staff of the Office of Air and Radiation has considered the rulemaking alternative consisting of a 0.10 lbs/MMBtu emission limitation, to be determined on a rolling annual average and phased in by unit in 1997, 1998 and 1999, and has reviewed supporting technical and cost information. I understand that the staff has concluded that greater visibility improvement at less cost can be achieved by this alternative, as compared to the rule proposed in the February 1991 notice, which applied the BART Guidelines focusing on NSPS levels of control to the facts of this case. I understand that the staff also referred to the BART guidelines to provide the methodology employed in developing the level of sulfur dioxide reductions in the alternative presently under consideration. See sections 169A(g)(1) and (2).

Based on the staff conclusions regarding the factual circumstances of this case, EPA could reasonably find that the present alternative, with its higher expected visibility improvement and lower expected costs (in comparison to the February 1991 proposed rule), best fulfills the overarching statutory requirement in section 169A(b)(2) (which incorporates the more specific provisions of subparagraphs (A) and (B)) that implementation plan revisions adopted under section 169A make "reasonable progress" toward the national visibility goal.

CONCLUSION

In sum, subject to any significant points that may be raised in the reopened comment period, I believe that under the specific circumstances of this case EPA could rely on the provisions of section 169A(b)(2) as the source of delegated rulemaking authority for the present alternative. The Agency has weighed the relevant factors and could appropriately conclude that this alternative reasonably interprets and harmonizes the statutory provisions in a way that best furthers the overarching legislative purpose to achieve reasonable progress toward the national visibility goal. See, e.g., Public Citizen v. Department of Justice, 109 S.Ct. 2558, 2566 (1989); Church of the Holy Trinity v. United States, 143 U.S. 457, 459, (1898); see also Citizens to Save Spencer County v. EPA, 600 F.2d 844 (D.C. Cir. 1979).

Finally, I note that by promulgating a 0.10 lbs/MMBtu emission limitation which requires installation of state-of-the-art SOx scrubber technology, the staff expects that no other federal implementation plan revisions requiring SOx control should be necessary at NGS under section 169A. I express no view on this essentially technical and policy matter.

Attachment

TCK
Copy

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[AD-FRL-]

APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS:
REVISION OF THE VISIBILITY FIP FOR ARIZONA

AGENCY: U.S. Environmental Protection Agency (EPA).

ACTION: Supplemental notice requesting comment.

SUMMARY: On February 8, 1991, EPA proposed to require the Navajo Generating Station (NGS) in Page, Arizona, to meet new emission limitations to address visibility impairment in the Grand Canyon National Park (GCNP) (55 FR 5173). Over 380 comments were received during the initial comment period. Since the close of the comment period, many meetings have taken place among representatives of Salt River Project (SRP) acting on behalf of the NGS owners, and representatives of the Grand Canyon Trust (GCT) and the Environmental Defense Fund (EDF) acting on behalf of their organizations. Representatives of the State of Arizona and EPA also have participated in most of the meetings. Very recently, representatives of the NGS owners and the environmental groups have agreed on a sulfur dioxide (SO₂) control strategy for NGS and have recommended that it be adopted by EPA. That strategy includes a 0.10 pounds per million British thermal units SO₂ emission limitation for the NGS (approximate to a 90 percent control level) based on

a rolling annual average and phased in by unit in 1997, 1998, and 1999. In addition, NGS would shift its maintenance schedule such that six unit-weeks of planned maintenance would occur between November 1 and March 15 each year. They have entered into a memorandum of understanding (MOU) memorializing their agreement which they have submitted (together with associated documents) to EPA and which is printed in the appendix to this notice. In today's notice, EPA is announcing that it has reopened the public comment period on this rulemaking to solicit comments on this new information.

DATES: Comments must be received by no later than September 9, 1991. The EPA is providing a 30-day public comment period, extending 30 days from the date of signature on this notice. In order to facilitate public participation, EPA is providing actual notice of this action to persons commenting on the February 8, 1991 proposal, where addresses are available.

ADDRESSES:

Comments

Send comments to EPA's Central Docket Section, Office of the General Counsel, ATTN: A-89-02A, Room 1500, 401 M Street, Washington, D.C. 20460.

Docket

Pursuant to section 307(d)(1)(B) of the Clean Air Act (Act), 42 U.S.C. 7507(d)(1)(B), this rulemaking is subject to the procedural requirements of section 307(d).

Therefore, EPA established Docket A-89-02A for this rulemaking. Further, materials related to the development of this notice, including summaries of the meetings EPA has participated in with the outside parties and information exchanged, have been placed in this docket. All dockets are available for public inspection and copying between 8:30 a.m. to 12:00 noon and 1:30 p.m. to 3:30 p.m., Monday through Friday, at EPA's Central Docket Section, Office of the General Counsel, Room 1500, 401 M Street, S.W., Washington, D.C. A reasonable fee may be charged for copies.

FOR FURTHER INFORMATION CONTACT: Mr. David H. Stonefield, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards (MD-15), Research Triangle Park, North Carolina 27711, (919) 541-5350 or FTS 629-5350.

SUPPLEMENTARY INFORMATION:Background

Section 169A of the Act, 42 U.S.C. § 7491, sets as a national goal "the prevention of any future, and the remedying of any existing, impairment of visibility" in certain national parks and wildernesses, including the GCNP. On December 2, 1980, EPA promulgated regulations (45 FR

80084, codified at 40 CFR 51.300 et seq.) to implement section 169A. The regulations required 36 affected States to revise their State implementation plans (SIP's) to implement the various elements of the visibility protection program. Among these provisions is the requirement that each affected State include in its SIP such emission limitations, schedules of compliance, and other measures as may be necessary, to make reasonable progress toward the national visibility goal [see 40 CFR 51.302(c), section 169A(b)(2)]. Measures for achieving reasonable progress include best available retrofit technology (BART) and a long-term strategy [see 40 CFR 51.302(c)(1) and (2), section 169A(b)(2)(A) and (B)]. Where a State fails to submit the SIP revisions necessary to meet its obligations under the visibility protection program, EPA may act in place of the State pursuant to a Federal implementation plan (FIP) under section 110(c) of the Act, 42 U.S.C. § 7410(c).

The State of Arizona was among several States which failed to adopt and submit the SIP's required by those regulations. The EDF and other environmental groups filed a citizen's suit alleging that EPA had failed to perform a nondiscretionary duty under section 110(c) of the Act to promulgate visibility FIP's for the States that had failed to submit SIP's to EPA as called for by the 1980 visibility regulations [EDF v. Reilly, No. C826850 RPA (N.C. Cal.)]. The EPA and the plaintiffs negotiated a court-approved (and

subsequently revised) settlement agreement and EPA initiated a program to promulgate FIP's for the States failing to submit the required visibility SIP's. As part of that program, on September 5, 1989, EPA published a notice (54 FR 36948) announcing a preliminary decision to attribute a significant portion of wintertime visibility impairment of the GCNP to emissions from the NGS. Then, on February 8, 1991, EPA proposed to revise the visibility FIP for Arizona to include an emission limit for NGS to address the visibility impairment observed in the GCNP (55 FR 5173). The EPA requested comment on several control options including but not limited to the following rule elements and specific regulatory alternatives: (1) emission limitations, including limitations ranging between 0.50 and 0.10 lbs/MMBtu; (2) averaging times, including a 3-hour, 30-day, and annual periods; and (3) implementation schedules, including one providing for plantwide compliance by the year 2000. Based on the information available to it at the time, EPA proposed to adopt an emission limitation of 0.30 lbs/MMBtu with compliance determined on a 30-day rolling average basis. The EPA proposed that the limits would be phased in by unit in 1995, 1997, and 1999.

In addition to soliciting written comments during the comment period, EPA also held a public hearing on March 18 and 19, 1991, in Phoenix, Arizona. A copy of the transcript of the hearing is in Docket A-89-02A.

A more extensive discussion of the background for this rulemaking was provided in EPA's February 8, 1991 notice of proposed rulemaking. Generally, readers should refer to that notice since only an abbreviated background has been reiterated here.

New Information After the Close of the Comment Period

After the comment period closed on April 19, 1991, at the recommendation of EPA, representatives of SRP, GCT, and EDF have had many meetings discussing alternative approaches to EPA's February 8 proposal. Very recently, the outside parties have agreed to recommend that EPA adopt an alternative which calls for promulgation of a 0.10 lb/MMBtu SO₂ emission limitation for the NGS (approximate to a 90 percent control level) based on a rolling annual average and phased in by unit in 1997, 1998, and 1999. In addition, under the agreement, NGS would shift its maintenance schedule such that a full six unit-weeks of planned maintenance would occur between November 1 and March 15 each year. Under specific conditions, less than a full six unit-weeks of maintenance between November 1 and March 15 may be allowed.

Representatives of EPA participated in many of the meetings with the parties, assisted in drafting documents to support a potential agreement between the parties, and provided technical assistance. Representatives of the State of Arizona also attended several of the meetings and

provided some technical support. New technical materials and cost information, including adjustment of the potential control costs to 1992 dollars, were exchanged between the parties and EPA. Summaries of the meetings and significant conversations in which EPA was involved and copies of the new material and information which were submitted to or developed by EPA have been included in Docket A-89-02A.

The outside parties memorialized their agreement in a MOU which they have submitted to EPA along with recommended regulatory requirements for a final rulemaking action. The SRP has estimated the total levelized annual cost (in 1992 dollars) for this alternative as \$89.6 million and for the alternative EPA proposed in February 1991 as \$106 million. The EPA notes that the alternative incorporated in the MOU would provide more visibility protection for the GCNP at a lower cost for NGS and its customers than the February 8, 1991 proposal. Thus, EPA is giving serious consideration to the control option recommended by the outside parties.

The text of the MOU and its attachments are reprinted as Appendix A to this notice. The first attachment to the MOU sets forth the regulatory requirements to address visibility impairment that the parties to the MOU have recommended that EPA adopt as a final rule.

Legal Rationale

On July 30, 1991, attorneys for the parties wrote to EPA to provide a legal rationale that they believed would justify EPA's adoption of the control alternative eventually recommended by the parties. A letter from Patrick M. Rahe, Hogan and Hartson for Grand Canyon Trust and Environmental Defense Fund, and Henry Nickel, Hunton and Williams for Salt River Project, dated July 30, 1991 is an attachment to the MOU and is set forth in Appendix A to this notice. Briefly, it asserts that the regulatory alternative that SRP, EDF, and GCT have recommended to EPA meets the requirement in section 169A(b)(2) of the Act that implementation plan revisions addressing visibility impairment achieve "reasonable progress" toward the national visibility goal. The EPA's Office of General Counsel reviewed the Rahe/Nickel letter and concurred in a memorandum stating that, subject to any significant points that may be raised in the reopened comment period, the "reasonable progress" argument would provide the core of a defensible rationale in support of the rulemaking alternative in question under the specific circumstances of this case. A memorandum entitled "Legal Rationale for Rulemaking Alternative in Grand Canyon Visibility Proceeding," from Gregory B. Foote, Assistant General Counsel to William G. Rosenberg, Assistant Administrator, dated August 2, 1991, is reprinted as Appendix B to this notice.

EPA Discretion

Throughout the meetings with the representatives of the EDF, GCT, SRP, and the State of Arizona, EPA staff have noted that the parties' discussions in no way infringed upon the Agency's unfettered rulemaking discretion. In an August 2, 1991 letter to representatives of SRP, GCT, and EDF, EPA's General Counsel restated this explaining, in part, that while he commended the parties' efforts to reach common ground, "EPA at all times retains complete and unfettered discretion over both the substantive provisions of any final regulation and the legal rationale supporting that regulation."¹

Solicitation of Comments

The EPA believes that the parties' agreement and associated recommendation to EPA, the underlying technical materials and cost information which has been exchanged, and the Agency's commitment to public participation constitute good cause for reopening the comment period. Accordingly, EPA requests comments on all aspects of the rulemaking alternative that is the subject of the MOU, including the regulatory terms and the legal rationale. That alternative is set forth in Appendix A (and associated attachments) to this notice. Where addresses are available, commenters on the February 8, 1991 proposal will be notified by mail of

¹ Letter from E. Donald Elliott, General Counsel, to Patrick Raher and Henry Nickel, August 2, 1991.

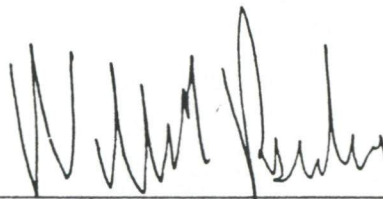
this notice in order to facilitate their ability to comment on this notice.

List of Subjects in 40 CFR Part 52

Air pollution control, Nitrogen dioxide, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides.

8/8/91

Date



Assistant Administrator
for Air and Radiation

Appendix A

ARIZONA VISIBILITY IMPLEMENTATION PLAN
MEMORANDUM OF UNDERSTANDING

The undersigned recommend that EPA take final action on the Navajo Generating Station ("NGS") visibility rulemaking consistent with the August 7, 1991 "Recommended Regulatory Requirements for the NGS Visibility Rulemaking," and the Rahe/Nickel July 30, 1991 letter to Thomas C. Kiernan, which are attached to this memorandum and incorporated by reference.

The undersigned agree to recommend to the managements of their respective organizations¹ that their Governing or Policy-Making Bodies or Office commit not to appeal a final regulation that implements the recommendations set forth in the attachments to this memorandum nor support in any way the efforts of another interested party in such an appeal. The commitments adopted by the Governing or Policy-Making

1 The respective organizations for John McNamara are the participants in NGS, Salt River Project Agricultural Improvement and Power District, Arizona Public Service Company, Tucson Electric Power Company, Department of Water and Power of the City of Los Angeles, Nevada Power Company, and the United States Department of the Interior; for Edward Norton are the Grand Canyon Trust, The Wilderness Society, the National Wildlife Federation, and the Sierra Club; and for Robert Yunke is the Environmental Defense Fund.

Bodies or Office of these organizations, after action on these recommendations, to abide by the terms of this memorandum will be expressed in an exchange of letters of agreement -- as soon as possible and with the expectation that this will occur no later than 30 days after publication of the final rule in the Federal Register -- to:

John McNamara
Salt River Project
1521 Project Drive
Phoenix, Arizona 85281

Edward Norton
Grand Canyon Trust
Suite 300
1400 16th Street NW
Washington, DC 20036

Once EPA promulgates the final rule, EDF and the NGS participants will petition (a) the United States Circuit Court of Appeals for the Ninth Circuit to vacate the judgement below and remand the matter pending in EDF v. Reilly, No. 90-15264 to the court below with instructions to dismiss and (b) the United States District Court for the Northern District of California to dismiss EDF v. Reilly, C-6850 RPA.

/s/

John McNamara, Authorized
Representative for and
Chairman of the Coordinating
Committee for the Participants
in NGS

/s/

Edward Norton, President
Grand Canyon Trust
/s/

Robert Yuhnke, Senior
Attorney, Environmental
Defense Fund

[First Attachment to the MOU]

RECOMMENDED REGULATORY REQUIREMENTS FOR THE
NAVAJO GENERATING STATION VISIBILITY RULEMAKING

AUGUST 7, 1991

1. Applicable to the fossil fuel-fired, steam-generating equipment designated as Units 1, 2, and 3 at the Navajo Generating Station (NGS).
2. Consistent with the terms of this document, the sulfur oxides emission limitation for NGS is 0.10 lbs SO₂/MMBtu of heat input on an annual rolling average basis. Emission controls will be installed and operated on the following schedule:

- One unit by November 19, 1997;
- Two units by November 19, 1998;
- All units by August 19, 1999.

The emissions from all units subject to this emission limitation will be averaged to determine compliance.

3. Schedule of compliance -- interim deadlines:

Date of binding contract for A/E	6/92
firm to design and procure the control system needed for compliance.	
Start of on-site construction of control system for the first unit	1/95
Initiation of start-up testing	
first unit	5/97
second unit	5/98
third unit	2/99

The interim deadlines will be extended if it can be demonstrated to the Administrator that compliance with the deadlines in paragraph 2 would not be affected.

4. Continuous emission monitors will be installed to determine compliance with the emission limitations. This equipment will meet the specifications listed in Appendix B of 40 CFR Part 60 and the quality assurance procedures found in Appendix F of 40 CFR Part 60.

5. Recordkeeping and reporting requirements:

- Report to EPA emissions as required by the procedures found in 40 CFR 60.7;
- Maintain records according to the procedures found in 40 CFR 60.7;
- FGD unit outages must be reported to EPA by the next business day; and
- A follow-up written report must be filed within 30 days of the repair stating how the repair was accomplished and justifying the amount of time taken for the repair.

6a. Compliance with the annual rolling average shall be determined on a daily basis by dividing the total sulfur dioxide emitted by the total energy of the fuel consumed during the previous 365 boiler-operating days.

b. For each unit, in determining compliance with the annual average emission limitation during the first year of operation of the control equipment installed to

comply with this emission limitation, periods during which one of the following conditions are met shall be excluded:

- i. Equipment or systems do not meet designer's or manufacturer's performance expectations.
- ii. Field installation including engineering or construction precludes equipment or systems from performing as designed.

The periods to be excluded shall be determined by the Administrator based on the periodic reports of compliance with this emission limitation which shall identify the times proposed for exclusion and provide the reasons for the exclusion, including the reasons for the FGD outage. The report also shall describe the actions taken to avoid the outage, to minimize its duration, and to reduce SO₂ emissions at the plant to the extent practicable while the FGD unit was not fully operational. Whenever the time to be excluded exceeds a cumulative total of 30 days for any FGD unit, the NGS owner or operator shall file a report within 15 days addressing the history of and prognosis for the performance of the control equipment.

c. In addition to the foregoing, the Administrator of EPA shall exclude from the compliance determination any periods for which the Administrator finds that the control equipment is out of service because of

catastrophic failure of any FGD unit which occurred for reasons beyond the control of the NGS owners and operators and could not have been prevented by good engineering practice, including appropriate maintenance.

d. All equipment needed to comply with this emission limitation will be operated consistent with good engineering practice to reduce emissions and outages and to return the FGD system to full operation as expeditiously as practicable.

7. On 3/16/93 and every year thereafter, the NGS owner or operator will prepare a long-term maintenance plan for the grid that NGS serves covering the period from the date of the filing to 3/15 of the next year showing at least six unit-weeks of maintenance for NGS in the 11/1 to 3/15 period, except as provided below, to further reduce SO₂ emissions during the winter. This plan will be developed consistent with the criteria established by the Western States Coordinating Council of the North American Electric Reliability Council to ensure adequate reserve margin. The full six-unit weeks of winter maintenance need not occur if any of the following circumstances arise:

a. There is no need for six unit-weeks of scheduled periodic maintenance in the year covered by the plan.

b. The reserve margin on any electrical system served by NGS would fall to an inadequate level, as defined by the criteria referred to in paragraph 7 above. In such case, the scheduled maintenance may be moved out of the 11/1 to 3/15 period.

c. The cost of compliance with this provision would be excessive. Costs of compliance would be excessive when the economic savings to the owners of moving NGS' maintenance out of the 11/1 to 3/15 period exceeds \$50,000 per unit-day of maintenance moved.

d. A major forced outage at a unit occurs outside the winter months, and necessary periodic maintenance occurs during the period of forced outage.

The NGS owner or operator must demonstrate to the satisfaction of the Administrator that such an event precluded the need for a full six-unit weeks of scheduled maintenance during the period specified.

Where six unit-weeks of scheduled maintenance is precluded, the NGS owner or operator shall nevertheless make best efforts to conduct as much scheduled maintenance as practicable during the winter period.

8. EPA and the Arizona Department of Environmental Quality reviewed the need to reheat the exhaust gases

to ensure appropriate plume rise with the lower gas exit temperatures associated with a 0.10 lb/MBtu emission limitation and found that reheating of the exhaust gas is not necessary to prevent a violation of national ambient air quality standard. Moreover, discussions with the State of Arizona indicate that the visible, water vapor plume that would be present with a scrubber without reheat, instead of the clear stacks that NGS now has, does not pose a condition that requires regulatory attention under State or federal law. The elimination of the need to reheat the exhaust gas will result in a significant reduction in capital and operational costs.

[Second Attachment to the MOU]

HOGAN & HARTSON
Columbia Square
555 Thirteenth Street NW
Washington, DC 20004-1109

July 30, 1991

Thomas C. Kiernan
Chief of Staff to the Assistant
Administrator for Air and Radiation
Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Re: Timing Issues in Arizona Visibility SIP

Dear Tom:

The purpose of this letter is to present our views on the legal rationale for a visibility-related emission limitation that would contain different compliance deadlines than the EPA proposal. As you know, our clients are discussing a recommendation to the Agency on an alternative to EPA's proposed rule. Specifically, EPA's proposed 0.30 lbs./MMBtu, 30-day average limitation, to be achieved on a phased basis beginning in 1995, has been compared to various 0.10 lbs./MMBtu limitations using different averaging periods and different schedules for phasing in this limitation. Among these alternatives, a 0.10 lbs./MMBtu emission limitation on a rolling annual average, phased in by unit in 1997, 1998, and 1999, achieves greater reductions at less cost than the EPA proposal.

If the Agency were to adopt such a limitation, the parties believe that the legal rationale for the final rule should be that this limitation represents "reasonable progress toward meeting the national goal [of the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas]." 40 C.F.R. § 51.300(a); 42 U.S.C. § 169A(b)(2) & 169A(a)(1). The parties jointly believe that this legal rationale is in accord with section 169A(b)(2) of the Clean Air Act. In explaining the basis for this final rule, we would hope that the Agency indicates in the preamble that the 0.10 lbs./MMBtu limitation offers a higher level of controls at a lower cost than would be provided by EPA's BART guidelines, which focus on NSPS levels of control, although the BART guidelines do provide the methodology employed in deciding the level of SO₂ reductions. Finally, we also hope that the preamble notes that by imposing a 0.10 lbs./MMBtu emission limitation, which requires the installation of a state-of-the-art SO_x scrubber, no other sulfur oxide emission controls should be required at NGS under section 169A.

Thank you for considering this matter in the development of the final rule. Please contact us if you have any questions.

Sincerely,

_____/s/_____
 Patrick M. Rahe
 Hogan & Hartson for
 Grand Canyon Trust and
 Environmental Defense Fund

_____/s/_____
 Henry V. Nickel
 Hunton & Williams for
 Salt River Project

APPENDIX B

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460
OFFICE OF GENERAL COUNSEL

MEMORANDUM

SUBJECT: Legal Rationale for Rulemaking Alternative
in Grand Canyon Visibility Proceeding

FROM: Gregory B. Foote
Assistant General Counsel

TO: William G. Rosenberg
Assistant Administrator
for Air and Radiation

INTRODUCTION

You have requested my opinion regarding a possible legal rationale in support of a rulemaking alternative for the February 1991 proposal to establish, under section 169A of the Clean Air Act, sulfur dioxide emission limitations at the Navajo Generating Station (NGS) in order to remedy visibility impairment at Grand Canyon National Park. In particular, you have asked that I review a joint letter dated July 30, 1991 from Patrick M. Raher, representing the Grand Canyon Trust and the Environmental Defense Fund (GCT/EDF), and Henry V. Nickel, representing the Salt River Project (SRP). The Raher/Nickel letter recommends that, in the event EPA adopts a final rule for NGS requiring a 0.10 lbs./mmbtu emission limitation on a rolling annual average, phased in by unit in 1997, 1998, and 1999, EPA should also

adopt the legal rationale described in the July 30 letter in support of such a final rule.

At the outset, I note that General Counsel Don Elliott recently responded to Messrs. Raher and Nickel by letter dated August 2, 1991 (copy attached). Don Elliott's letter reminded those parties that EPA must at all times retain full discretion in deciding on both the substantive content of and legal rationale for its final rulemaking actions. Thus, although the General Counsel assured Raher and Nickel that EPA would carefully consider their views, he made it clear that EPA could give no assurance that those views would be adopted. The General Counsel's letter did not address the merits of the Raher/Nickel letter, a subject that I will address below.

BRIEF ANSWER

In brief, the Raher/Nickel letter would focus on the "reasonable progress" requirement in section 169A(B)(2) as the basis for EPA's final action on the NGS rulemaking. That general approach is basically sound and could, in my opinion, provide the core of a defensible rationale in support of the prospective final rule in question. My views on this rulemaking alternative are set forth in greater detail below. Please note that I have not yet discussed those views in detail with the General Counsel. Once he has reviewed them, however, this memorandum could form part of the basis for a supplemental notice advising the public that

EPA is considering the specific regulatory option in question, and soliciting comment on that option.

DISCUSSION

Section 169A(b)(2) of the Clean Air Act requires that visibility implementation plans contain such emission limits, schedules of compliance and other measures as may be necessary to make reasonable progress toward the national visibility goal. These plan provisions include, as appropriate, BART (section 169A(b)(2)(A)), and a long-term strategy (section 169A(b)(2)(B)). Thus, "reasonable progress" is the overarching requirement that implementation plan revisions under section 169A(b)(2) must address, while subparagraphs (A) and (B) are more specific expressions of rulemaking authority that are incorporated into the parent subsection (b)(2). In crafting the visibility reasonable progress requirements, Congress did not explicitly address, and apparently did not even consider, whether there could be greater visibility improvement at a lower cost in furtherance of the national goal through an implementation plan provision that relied more generally on subsection (b)(2), rather than on the specific provisions of subparagraph (A) and/or subparagraph (B). Where Congress has not directly spoken to the precise question at issue, EPA may make a reasonable construction of the statute that is appropriate in the context of the particular program

at issue. Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc., 467 U.S. 837, 842-45 (1984).

In the notice of proposed rulemaking published in the Federal Register on February 8, 1991 (56 Fed. Reg. 5173), EPA proposed a 0.30 lbs/MMBtu emission limitation for NGS, to be determined on a 30-day rolling average and to be phased in by unit in 1995, 1997 and 1999. EPA explicitly requested comment on other control options permitted under the Act including, inter alia, the following rule elements and specific regulatory alternatives:

(1) emission limitations, including a limitation of 0.10;
(2) averaging times, including an annual averaging period;
and (3) implementation schedules, including a schedule that extended to 2000. EPA also solicited comment generally on regulatory issues raised by interested parties. In my opinion, the specific rulemaking alternative now under consideration is within the scope of the February 1991 proposal. However, in order to insure full public consideration of this alternative, I strongly recommend that EPA issue a supplemental notice providing a further opportunity for public comment.

As you know, the staff of the Office of Air and Radiation has considered the rulemaking alternative consisting of a 0.10 lbs/MMBtu emission limitation, to be determined on a rolling annual average and phased in by unit in 1997, 1998 and 1999, and has reviewed supporting

technical and cost information. I understand that the staff has concluded that greater visibility improvement at less cost can be achieved by this alternative, as compared to the rule proposed in the February 1991 notice, which applied the BART Guidelines focusing on NSPS levels of control to the facts of this case. I understand that the staff also referred to the BART guidelines to provide the methodology employed in developing the level of sulfur dioxide reductions in the alternative presently under consideration. See sections 169A(g)(1) and (2).

Based on the staff conclusions regarding the factual circumstances of this case, EPA could reasonably find that the present alternative, with its higher expected visibility improvement and lower expected costs (in comparison to the February 1991 proposed rule), best fulfills the overarching statutory requirement in section 169A(b)(2) (which incorporates the more specific provisions of subparagraphs (A) and (B)) that implementation plan revisions adopted under section 169A make "reasonable progress" toward the national visibility goal.

CONCLUSION

In sum, subject to any significant points that may be raised in the reopened comment period, I believe that under the specific circumstances of this case EPA could rely on the provisions of section 169A(b)(2) as the source of delegated rulemaking authority for the present alternative.

The Agency has weighed the relevant factors and could appropriately conclude that this alternative reasonably interprets and harmonizes the statutory provisions in a way that best furthers the overarching legislative purpose to achieve reasonable progress toward the national visibility goal. See, e.g., Public Citizen v. Department of Justice, 109 S.Ct. 2558, 2566 (1989); Church of the Holy Trinity v. United States, 143 U.S. 457, 459, (1898); see also Citizens to Save Spencer County v. EPA, 600 F.2d 844 (D.C. Cir. 1979).

Finally, I note that by promulgating a 0.10 lbs/MMBtu emission limitation which requires installation of state-of-the-art SOx scrubber technology, the staff expects that no other federal implementation plan revisions requiring SOx control should be necessary at NGS under section 169A. I express no view on this essentially technical and policy matter.

Attachment

ATTACHMENT TO APPENDIX B

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460
OFFICE OF GENERAL COUNSEL
AUGUST, 2 1991

Mr. Patrick M. Rahe
Hogan & Hartson for
Grand Canyon Trust and
Environmental Defense Fund
Columbia Square
555 Thirteenth Street, N.W.
Washington, D.C. 20004-1109

Mr. Henry V. Nickel
Hunton & Williams for
Salt River Project
2000 Pennsylvania Ave., N.W.
Washington, D.C. 20036

RE: Timing Issues in Arizona Visibility FIP

Dear Mr. Rahe and Mr. Nickel:

This is in response to your letter of July 30, 1991 to Tom Kiernan, Chief of Staff to Assistant Administrator Bill Rosenberg.

I note with interest your views on a possible legal rationale for a final rule addressing visibility-related emission limitations for Navajo Generating Station. EPA applauds your efforts to find common ground that may lead to an amicable conclusion to this important rulemaking. The Agency is giving your views careful consideration as it moves toward final action. I want to remind you, however, that of course EPA at all times retains complete and unfettered discretion over both the substantive provisions

of any final regulation and the legal rationale supporting that final action.

President Bush reiterated this important principle in the Statement by the President accompanying the signing of the Negotiated Rulemaking Act of 1990, 104 Stat. 4969, 5 U.S.C. 581 (1990). A copy of the Statement is enclosed for your reference. The Statement noted that under the Appointments Clause of the Constitution, Article II, Sec. 2, Cl. 2, governmental authority may be exercised only by officers of the United States. In particular, the President emphasized that "Federal officials will retain their full statutory and constitutional responsibility to make all administrative determinations on regulatory matters." Clearly, this responsibility extends to all material aspects of a final regulation under section 169A of the Clean Air Act. Accordingly, while we appreciate the views you have placed before us, EPA can give no assurances nor negotiate any binding commitments that it will ultimately adopt the regulatory approach or the legal rationale you have recommended.

Sincerely,

/s/

E. Donald Elliott
Assistant Administrator
and General Counsel

Enclosure

THE WHITE HOUSE
Office of the Press Secretary

For Immediate Release

November 29, 1990

STATEMENT BY THE PRESIDENT

Today I am signing S. 303, the "Negotiated Rulemaking Act of 1990." This Act will encourage Federal agencies to use negotiation in the regulatory process, to the extent that it may be appropriate, as a means of avoiding costly and time-consuming litigation.

In approving this bill, I must emphasize that Federal officials will retain their full statutory and constitutional responsibility to make all administrative determinations on regulatory matters. Under the Appointments Clause of the Constitution, Article II, Sec. 2, Cl. 2, governmental authority may be exercised only by officers of the United States.

The Act does not require an agency to adopt, or even to publish as a proposed rule, a consensus reached by a negotiated rulemaking advisory committee. Nor does the Act supplant either the role of the public in commenting on a proposed rule in accordance with the Administrative Procedure Act, or the responsibility of Government officials to consider such comments and to decide on and draft the

text of a final rule. In this regard, I note that a negotiated rulemaking advisory committee has completed its function after it has recommended a proposed rule to the rulemaking agency.

I must also emphasize that S. 303 does not derogate in any way from existing agency authority to utilize or experiment with any lawful form of rulemaking, including negotiated rulemaking.

GEORGE BUSH

THE WHITE HOUSE,

November 29, 1990

GRAND CANYON TRUST AND ENVIRONMENTAL DEFENSE FUND
ALTERNATIVE CONTROL CONCEPTS
June 21, 1991

I. REFERENCE POINT: EPA/NPRM

Emission Limitation:	.30 lbs./MMBtu
Scrubber Configuration:	2 modules + 1 spare module
Averaging Time:	30 Day Rolling Average
Construction Timing:	1995, 1997, 1999
Reheat:	None
Annual Cost:	\$83 Million (SRP Estimate)

II. ALTERNATIVE STRATEGY I

Emission Limitation:	.10 lbs./MMBtu
Scrubber Configuration:	2 modules + 1 spare module
Averaging Time:	30 Day Rolling Average
Construction Timing:	1995, 1997, 1999 (start date subject to discussion)
Reheat:	None
Annual Cost:	\$90 Million (SRP Estimate)

III. ALTERNATIVE STRATEGY II

Emission Limitation:	.10 lbs./MMBtu
Scrubber Configuration:	2 modules + No spare module

Averaging Time:

30 Day Rolling Average
EXCEPT THAT:

NGS Units #1, 2, and 3 shall not cause to be discharged into the atmosphere sulfur dioxide at a rate exceeding:

(a) 0.4 lbs./MMBtu heat input as averaged over any one calendar day for a total of 30 days per calendar year, and

(b) 0.1 lbs./MMBtu heat input as averaged over the 60-day block period, as specified by the operator, containing the days when the 0.4 lbs./MMBtu standard applies.

(c) Major scheduled maintenance operations must be carried out between December and Jan, + February.

Construction Timing:

1995, 1997, 1999
(start date subject to discussion)

Reheat:

None

Annual Cost:

\$77 Million (SRP Estimate)

HUNTON & WILLIAMS

ATLANTA, GEORGIA
BRUSSELS, BELGIUM
FAIRFAX, VIRGINIA
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NEW YORK, NEW YORK
NORFOLK, VIRGINIA
RALEIGH, NORTH CAROLINA
RICHMOND, VIRGINIA

January 10, 1991

The Honorable William G. Rosenberg
Assistant Administrator for Air
& Radiation
United States Environmental Protection
Agency
401 M Street, S.W.
Room 937 West Tower
Washington, D.C. 20460

Dear Mr. Rosenberg:

Under the court-imposed deadline, the Environmental Protection Agency must decide by February 1 whether or not to propose BART limitations for the Navajo Generating Station. The February 1990 EPA staff draft proposal would require Navajo to install a 90 percent (3 hour averaging time) scrubber that would have to achieve sulfur dioxide emission reductions in excess of 95 percent on a long term basis. That draft proposal was based upon the National Park Service's WHITEX analyses which concluded that NGS was responsible for 40 percent of the average winter time haze in the Canyon and 60 to 70 percent during episodes.

Following release of the staff proposal last February, the National Research Council issued a report highly critical of the NPS's WHITEX quantifications. Also, the Salt River Project (SRP) completed a comprehensive study of winter visibility in Grand Canyon. Preliminary results from SRP's study refute the WHITEX conclusions that Navajo was a dominant contributor to winter haze in the Canyon.

As we have explained in earlier letters, SRP believes that the NRC Report on WHITEX and the preliminary results from the SRP study require reconsideration of the staff draft scrubbing proposal. SRP also believes that there are legal barriers under EPA's 1980 visibility rules to the Agency's regulating a source that is at most only a contributor to regional haze.

While it is clear that the Agency does not share our view as to the scope of its legal authority to impose BART limits, SRP believes that the Agency should consider alternatives to its 90

The Honorable William G. Rosenberg

January 10, 1991

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percent scrubbing proposal in view of its extremely high cost and the marginal visibility improvements that would result from installing and operating scrubbers at this time. SRP management has developed an alternative to the Staff scrubber proposal which we believe is fully consistent with the Agency's legal position that Navajo's emissions can be regulated under current rules and is responsive to SRP's concerns regarding the disparity between control costs and visibility benefits.

The alternative being proposed by SRP management, discussed below, would assure that any emission reductions would cost much less than the staff draft proposal and would take place no later than the earliest time that major contributors to haze in the Canyon (e.g., other major stationary sources in the region and urban sources) would be reducing emissions. The SRP alternative would be integrated into the comprehensive program to evaluate visibility called for by the 1990 Amendments, a research program that SRP would support. The following discussion outlines the SRP proposal.

If you are interested in pursuing this approach, we would recommend that we and your counsel seek a 60 day extension in the February 1 court deadline. This 60 day extension will allow SRP and your staff to develop a detailed proposal and will provide necessary time to have that proposal reviewed and approved by you and the Administrator, by the SRP Board, and by the other Navajo participants.

DISCUSSION

SRP's alternative has the following elements:

--SRP would agree to help fund, and otherwise to cooperate fully with, the regional haze studies that EPA is required to conduct under the 1990 Amendments, to assure that EPA can collect the scientific and technical data necessary to permit a full assessment and evaluation of all sources of haze in the Grand Canyon.

--EPA would expedite establishment of the Grand Canyon Visibility Transport Commission. SRP would cooperate with the Governors of the affected States and the Commission in the conduct of its inquiry.

--SRP would agree to undertake tests to try to demonstrate the feasibility of several promising clean coal technologies that may provide much lower cost alternatives to conventional scrubbers on plants fired by low sulfur western coal. If one of the technologies were demonstrated to achieve an agreed upon

The Honorable William G. Rosenberg
January 10, 1991
Page 3

minimum removal efficiency at an agreed upon cost, SRP would commit to install that technology and operate it on a seasonal basis to address the alleged effect of the NGS on wintertime visibility.

--SRP would agree that, if none of the technologies met the test criteria, it would then install pollution control devices that would remove at least 70% of uncontrolled SO2 emissions measured on an annual basis. This technology would not have to be operational before January 1, 2000, the date upon which the first allowances would be issued to the plant under the 1990 Amendments.

This alternative approach has several distinct advantages. First, it avoids very costly controls that will at best only marginally improve visibility a few hours in the winter. Second, it assures that any haze program will be based upon reliable science and sufficient data, rather than the flawed WHITEX experiment, which has driven the EPA Staff draft. Third, it allows coordination of the NGS program with the regional haze studies to be undertaken by the EPA and the recommendations of the Grand Canyon Visibility Transport Commission. This assures maximum input of the States into the ultimate solution.

In terms of ultimate emissions reductions, the alternative technological test program offers the potential for immediate, local pollution reductions at much lower cost than scrubbers. New low cost technologies, if demonstrated, can make a major contribution to long-term pollution reduction efforts at plants burning low sulfur coal that are potential targets for cost benefit based visibility regulation. Finally, if alternatives cannot be demonstrated, this approach will assure that there will be long-term, large-scale reductions in SO2 emissions from the NGS, with controls installed under deadlines that will permit the market for allowances to help finance the substantial capital and operating costs that otherwise would have to be absorbed by the Arizona economy and Federal taxpayers.

Regional Visibility Studies. Administrator Reilly has repeatedly acknowledged the critical importance of basing EPA rules on solid scientific work. He also has recognized the dangers of the "ready, fire, aim" type of regulation, when rules are based on emotional reactions to an environmental issue rather than considered policy analysis. The draft NPRM reflects both flaws, particularly its proposed reliance on the WHITEX experiment as the basis for regulation.

The SRP alternative will provide a far more reliable scientific and technical basis for considering a response to haze

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in the Grand Canyon. The 1990 Salt River Project study of NGS represents a quantum leap forward in the sophistication and reliability of region-wide atmospheric studies. That experience will be invaluable in conducting proper studies to cure one of the NRC's principal criticisms of WHITEX, its failure to consider the other point and regional sources that obviously contribute to haze in the Grand Canyon.

SRP is prepared to help improve those studies by assisting with their funding, design, and implementation. Especially with the strain on EPA resources caused by implementation of the 1990 Amendments and the fiscal constraint caused by Federal budget issues, such financial contributions are of substantial value in accelerating the timetable and permitting more thorough studies.

Coordination with the Visibility Transport Commission. This feature offsets one of the principal flaws in the EPA Staff draft proposal, the likelihood that a piecemeal approach of source-by-source regulation would not actually result in significantly improved visibility in the Grand Canyon.

While the haze is clearly regional, little is now known of the contributions made by its sources, or at what cost they could be controlled. Permitting the Governors to study the problem on a regional basis and devise a comprehensive solution offers the best opportunity for a cost effective approach to the problem. In particular, this approach will allow coordination of the regional haze program with other programs required by the 1990 Amendments, notably the urban nonattainment and air toxic programs. Under this approach, in the event that the clean coal demonstration program is unsuccessful, the year 2000 deadline to install other control technology would tie in directly with the emission reductions that the urban areas are achieving, and would correspond with any regional reductions arising out of the visibility studies conducted under the 1990 Amendments.

Administrator Reilly recently has written the Governors emphasizing their critical role in implementation of the 1990 Amendments. The Commission, as a forum for direct study and planning by the Governors of all affected States, thus is an ideal forum for consideration of the visibility problem from both a Federalism and an environmental perspective.

Clean Coal Technology Program. The centerpiece of the SRP proposal is the commitment to conduct a test of promising clean coal technologies as an alternative to scrubbers. This program offers the prospect of both immediate local emissions reductions and a long-term advance in the state-of-the-art of control

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technologies for low sulfur coal plants that could produce environmental benefits throughout the west. This approach is consistent with the clean-coal technology incentives incorporated in the Senate passed version of the 1990 Amendments.

The Salt River Project has preliminarily explored the feasibility of a significant number of alternative technologies that might substantially reduce SO₂ emissions without requiring the enormous expense and loss of electricity capacity imposed by scrubbers. Based on that initial review, it believes that several approaches, including a sodium injection technology and a novel clay injection technique developed by TRIMEX warrant further testing.

SRP is willing to develop and implement a full-scale experimental project for promising technologies. Precise identification of technologies to be tested and test conditions would be devised in consultation with EPA staff.

SRP is further willing to commit that, if one of these technologies were demonstrated to reduce SO₂ emissions efficiently and cost effectively, SRP would install it and operate it in the winter time. As part of the design of the program, the NGS and EPA would agree upon the minimum removal efficiency, cost and other criteria that must be satisfied by the alternatives to be tested.

Control Technology Underwritten by the Allowance Market.
SRP would commit that, if none of the clean coal technologies satisfied the test criteria, it would then select and install pollution control equipment that would remove at least 70% of the uncontrolled SO₂ emissions measured on an annual basis. This technology would be operational on January 1, 2000, the date when the first allowances will be issued to the plant.

Deferring selection of a 70% control system until after completion of the test, that is until the mid-1990's, offers several advantages. First, it would allow the NGS to take advantage of any other developments in pollution control technology in the interim, as long as the ultimate performance standard was met. Second, coordinating the receipt of allowances with the installation of higher cost controls will allow the market to underwrite part of the capital and operating costs of controls. Accordingly, the net costs to the ratepayers of Arizona and the Federal budget will be significantly less than they would be if control costs had to be incurred at an earlier time.

HUNTON & WILLIAMS

The Honorable William G. Rosenberg

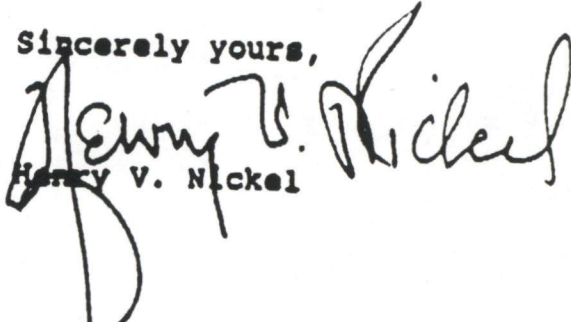
January 10, 1991

Page 6

CONCLUSION

We appreciate your consideration of this proposed alternative to the current staff position. SRP would be pleased to answer any questions you or your assistants may have about this proposal. In this regard, two SRP senior management representatives who are responsible for this proposal -- John McNamara and Richard Silverman -- will be in Washington this Thursday and Friday and would be available to meet with you personally if your schedule would permit. Please call John McNamara or Richard Silverman at SRP (602/236-5900) or me in Washington (202/944-1561) if you or your staff have any questions.

Sincerely yours,


Henry V. Nickel

cc: Mr. Michael Shapiro
Mr. John S. Seitz
Ms. Lydia Wegman
Mr. Gregory B. Foote

FAX COVER SHEET

DILWORTH, PAXSON, KALISH & KAUFFMAN
1001 Pennsylvania Avenue, N.W.
Suite 275 North
Washington, D.C. 20004
U.S.A.
(202) 624-5900
(202) 624-5904 (Fax)

DATE: June 10, 1991

TO: NAME Jeff Hammstead
COMPANY NAME _____
TELECOPY # 456-7929

FROM: NAME Bob Beane
TELEPHONE # _____

NUMBER OF PAGES INCLUDING COVER PAGE: 6

CLIENT/MATTER: _____

USER NUMBER: _____

COMMENTS: Jeff - Materials related to
precedents.
B.

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EPA's Phase I and Phase II Regulations

- In 1980, EPA concluded that there were two categories of visibility problems:
 - "plume blight" caused by identifiable individual sources; and
 - "regional haze" caused by several sources without attributable plumes.
- EPA announced that it would issue two regulations to deal with these two distinct problems.
- On December 2, 1980, EPA issued its Phase I regulations to allow the regulation of individual sources whose plume impacts a National Park.
- EPA has never issued Phase II regulations for "regional haze".

EPA's experience with visibility regulations

- In 1982, the Environmental Defense Fund sued EPA to compel it to revise SIPs to address visibility concerns under the Phase I rules.
- A settlement agreement was entered in 1984, and the program has been monitored by the Federal courts since that time.
- Even with the oversight of the courts, neither EPA nor any State has ever regulated a single source under the Phase I regulations.
- In every case it has reviewed, EPA has concluded that visibility impairment in a National Park was regional haze and could not be "reasonably attributed" to a specific source.
- EPA is trying to fit NGS into Phase I instead of addressing NGS emissions as regional haze, as it should.

EPA's efforts to regulate NGS will be precedential

- This would be the first source ever regulated under EPA's Phase I regulations. (EPA has never issued Phase II).
- A decision to regulate will --
 - ratify the use of tracer studies for Phase I
 - set a minimum standard for the amount of SO2 contribution from a source to warrant regulation
 - set the cost/benefit standard to justify regulation
- The Phase I regulation of more plants is likely.
 - NPS can trigger EPA decisions at any time, using the NGS as a standard.
 - Every other Park (but one) has a greater visibility problem than the GCNP.
 - EPA must face an NGS precedent when it reviews all state SIPs every three years.

Next Plants to be Regulated

- In the west, there are four target plants identified in the House Synar Hearings:
 - ✓ Centralia 1-2 (Washington)
 - ✓ Mohave 1-2 (Nevada)
 - ✓ Pawnee 1 (Colorado)
 - ✓ Hayden 2 (Colorado)(These were also identified in an analysis commissioned by EPA).
- Funds are now available for tracer studies at Mohave, and EPA has proposed to Mohave that it reduce its emissions by 50% to avoid visibility regulation.
- In the east, Shenandoah is already an issue. Offsets not required by the CAAs have already been exacted from one Company. Can the midwest be far behind?

Visibility regulatory issues

- when should EPA regulate individual sources (as plume blight) and when should they pursue regional haze solutions instead?
- should the regional visibility transport commissions required by the 1990 CAAs be the primary visibility initiative?
- what SO₂ reductions in addition to those required in the 1990 CAAs should utilities be required to make?
- should more money per ton be spent to reduce emissions for purely aesthetic (visibility) reasons than the CAA requires for health and safety reasons?

RP-21
6/6

Our National Parks are at Risk

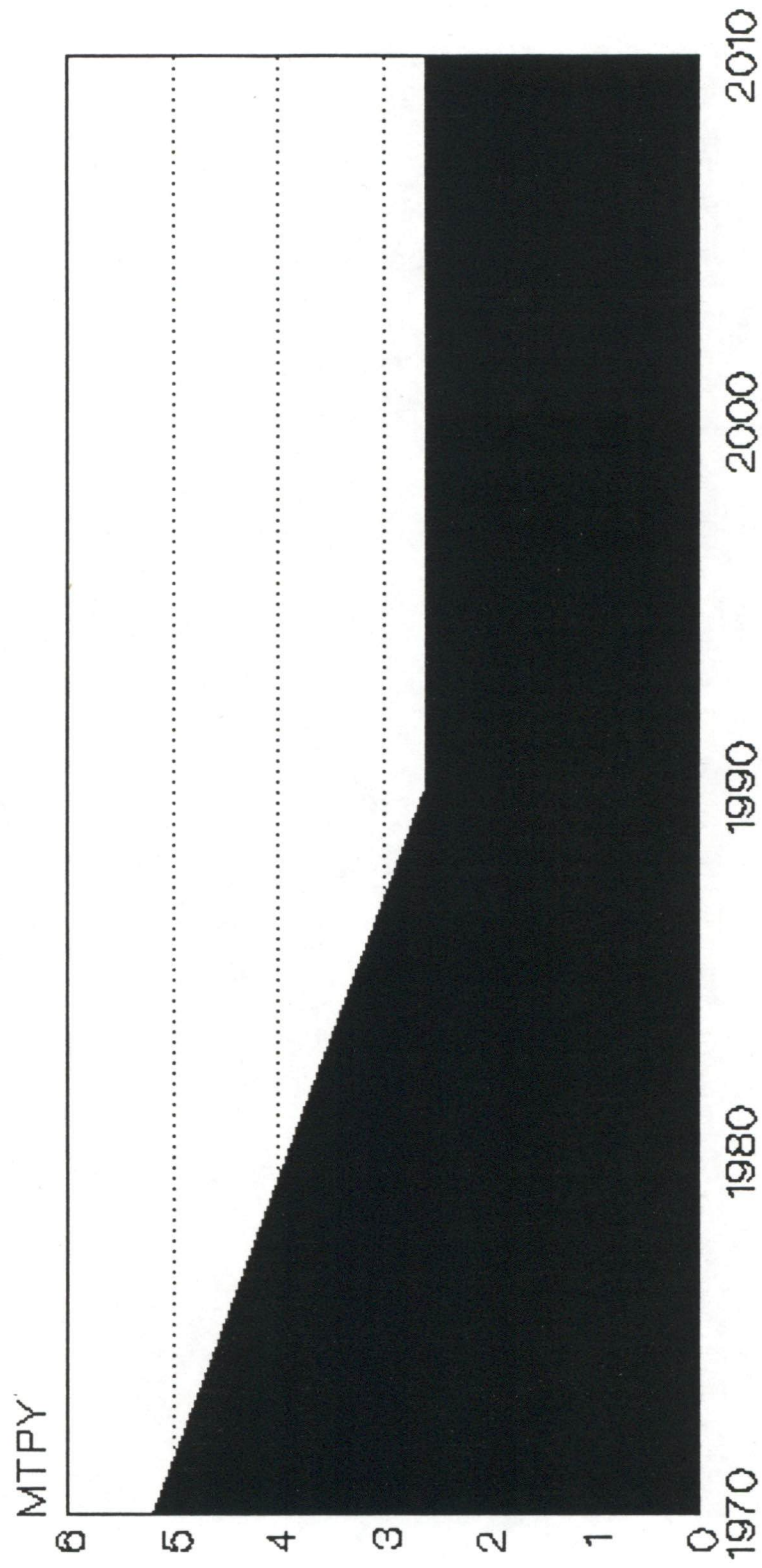
- Visitors to the Parks are dramatically increasing. This year, nearly 300 million people will visit facilities operated by the National Parks Service.
- Within the next 15 years, the number of visitors will double.
- Transportation within some Parks already exceeds capacity.
- Commercial development threatens the natural beauty of the Parks.
- Automobile and other pollution has degraded visibility in some Parks.
- Water usage increasingly affects flows through the Parks.

The Visibility Aspect of the Problem

- Visibility in our National Parks is declining, particularly in the east and south where the total amount of sulfur dioxide emissions has been increasing.
- Media awareness of the problems is increasing.
- SO₂ emissions will decline under the 1990 Clean Air Act Amendments.

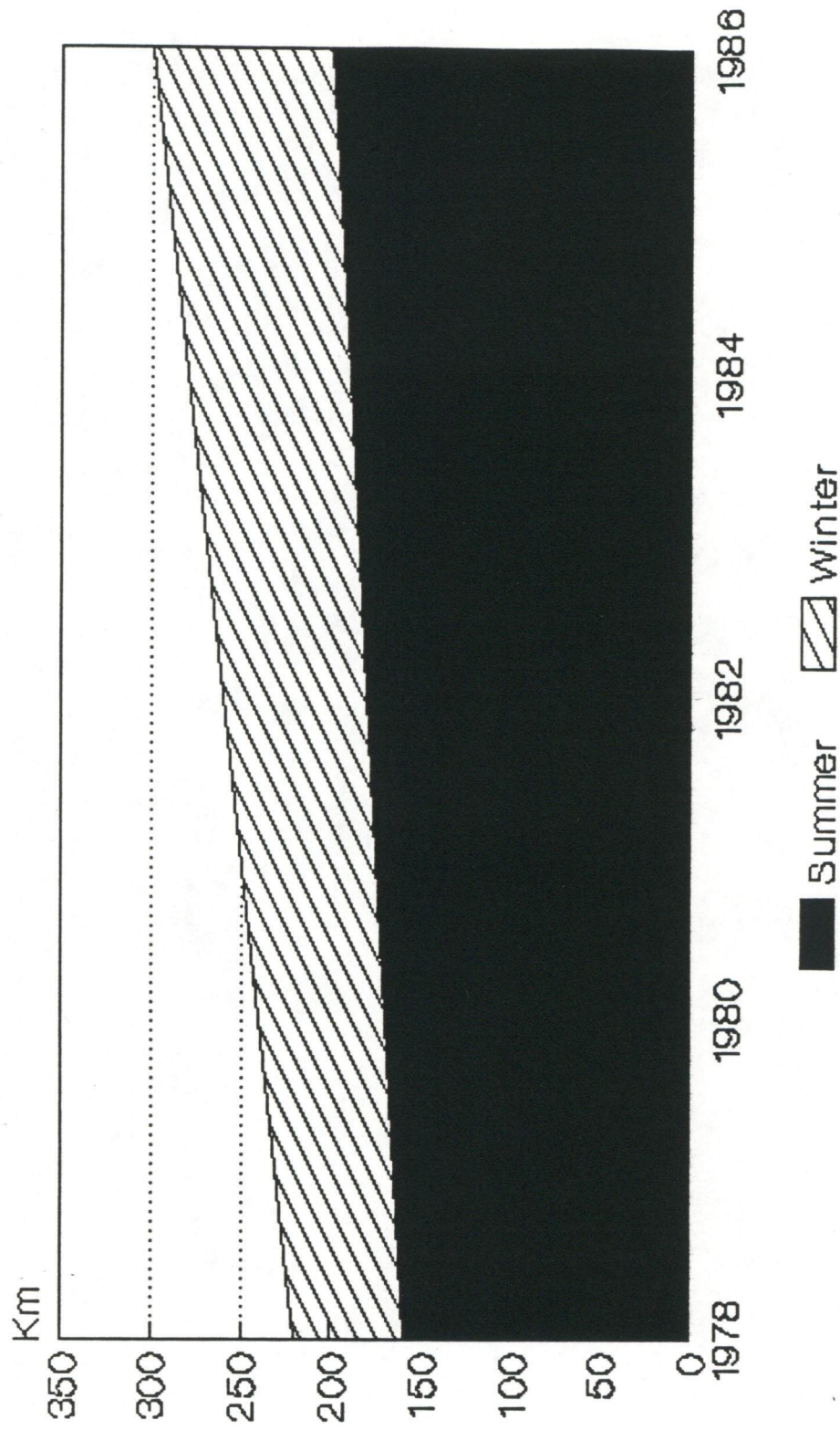
St 112
4/6

SO₂ emissions in the southwest are declining



MTPY - millions of tons/year

The visual range in the Grand Canyon is increasing



Federal laws affecting visibility

- Programs that reduce SO₂ emissions that impair visibility in a National Park will improve visibility in that Park.
- Accordingly, Federal and State emission reduction programs, e.g., NAAQS under the CAA and the SIPS, will improve visibility to the extent they reduce SO₂ emissions that, in turn, affect visibility in the Parks.
- The Clean Air Act Amendments of 1990 contain several provisions that, when fully implemented, will significantly reduce SO₂ emissions and improve visibility in National Parks.
- These new programs include the Acid Rain SO₂ emissions reduction provision.

SDP 3
10/6

Visibility regulatory programs under the CAA

- The Federal Clean Air Act Amendments of 1977 required EPA issue regulations requiring States to issue SIPs to assure "reasonable progress" towards the "prevention of any future, and the remedying of any existing, impairment of visibility" in Class I Areas. (Section 169A, CAA).
- For power plants, "reasonable progress" is defined by a cost/benefit balancing.

EPA's Phase I and Phase II Regulations

- In 1980, EPA concluded that there were two categories of visibility problems:
 - "plume blight" caused by identifiable individual sources; and
 - "regional haze" caused by several sources without attributable plumes.
- EPA announced that it would issue two regulations to deal with these two distinct problems.
- On December 2, 1980, EPA issued its Phase I regulations to allow the regulation of individual sources whose plume impacts a National Park.
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EPA's experience with visibility regulations

- In 1982, the Environmental Defense Fund sued EPA to compel it to revise SIPs to address visibility concerns.
- A settlement agreement was entered in 1984, and the program has been monitored by the Federal courts since that time.
- Even with the oversight of the courts, EPA has not regulated a single source under its Phase I regulations.
- In every case it has reviewed, EPA has concluded that visibility impairment in a National Park was regional haze and could not be "reasonably attributed" to a specific source.
- EPA is trying to fit NGS into Phase I instead of addressing NGS emissions as regional haze, as it should.

The visibility provisions of the CAAAs of 1990

- [general reductions of SO₂ emissions]
- [the new regional haze provisions]
- [the overall emissions limits for future years, specifically, the 1995 and 2000 limits]
- [any other relevant provisions]

Visibility regulatory issues

- when should EPA and the NPS regulate individual sources (as plume blight) and when should they pursue regional haze solutions instead?
- should the regional visibility transport commissions required by the 1990 CAAAs be the primary visibility initiative?
- what SO₂ reductions in addition to those required in the 1990 CAAAs should now be pursued?
- should more be spent to reduce emissions for visibility than for health and safety reasons?

APPENDIX

These issues will be precedential.

They are raised by EPA's ongoing rulemaking to reduce SO₂ emissions at the Navajo Generating Station in Page, Arizona.

The Navajo Generating Station

- Construction of the NGS began in 197_ and the plant became operational in _____. State-of-the-art environmental studies and planning were employed in its development.
- NGS is owned jointly by:
 - the Salt River Project (____%)
 - the Bureau of Reclamation of the Department of Interior (____%)
 - APS
 - Tucson
 - Nevada
 - Los Angeles Department of Power and Water (____%)
- The NGS is operated by the SRP on behalf of the other participants.
- NGS generates 2250 megawatts.

Emissions at the Navajo Generating Station

- NGS burns very low sulfur coal.
- The average SO₂ emissions rate at NGS is .89 lbs./[?].
- When NGS was approved for construction, it agreed to comply with all applicable Federal and State emissions limits. It has.
- In fact, without further controls, NGS will meet even the new emissions limits in the 1990 Clean Air Act Amendments (1.2 lbs./[?]) until 2000.
- For most days of the year, the NGS is downwind of the Grand Canyon National Park. The plant is located east of the Park and the prevailing west-to-east winds blow NGS emissions away from the Park, i.e., to the Northeast.

EPA's NPRM concerning the NGS

- On March 24, 1986, the Secretary of the Interior certified to EPA the existence of visibility impairment in the GCNP and --based upon WHITEX-- that NGS was the probable source.
- Under the court order, this required EPA to consider, under its Phase I rules, whether visibility impairment in the Park could be "reasonably attributable" to NGS.
- On August 29, 1989, EPA issued an NPRM on its conclusion --based on Interior's letter-- that haze in the GCNP during the winter could be "reasonably attributable" to the NGS.
- The court order required EPA to decide by February 1, 1991, whether to initiate a BART rulemaking for the NGS.
- On January 31, 1991, EPA issued a BART NPRM for NGS seeking comment on the appropriate reduction levels to "assure

The Basis for the EPA Rulemaking The WHITEX Experiment

- The proposed attribution determination by EPA was based almost entirely upon the WHITEX experiment conducted by the National Parks Service.
- WHITEX was intended to test the feasibility of using tracers to track emissions from particular sources. It was not designed to quantify the relative contribution of any source to visibility impairment.
- The use of WHITEX to quantify the relative contribution of NGS to visibility in the GCNP was rejected by the National Research Council of the National Academy of Science after Interior's determination and after EPA had drafted its NPRMs.
- The only credible study conducted after WHITEX was the \$14 million study sponsored by the NGS, the most comprehensive visibility study ever undertaken. The NGS study was submitted to the EPA record during the public comment period.

The Conclusions of WHITEX

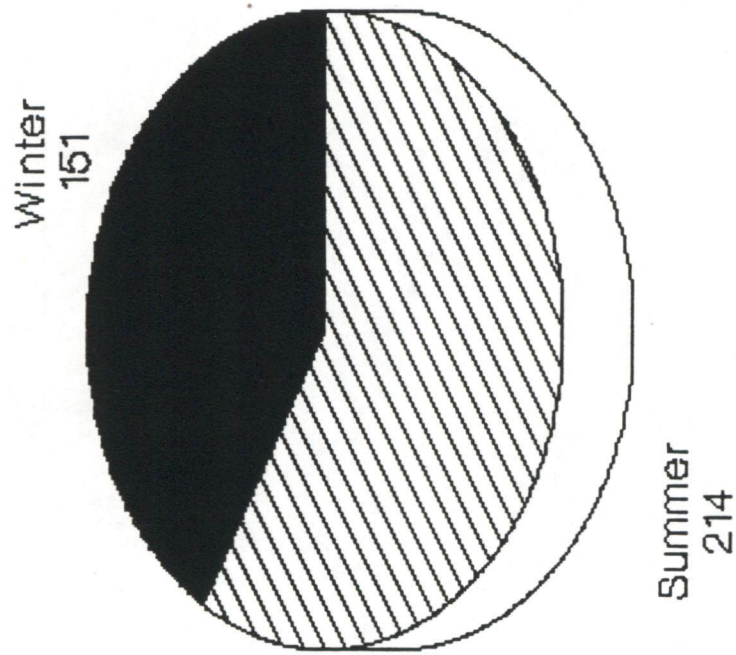
- [list the essential conclusions to mirror those of the NGS]
- [then have another chart--maybe a 3 column-- that compares the results of WHITEX and NGS]
- [This chart should precede srp24]

The Critical Failures of WHITEX

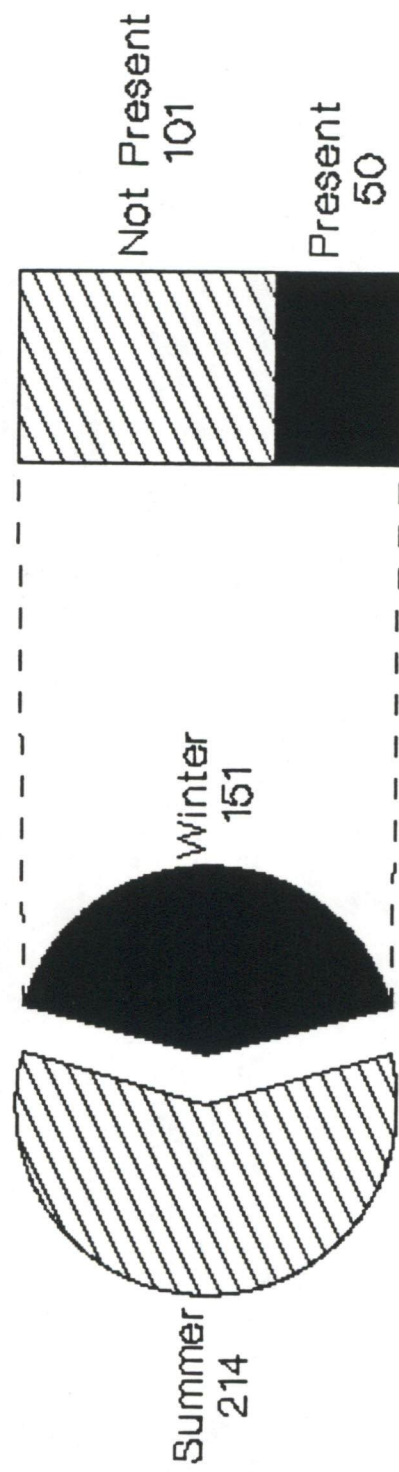
- WHITEX did not measure the contribution of other sources to visibility impairment in the GCNP. Accordingly, it is not possible to assess the relative contribution to such impairment by the NGS. (NRC page
- WHITEX did not provide a means to verify its data.
- [other]
- Substantial errors were made in interpreting the WHITEX data. As a result, the impairment due to NGS was substantially over estimated.

The Results of the NGS Study

Seasons at the Grand Canyon Nat'l Park

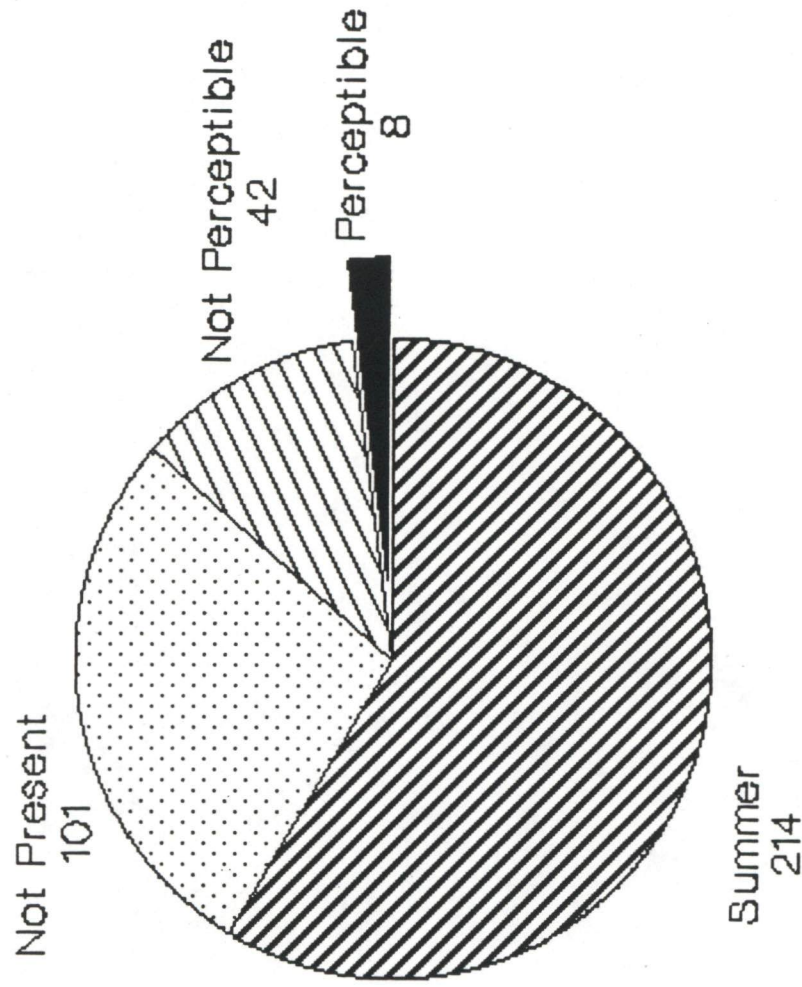


Days when NGS emissions are present



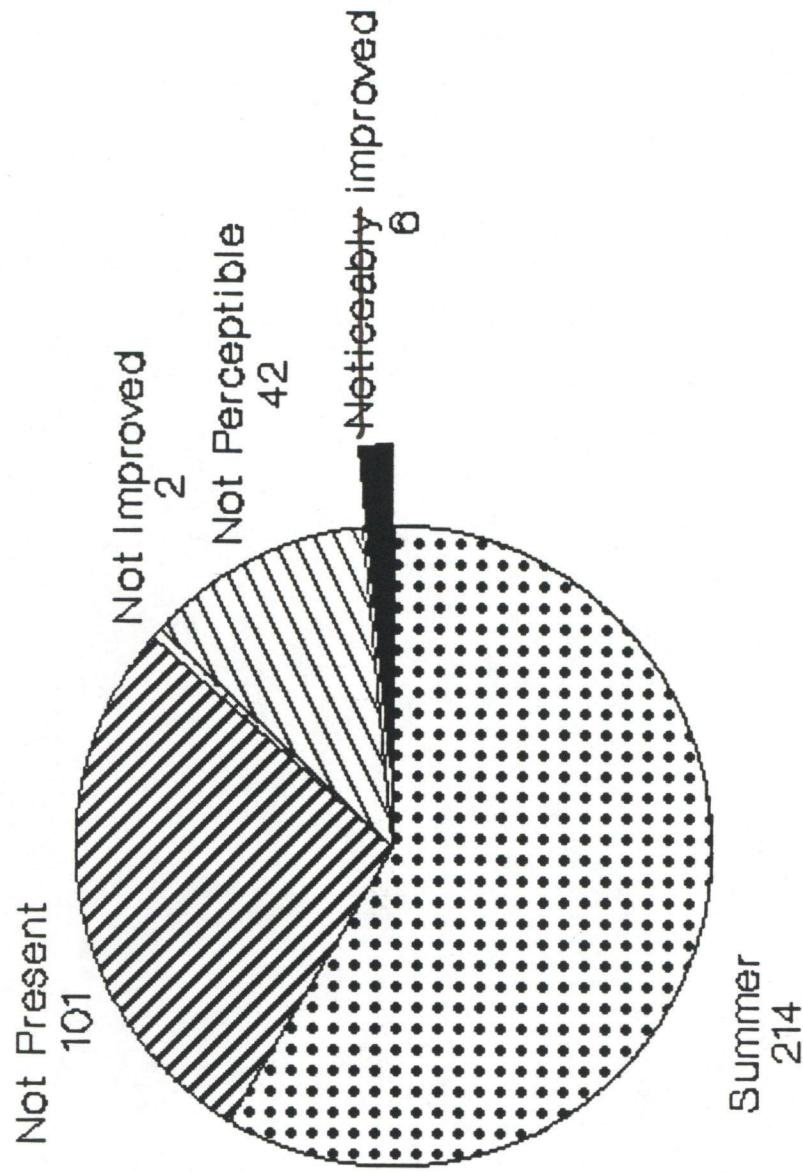
NGS Study dated

Days when NGS emissions are perceptible



NGS Study dated

Days when a 90% reduction would matter



NGS Study dated

Average improvement with a 90% reduction

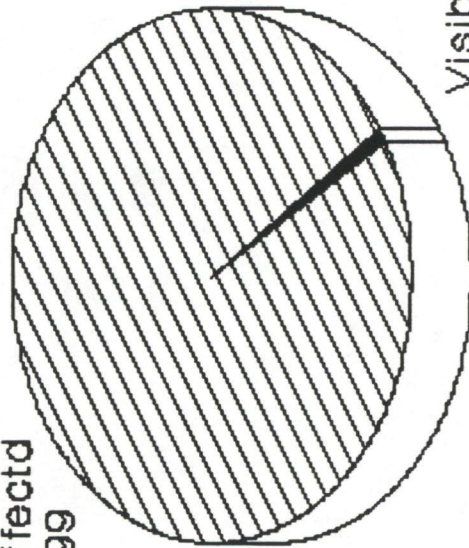
- On average, with a 90% reduction of NQS emissions, on the days when such reduction would be perceptible -- 6 each year -- the average improvement in visibility would be 24%.
- Accordingly, a reduction of 90% of NQS emissions would perceptibly improve about 1% of the visibility impairment at the GCNP during the Winter.
- Similarly, a reduction of 90% of NQS emissions would perceptibly improve about 1/3 of 1% of the visibility impairment at the GCNP during the year.

NGS Study dated

21219

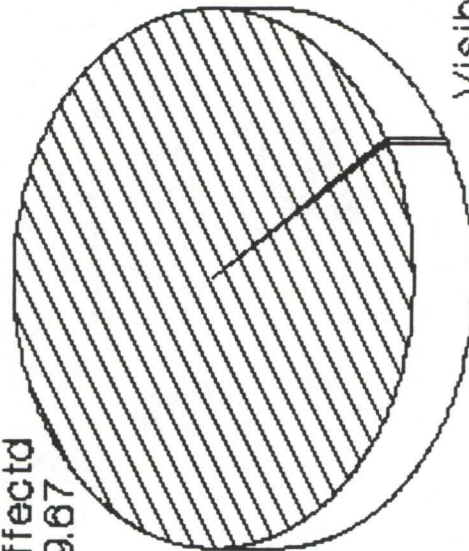
Visibility improvement Reducing NGS Emissions 90%

Visibility
unaffected
99



Winter

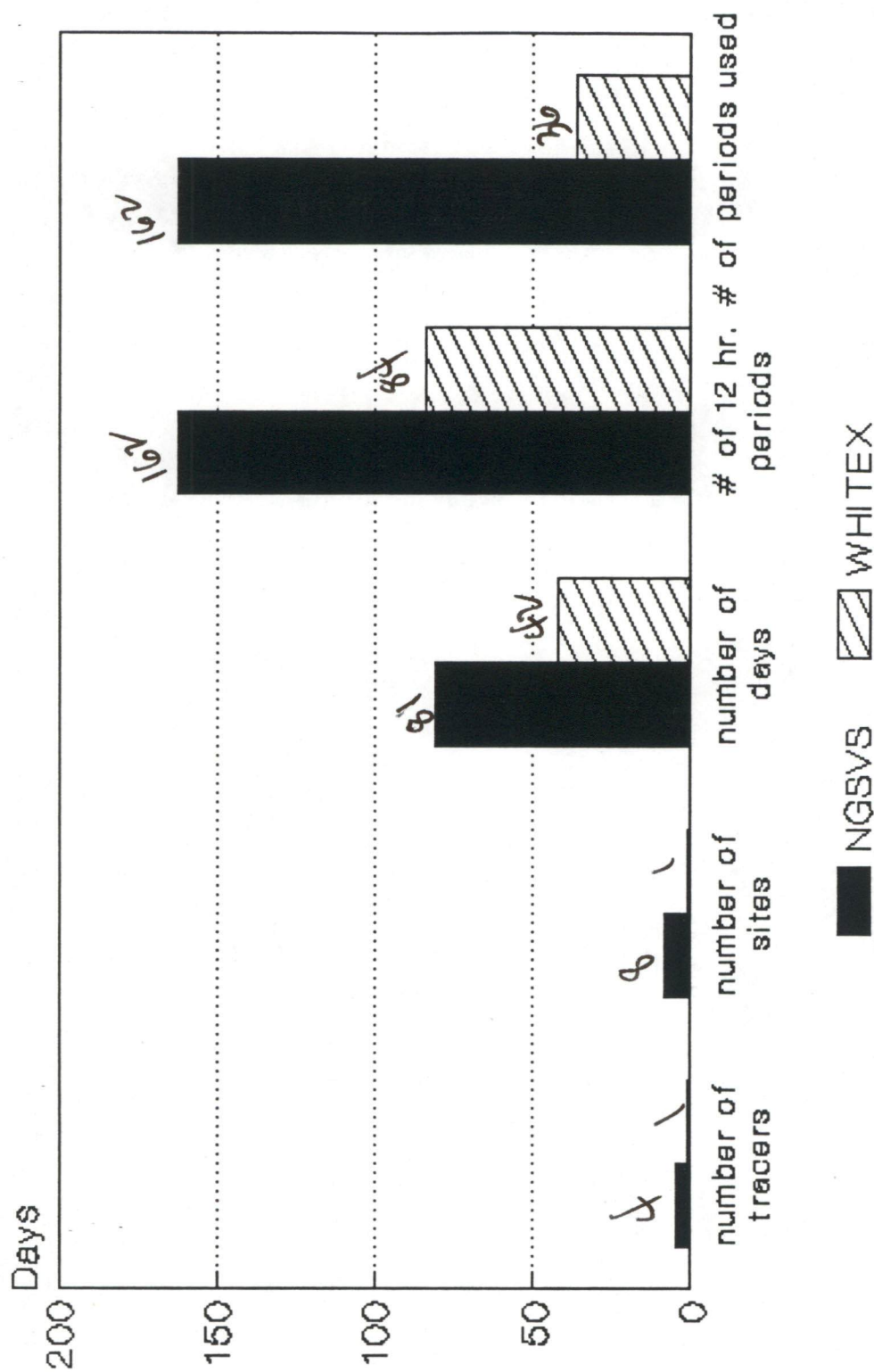
Visibility
unaffected
99.67



Annual

NGS Study dated

NGS Visibility Study vs. WHITE



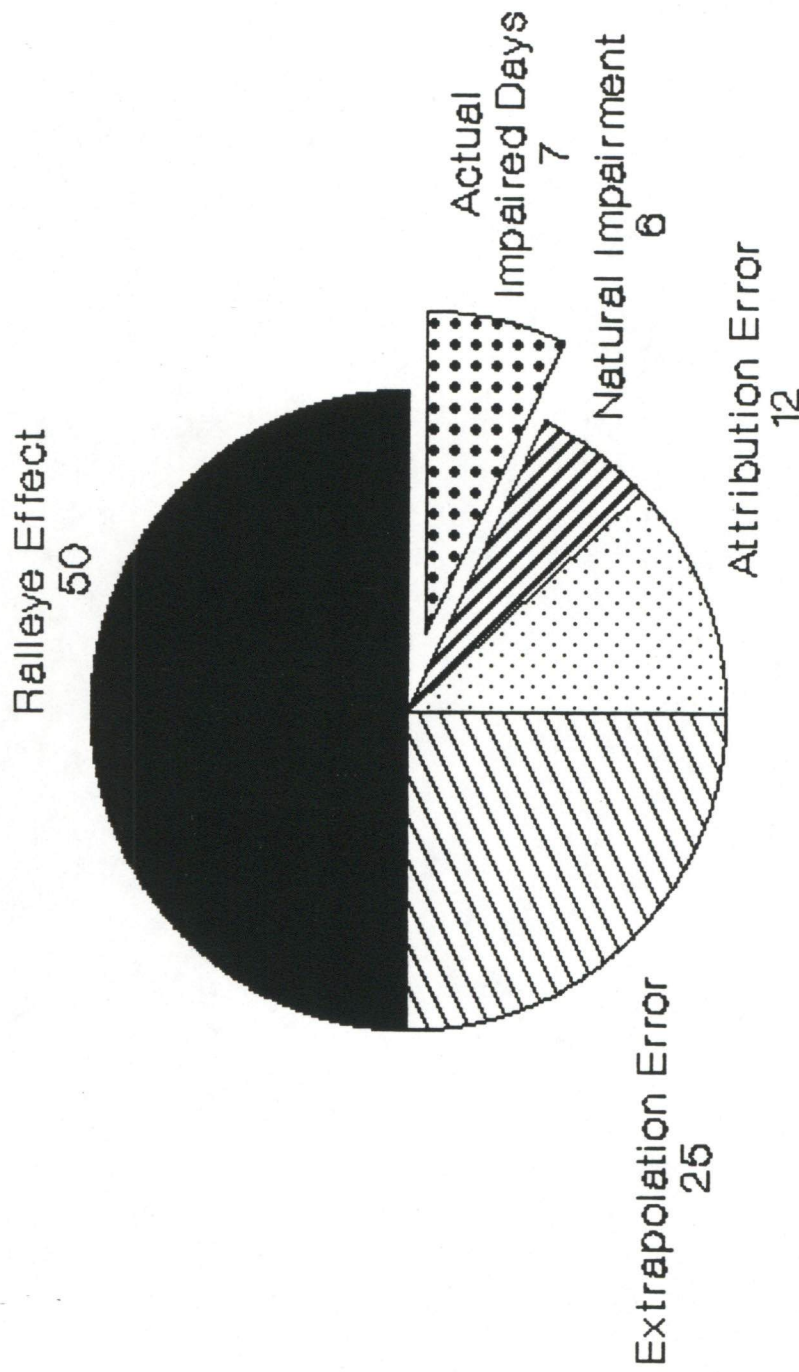
How does NGS Study compare to WHITEX?

There are significant errors in WHITEX

- The National Research Council concluded that WHITEX could not be used to determine the number of days that NGS emissions were present in the GCNP, or the amount of improvement that would result from any reduction in NGS emissions.
- Subsequent to the NRC criticism, EPA and NPS have acknowledged that the calculations based on the WHITEX data did not take into account -- as it should have -- the visibility impairment that naturally results from the air (the Rayleigh effect).
- These same calculations extrapolated the impairment data from severe episodes into periods when that were not severe.
- EPA's NPRM used the discredited excessive estimates of NGS SO2 emissions in the GCNP.
- And finally, EPA counted as days when impairment would be improved, days on which natural conditions, e.g., fog and clouds, would obscure the improvement assumed by EPA.

Correcting WHITEX Errors

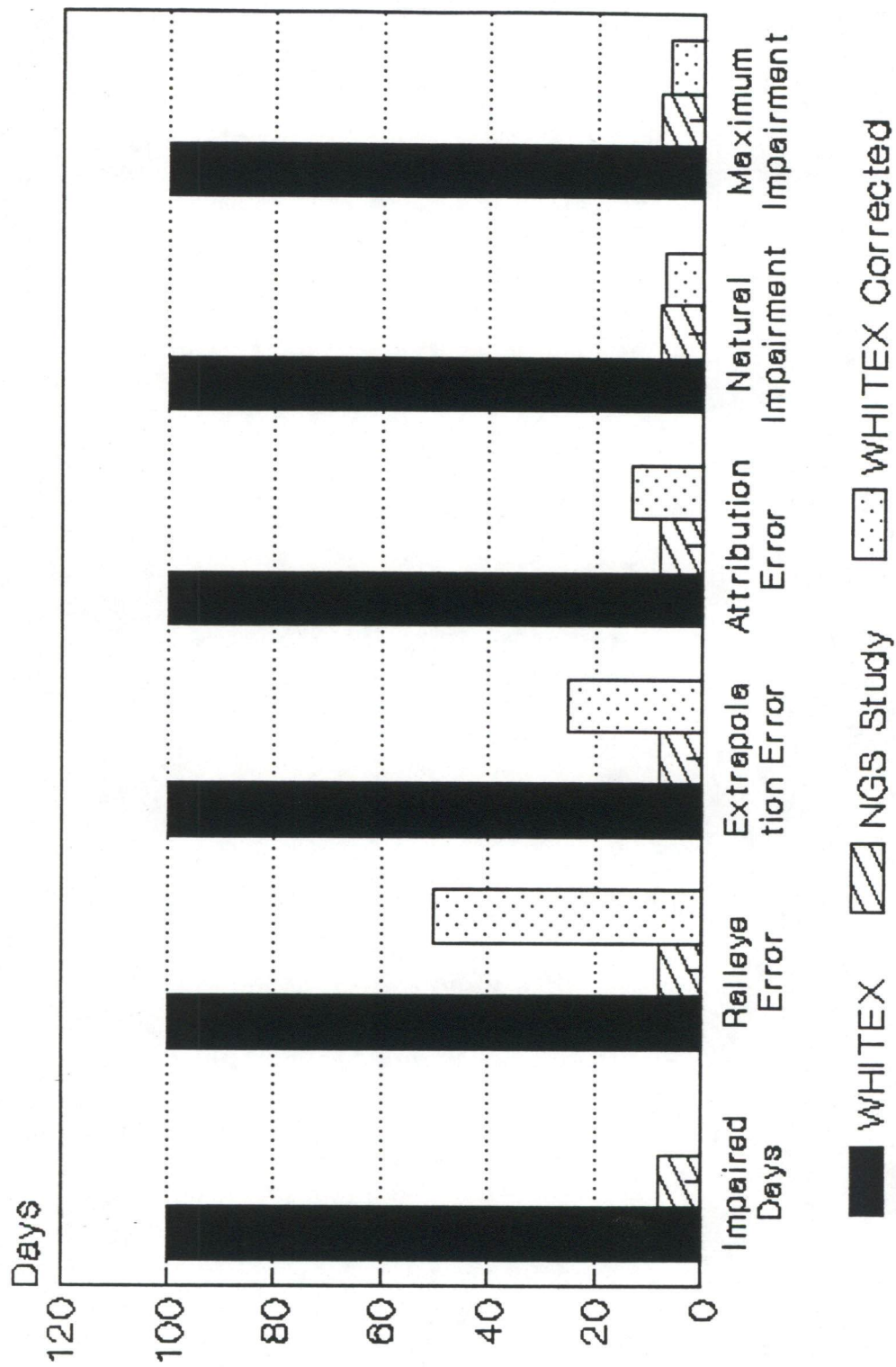
The NPRM assumed 100 NGS impaired days



100 Days

EPA NPRM dated

Comparing NGS with WHITEX



he Costs of Reducing Emissions at NG

01P31:

Valuing the Benefits of SO₂ Reduction

The Consequences of Regulating NGS as Phase I Plume Blight

The Alternatives

8.4.23

FAX COVER SHEET

DILWORTH, PAXSON, KALISH & KAUFFMAN
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Suite 275 North
Washington, D.C. 20004
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(202) 624-5904 (Fax)

DATE:

April 22, 1991

TO:

NAME

Jeff Holmstead

COMPANY NAME

TELECOPY #

456-7929

FROM:

NAME

BR Bradu

TELEPHONE #

NUMBER OF PAGES INCLUDING COVER PAGE:

5

CLIENT/MATTER:

SRP

17128 / 48240

USER NUMBER:

COMMENTS:

Jeff-

Upcoming EPA visibility
meeting. FYI. See you
Thursday.

B.

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OR DON'T RECEIVE ALL OF THE PAGES, PLEASE CALL
(202) 624-5900



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

April 17, 1991

Mr. John McManara
Associate General Manager
Salt River Project
Post Office Box 82025
Phoenix, Arizona 85072-2025

Dear Mr. McManara:

The Environmental Protection Agency (EPA) has received a large amount of technical information during the public comment period on the best available retrofit technology proposal for the Navajo Generating Station. In order to facilitate a complete review of this technical information, this office is organizing a technical meeting to be held at the Environmental Research Center's Auditorium in Research Triangle Park, North Carolina, on April 25 and 26.

The meeting will focus on two areas of technical information which need additional definition: (1) the amount and frequency of visibility impairment at the Grand Canyon National Park and other Class I areas caused by the Navajo Generating Station, and (2) the costs of controlling sulfur dioxide emissions at the Navajo Generating Station. The presentations of the technical details and discussion on the nature of impairment should include monitoring data, meteorological data, model descriptions and implementation procedures, extrapolation of data for specific study periods to nonstudy wintertime periods, and the nonwinter impairment contribution calculations. Costs presentations and discussions shall cover availability of control techniques, cost model assumptions, and assessing the costs of new technologies.

Because of your previously expressed interest and involvement in this rulemaking process, we invite you and your supporting scientists to make presentations at this meeting. The meeting will allow for explanation of information which you and others have placed in the rulemaking docket and is not intended to be a forum for introduction of new material nor a simple representation of that which was presented at the public hearing. After presentation of the information, there will be a structured period of discussion, including questions from EPA staff, its contractors, and other presenting participants. Although the meeting will be open to the general public, they will not be requested to make presentations or respond to questions. Minutes of the meeting will be made and placed in the rulemaking docket. A tentative agenda and list of invited participants is enclosed.

In order to assure complete discussion by all parties, the names and affiliations of all interested presenters should be provided to me as soon as possible, but not later than Monday, April 22. I understand that you will notify the other Navajo Generating Station participants of the time and place of the meeting. I can be reached at 919/841-8350 (RTS 639-5350). We look forward to a productive and informative meeting.

Sincerely,



David M. Stonerfield
Chief

Particulate Matter Programs Section

Enclosures

Meeting Participants

XPA Panel

Dave Stonefield
Leland Deck
Bruce Polkowaky
Don Henry
Marc Pitchford
William Wilson
Nancy Kate

Invited

Salt River Project

Grand Canyon Trust & Environmental Defense Fund

National Park Service

Tentative Agenda
Environmental Research Center
Auditorium

April 25

9:00 - 9:30 Introduction and Format (Facilitator)
9:30 - 10:30 Currently Available Technology
10:30 - 10:45 BREAK
10:45 - 12:00 Cost Models
12:00 - 12:30 Summary of Costs Discussion
12:30 - 1:30 LUNCH
1:30 - 3:30 Grand Canyon Trust and Environmental Defense
Fund Presentation
3:30 - 3:45 BREAK
3:45 - 5:30 Structured Question Period

April 26

8:30 - 10:30 SEP Presentation
10:30 - 10:45 BREAK
10:45 - 12:30 Structured Questions
12:30 - 1:00 Conclusions and Next Steps

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[AD-FRL-]

Approval and Promulgation of Implementation Plans:
Revision of the Visibility FIP for Arizona

AGENCY: U.S. Environmental Protection Agency (EPA).

ACTION: Proposed rule and announcement of public hearing.

SUMMARY: This proposal addresses the need for revising the Federal implementation plan (FIP) for the State of Arizona to include emission limits representing best available retrofit technology (BART) for the Navajo Generating Station (NGS) to remedy wintertime visibility impairment in the Grand Canyon National Park (Grand Canyon). This action is taken pursuant to sections 169A and 110(c) of the Clean Air Act (Act) which require EPA, upon default by a State, to take appropriate measures to remedy certified visibility impairments in mandatory Class I areas where the impairment is reasonably attributed to a specific source. On September 5, 1989, EPA preliminarily attributed a significant portion of wintertime impairment to the NGS (54 FR 36948). The timing of today's action is in accordance with a revised settlement agreement between EPA and the Environmental Defense Fund (EDF) in EDF v. Reilly, No. C82-6850 RPA (N. D. Cal.).

DATE: Comments on this notice of proposed rulemaking should be submitted to the Central Docket Section no later than April 19, 1991.

The EPA has received a written request for a public hearing on this action. A hearing has been scheduled for Monday, March 18, 1991, starting at 1:00 p.m. in the Maricopa County Auditorium, 201 West Jefferson, Phoenix, Arizona. Persons wishing to speak at the hearing should notify the Information Contact by March 11, 1991 at the address given below.

ADDRESS: Comments should be submitted (in duplicate, if possible) to Air Docket (LE-131), Attention: A-89-02A, U.S. EPA, Rm. M1500 Waterside Mall, 401 M Street, S.W., Washington, DC 20460.

Docket: Pursuant to section 307(d)(1)(B) of the Act, 42 U.S.C. 7607(d)(1)(B), this action is subject to the procedural requirements of section 307(d). Therefore, EPA has established a docket for this notice, Docket Number A-89-02A. Materials related to the development of this notice have been placed in this docket. Materials related to EPA's preliminary attribution of a significant portion of the wintertime visibility impairment in the Grand Canyon to the NGS [54 FR 36948 (September 5, 1989)] have been placed in Docket A-89-02. For background information, materials related to the development of the visibility protection program (40 CFR 51.300 et seq.) are available in Docket

A-79-40. Also, materials related to the development of the visibility new source review (NSR) and visibility monitoring strategies are available in Docket A-84-32. Materials related to the visibility long-term strategy, implementation of control strategy, and integral vista program are available in Docket A-85-26. All dockets are available for public inspection and copying between 8:30 a.m. to 12:00 noon and 1:30 p.m. to 3:30 p.m. Monday through Friday at EPA's Central Docket Section, Office of General Counsel, Room 1500, 401 M Street, S.W., Washington, DC. A reasonable fee may be charged for copies. Copies of this Notice, the Guidelines for Determining BART, the BART Analysis for NGS, the Regulatory Impact Analysis and Addendum, and copies of the comments provided by the Federal land manager (FLM), if any, are also available for public inspection at:

Department of Environmental Quality
Office of Air Quality
3003 North Central Avenue, Suite 1700
Phoenix, Arizona 85012

Department of Environmental Quality
Northern Regional Office
2501 North 4th Street, Suite 14
Flagstaff, Arizona 86004

City of Page Municipal Library
697 Vista Avenue
Page, Arizona 86040

FOR FURTHER INFORMATION CONTACT:

David H. Stonefield
U.S. Environmental Protection Agency
Office of Air Quality Planning
and Standards
MD-15
Research Triangle Park, NC 27711.
(919) 541-5350 or FTS 629-5350

SUPPLEMENTARY INFORMATION:

Background

A. Regulatory Requirements

Section 169A of the Act, 42 U.S.C. 7491, sets as a national goal "the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution." Mandatory Class I Federal areas are certain national parks, wildernesses, and international parks as described in section 162(a) of the Act, 42 U.S.C. 7472(a). Section 169A requires that EPA promulgate regulations to assure reasonable progress toward meeting the national goal for mandatory Class I Federal areas where EPA has determined that visibility is an important value. On November 30, 1979, EPA identified 156 areas, including the Grand Canyon in Arizona where visibility is an important air quality related value (44 FR 69122). Section 169A specifically requires EPA to promulgate regulations requiring States to amend their State implementation plans (SIP's) to provide reasonable progress toward meeting the national goal for the 156 areas.

On December 2, 1980, EPA promulgated the required visibility regulations (45 FR 80084, codified at 40 CFR 51.300 et seq.). In broad outline, the visibility regulations require the 36 States listed in section 51.300(b), including Arizona, to: (1) coordinate SIP development with the appropriate FLM's; (2) develop a program to assess and remedy visibility impairment from new and existing sources; (3) develop a long-term (10 to 15 years) strategy to assure reasonable progress toward the national goal; (4) develop a visibility monitoring strategy to collect information on visibility conditions; and (5) consider in all aspects of visibility protection any "integral vistas" (important views of landmarks or panoramas that extend outside of the boundaries of the Class I area) identified by the FLM's as critical to the visitors' enjoyment of the Class I areas. The affected States were required to submit revised SIP's satisfying these provisions by September 2, 1981. See 45 FR 80091, codified at 40 CFR 51.302(a)(1).

The second requirement listed above is of particular relevance to today's action. Pursuant to 40 CFR 51.302(c)(2), each affected State is required to include in its SIP such emission limitations, schedules of compliance, and other measures as may be necessary to make reasonable progress toward the national visibility goal. In addition, under 40 CFR 51.302(c)(1), an FLM may certify to a State

that there exists impairment of visibility in any mandatory Class I Federal area. Pursuant to 40 CFR 51.302(c)(4)(i), where impairment is certified at least 6 months prior to plan submission, an affected State must (1) identify each existing stationary facility which may "reasonably be anticipated to cause or contribute" to any such impairment which is "reasonably attributable to that existing stationary facility," and (2) analyze for BART any facility so identified. "Reasonably attributable" impairment is impairment "attributable by visual observation or any other technique the State deems appropriate" [40 CFR 51.301(s)]. Where a State defaults on its obligations under the visibility regulations, EPA may act in place of the State pursuant to a FIP under section 110(c) of the Act, 42 U.S.C. 7410(c).¹ In such cases, all of the rights and duties that would otherwise fall to the State accrue instead to EPA. Thus, EPA may utilize attribution techniques it deems appropriate; must identify "reasonably attributable" sources of impairment, conduct BART analyses, adopt BART requirements; and may promulgate such other control strategies that EPA, in its discretion, deems necessary to

¹Section 110(c) requires EPA to promulgate FIP's whenever a State fails to submit an implementation plan (or portion thereof) which meets the requirements of section 110; the Administrator determines that a plan (or portion) is not in accordance with the requirements of section 110; or the State fails to revise its plan within 60 days after notification by the Administrator in accordance with section 110(a)(2)(H).

make reasonable progress toward the national visibility goal.

The visibility regulations promulgated at 40 CFR 51.302(c)(4)(i) require that once impairment has been certified, a State (or EPA if the State's visibility protection program addressing BART has not been approved and EPA is acting in its place) must analyze for BART any specific existing stationary facility it identifies as a "reasonably attributable" source of the impairment. Pursuant to section 169A(b) of the Act [42 U.S.C. 7491(b)] and 40 CFR 51.302(c)(4)(iii), the emission limitation representing BART for fossil fuel-fired power plants with a generating capacity in excess of 750 megawatts (MW) must be determined pursuant to guidelines promulgated by the Administrator. This statutorily-required procedure for conducting a BART analysis is found in "Guidelines for Determining Best Available Retrofit Technology Analysis for Coal-Fired Power Plants and Other Stationary Facilities" (EPA-450/3-80-009b) (BART Guidelines).² A copy of this document may be found in Docket A-89-02.

In December 1982, environmental groups, including EDF, filed a citizens' suit in the United States District Court for the Northern District of California alleging that EPA had failed to perform a nondiscretionary duty under section

²As discussed below the Agency is proposing in this rulemaking to make certain modification to these Guidelines.

110(c) of the Act, 42 U.S.C. 7410(c), to promulgate visibility FIP's for the 35 States³ that, at that time, had failed to submit SIP's to EPA as called for by the 1980 visibility regulations, EDF v. Reilly, No. C826850 RPA (N. D. Cal.). The State of Arizona was one of the 35 States that failed to submit a revised SIP to EPA.

The EPA and the plaintiffs negotiated a settlement agreement for the remaining States which the court approved by order on April 20, 1984. For more information on details of the provisions of the settlement, including a schedule of actions by EPA, see EPA's announcement of the agreement at 49 FR 20647 (May 16, 1984).

B. Settlement Agreement

To remedy the States' failure to submit the necessary SIP revisions during the time specified by the regulations, the settlement agreement replaced the original regulatory deadlines for visibility SIP provisions with a rulemaking schedule agreed to by the parties and approved by the court. This schedule required EPA to review the existing SIP's to determine any deficiencies, allow the States to cure those deficiencies, and to promulgate FIP's on a specified schedule for those States that still did not submit visibility SIP revisions to EPA. Specifically, the first part of the agreement required EPA to promulgate FIP's which

³The State of Alaska had submitted a SIP which was approved on July 5, 1983 at 48 FR 30623.

cover the monitoring and NSR provisions of 40 CFR 51.305 and 51.307. The EPA promulgated its monitoring strategy for 23 States and its NSR provisions for 21 States at 50 FR 28544 (July 12, 1985), 51 FR 5504 (February 1, 1986), and 51 FR 22937 (June, 1986). In separate notices, EPA approved the SIP's of the other States with respect to monitoring and NSR.

The second part of the settlement agreement required EPA to determine the adequacy of the SIP's to meet the remaining provisions of the visibility regulations and gave the States until December 1986 to submit additional measures that would avoid the need for a FIP. These provisions are the general plan provisions, including BART and other implementation control strategies (section 51.302), integral vista protection (section 51.302-307), and long-term strategies (section 51.306). The settlement agreement required EPA to promulgate FIP's to remedy any deficiencies on a specified schedule.

Pursuant to 40 CFR 51.302(c)(1), on November 14, 1985, the Department of the Interior (DOI) certified the existence of visibility impairment in all Class I areas within its jurisdiction in the lower 48 States.

On January 23, 1986, EPA determined that the SIP's of 32 States (including Arizona) were deficient with respect to the remaining visibility provisions (51 FR 3046) and offered the States an opportunity to submit corrective SIP

revisions. Thereafter, EPA and the plaintiffs negotiated revisions to the settlement agreement which extended the deadlines for State action or, if the States failed to respond, Federal action proposing FIP's to remedy these deficiencies. The court approved these revisions by its order of September 9, 1986.⁴

On March 24, 1986, the DOI sent letters to EPA which supplemented its earlier certification of visibility impairment. The letter addressed the Grand Canyon and identified the NGS, a coal-fired power plant located near Page, Arizona, as a probable source of impairment in this Class I area. A copy of this letter may be found in Docket A-89-02.

The affected States failed to submit visibility SIP revisions in response to the notice of deficiency. Consequently, in accordance with the revised settlement agreement, on March 12, 1987 (52 FR 7802), EPA proposed to disapprove the SIP's of 32 States, including Arizona, for failing to meet the remaining provisions of the visibility regulations, including general plan requirements [which in turn includes BART and other control strategies (section 51.302) and long-term strategies (section 51.306)]. Also in accordance with the agreement, on November 24, 1987 (52 FR 45132), EPA took final action disapproving the affected

⁴A copy of the settlement agreement and revisions is available in docket A-85-26 at the address given at the beginning of this notice.

SIP's, again including Arizona. The EPA promulgated, as FIP measures under section 110(c), general plan requirements and long-term strategies for these States. The EPA also determined that BART was unnecessary in 28 States because it could not reasonably attribute any part of the impairment to specific sources. In addition, under the revised agreement, EPA deferred until August 31, 1988 a decision regarding the need for BART or other control measures in the FIP's for the States of Arizona, Maine, Minnesota, and Utah to address certified visibility impairments in seven Class I areas in these States which potentially could be reasonably attributed to a specific source pending acquisition and evaluation of additional monitoring information regarding the potential sources of impairment. The EPA required additional information to determine whether any part of the impairment in any of these Class I areas is "reasonably attributable" to an existing stationary facility, and to enable a BART analysis for any source so identified as causing or contributing to visibility impairment [40 CFR 51.302(c)(4)(i)].

Because EPA required information which was forthcoming but not available in time to meet the August 31, 1988 deadline, the Agency sought and received a second extension, until August 31, 1989, of the deadline for issuing a rulemaking proposal regarding the need for BART or other control measures to remedy visibility impairments in three

of the remaining Class I areas (Moosehorn Wilderness, Grand Canyon National Park, and Canyonlands National Park). With regard to the impairment in the Grand Canyon, EPA delayed action in order to allow the National Park Service (NPS) time to analyze the data from a 1987 winter visibility attribution study, termed the Winter Haze Intensive Tracer Experiment (WHITEX), conducted in the Colorado Plateau where this Class I area is located. In the meantime, on May 19, 1989 (54 FR 21904), in accordance with the second revision to the settlement agreement, EPA promulgated decisions concerning certified visibility impairments in four of the seven Class I areas. Based on monitoring conducted in these areas, EPA found that no part of the visibility impairments were reasonably attributable to any specific source. Therefore, EPA determined that it was not necessary at that time to revise the FIP's for the States of Maine, Minnesota, and Arizona to include BART or other control strategies to remedy impairments in Roosevelt Campobello International Park (Canada), Voyageurs National Park (Minnesota), Saguaro Wilderness (Arizona), and Petrified Forest National Park (Arizona).

In April 1989, EPA received a draft report on WHITEX from the NPS. Because of the delay in receiving this report, EPA believed that it lacked sufficient time to complete all actions in determining whether impairment in the Grand Canyon was reasonably attributable to a specific

source, conduct a BART analysis, and issue a proposal regarding BART by the August 31, 1989 deadline.

Accordingly, EPA and EDF filed a joint motion to revise the settlement agreement for a third time, which was approved by order of the court dated July 6, 1989. Under this revision, there was no change in the deadlines for proposed action regarding Canyonlands National Park or Moosehorn Wilderness. As to the Grand Canyon, the third revision to the settlement agreement divided EPA's duty into two parts. The EPA would proceed, on a preliminary basis, to issue a finding on reasonably attributable impairment by the August 31, 1989 deadline. However, if EPA did provisionally identify a specific source of impairment, it would solicit comments on that finding and would have additional time to conduct a BART analysis. The EPA was to issue a rulemaking proposal on the need for BART by February 1, 1990 unless, in response to comments, EPA rejected its proposed identification and instead determined that BART was unnecessary.

In accordance with the third revision to the settlement agreement, EPA published a notice of proposed rulemaking on September 5, 1989 (54 FR 36948). Regarding Moosehorn Wilderness, EPA identified a source of the certified impairment, but proposed that BART was unnecessary at this time because the impairment would be adequately remedied by the retirement of certain existing emission units and the addition of pollution controls on other units pursuant to a

permit issued under the Act's prevention of significant deterioration provisions. As to Canyonlands National Park, EPA could not reasonably attribute the certified impairment to a specific source and so proposed that BART was unnecessary. On June 13, 1990 (55 FR 24060), EPA promulgated its decisions that BART at that time was not necessary to address impairment in either the Moosehorn Wilderness or the Canyonlands National Park.

Regarding the Grand Canyon, EPA preliminarily attributed a significant portion of wintertime visibility impairment to emissions from the NGS. The EPA reviewed the draft NPS report on WHITEX⁵ and concurred with the findings of the NPS that NGS, located approximately 20 kilometers from the boundary of the Grand Canyon, is a substantial contributor to the wintertime visibility impairment. The EPA solicited comments on the merits of its preliminary attribution finding. In addition, EPA discussed certain legal and regulatory issues relating to the BART process, as it might affect NGS, that had previously been raised by the Salt River Project (SRP) and Alabama Power Company, et al., and solicited comments on those issues.

In commenting on the September 5, 1989 notice, SRP and others renewed their earlier arguments on legal and regulatory issues. They also made new arguments alleging

⁵Malm, et al., "The National Park Service Report on WHITEX Draft Final Report" (April 7, 1989).

that they could not comment adequately on EPA's preliminary attribution finding because the NPS draft WHITEX report on which it was based was subject to change. All of the issues raised by SRP are addressed in detail in a later section of this notice. The EPA notices, however, that comment regarding the adequacy of the September 5, 1989 notice and the draft WHITEX report have been rendered moot by the fact that the NPS has now issued a final report on WHITEX⁶ and by today's notice. This notice contains the complete statement of basis and purpose for a regulatory proposal required under section 307(d)(3) of the Act, and reopens the comment period on the issue of reasonably attributable impairment, as well as providing an opportunity to comment on all other issues relevant to this rulemaking.

On August 1, 1989, the SRP, et al., and Alabama Power Company, et al., intervenors in EDF v. Reilly, moved the court to modify the rulemaking schedule under the settlement agreement. In this motion, the intervenors challenged the court's jurisdiction to order EPA to conduct any rulemaking that might result in the installation of BART at NGS. The intervenors later filed a separate motion requesting a 1-year delay in the rulemaking schedule. By order dated November 22, 1989, the court denied the intervenors' motion challenging the court's jurisdiction. By order dated

⁶Malm, et al., "The National Park Service Report on WHITEX Final Report" (December 4, 1989).

January 9, 1990, the court granted the intervenors' motion to extend the deadlines. This order set February 1, 1991 as the new deadline for EPA to propose whether or not to require BART emission limits for the NGS to remedy winter visibility impairment. The order also extended the deadline for final action on any proposal regarding BART until October 1991 (6 months after the close of the comment period)⁷.

The National Research Council of the National Academy of Sciences (NAS) has reviewed the scientific methods used in the WHITEX report and has issued a report. The qualitative assessment in the NAS report entitled "Haze in the Grand Canyon; An Evaluation of the Winter Haze Intensive Tracer Experiment" (October 1990) supports EPA's finding that, on some days, NGS contributes significantly to haze in the Grand Canyon. The NAS report has been placed in the rulemaking docket.⁸ The report also finds that the data base and data analyses techniques in WHITEX alone were not sufficient to ascertain the quantitative NGS contribution to haze at any given time. The EPA solicits comment on both the relevance of the report to today's action and its contents.

⁷EDF has appealed the extension of rulemaking deadlines in this case EDF v. Reilly, No. 90-15264 (9th Cir.). That appeal is pending.

⁸Additional copies of this report are available from the National Academy Press, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.

Another study effort has been undertaken by SRP. This study is intended to measure the degree of contribution by the NGS to visibility impairment in the Grand Canyon during the 1989-1990 winter season. The EPA has received some preliminary results from this study and has placed them in Docket A-89-02A. However, EPA has not yet received final results of or a report on the study. If the final study results and report are submitted during the comment period of this action, and if EPA's review of the report indicates that the latest information would materially affect the proposed attribution decision which is the underlying basis for this rulemaking (including the emission limitations proposed herein), the EPA will reopen the public comment period to consider such additional information.

C. Navajo Generating Station

The NGS is a 2250 MW coal-fired power plant located near Page, Arizona, approximately 20 kilometers from the northern boundary of the Grand Canyon. The NGS is a baseload generating station consisting of three 750 MW units which became operational between 1974 and 1976. The NGS is jointly owned by the U.S. Bureau of Reclamation, the SRP, the Los Angeles Department of Water and Power, the Arizona Public Service Company (APS), the Nevada Power Company, and the Tucson Gas and Electric Company. Existing pollution control equipment at NGS include electrostatic precipitators

for particulate matter (PM) removal and specific burner design for nitrogen oxides (NO_x) control.

Potential adverse impacts to the environment, especially to air quality, have been of concern to citizens and State and Federal agencies since construction of the plant was first announced in the late 1960's. In April of 1970, the Secretary of the Interior expressed his concerns over potential environmental impacts of the NGS in a memorandum to the Assistant Secretary for Water and Power Development. Secretary Walter Hickel stated, "As you know, the Department is concerned with and is an outspoken advocate for protection and enhancement of the quality of our Nation's natural environment. The Grand Canyon area of the Colorado River is of particular concern to me. We must not allow anyone to pollute the environment there, and it would be unthinkable for us to pollute it ourselves."⁹ On February 3, 1971, in a letter to EPA, the Arizona Division of Air Pollution Control expressed its concern about the impact of the power plant on visibility in the region and requested EPA to provide information on the impact of the NGS emissions on visibility.¹⁰

⁹Memorandum from Walter J. Hickel, Secretary of the Interior, to the Assistant Secretary of Water and Power Development, April 3, 1970.

¹⁰Letter from Arizona Division of Air Pollution Control to EPA, February 3, 1971.

In response to these and other concerns, NGS issued a strong policy statement indicating that its NGS participants were committed to ensuring environmental protection. Furthermore, the NGS stated, "the plant will be designed so that additional control equipment, including devices for removal of oxides of sulfur, can be added when developed."¹¹ In the final environmental statement for the Navajo Project, NGS participants stated, "the participants have committed themselves to installing sulfur dioxide (SO₂) removal systems on all three units at the Navajo Generating Station It is planned that an SO₂ removal system will be installed and operative before . . . May 1975."¹² Although most commitments made by NGS for installing SO₂ removal systems centered around complying with State or Federal ambient air quality standards, NGS acknowledged in the final environmental impact statement that operation of the plant could result in adverse visibility impacts. Furthermore, the NGS participants indicated that a goal of the participants in the Navajo Project was to prevent such adverse impacts.¹³

In summary, all of the above citations indicate that the protection of visibility in the Colorado River Basin was

¹¹Policy statement by the participants in the NGS, 1971.

¹²Final environmental statement for the Navajo Project, page 31, February 4, 1972.

¹³Ibid. pg. 59.

of concern prior to construction of the NGS. Moreover, statements made by the NGS participants indicate a strong commitment to protecting the environment (including visibility). All of the above historical documents, including the draft and final environmental statements for the NGS, have been placed in Docket A-89-02.

Today's Action

The September 5, 1989 preliminary finding that a significant portion of wintertime impairment in the Grand Canyon was reasonably attributable to NGS was not based on any single analytical technique in the WHITEX report, but rather on the collection of techniques performed by the NPS using WHITEX and other data. All of the techniques used by the NPS support the conclusion that for most days which tracer data are available, NGS is a significant contributor to visibility impairment in the Grand Canyon during the winter months. The EPA has reviewed the NPS December 4, 1989 final report on WHITEX and the NAS evaluation of that report and finds no basis to reverse the Agency's preliminary finding that a significant portion of the visibility impairment in the Grand Canyon is reasonably attributable to NGS. The EPA solicits comments on the merits of today's proposed reasonable attribution finding. The EPA has reviewed comments by SRP and by others on the September 5, 1989 notice criticizing the draft WHITEX report and EPA's reliance on it in making a preliminary reasonable

attribution finding. The EPA is seeking additional comment on this and related studies, but is not persuaded by these comments to reverse its preliminary finding at this juncture. The EPA will address in detail technical issues regarding the attribution question following receipt of comments on the final WHITEX report and NAS evaluation and will make a final attribution finding in conjunction with its final action on today's regulatory proposal.

In June of 1989, EPA began to gather preliminary information on the NGS that could be used in a BART analysis. An EPA contractor visited the power plant in order to compile site-specific data. Following publication of the September 5, 1989 notice preliminarily attributing impairment in the Grand Canyon to NGS, a full-scale BART analysis was initiated. In accordance with the BART Guidelines (EPA-450/3-80-009b)¹⁴ and 40 CFR 51.301(c), the analysis included consideration of the following: the costs of compliance, the energy and nonair quality environmental impacts, any existing pollution control technology in use at the facility, the remaining useful life of the source, and the degree of improvement in visibility anticipated to result from application of controls. A copy of the BART Guidelines may be found in Docket A-89-02A.

¹⁴U.S. EPA "Guidelines for Determining Best Available Retrofit Technology Analysis for Coal-Fired Power Plants and Other Existing Stationary Facilities," November 1980.

In order to evaluate its BART analysis approach, EPA considered the cost-benefit analysis conducted as a part of the preliminary Regulatory Impact Analysis (RIA) (as required by Executive Order 12291) for this rule. This analysis also satisfies the requirements of section 317 of the Act regarding economic impact assessments. A more detailed discussion of the benefits associated with improving visibility in the Grand Canyon is found in the "Benefit Analysis" section of this notice.

The BART Guidelines published in 1980 stated that the level of control necessary to meet the new source performance standard (NSPS) for power plants¹⁵ is generally available to large power plants.¹⁶ However, the guidelines do allow the State (or EPA in this case) to propose an emission limit other than NSPS if the limit proposed reflects a "reasonable balance of the various BART factors."¹⁷ The BART Guidelines further state that, if the State (or EPA) set a BART limit equivalent to the NSPS level of control, no detailed analysis of the BART factors would be required.¹⁸ In light of the Clean Air Act Amendments of 1990, EPA believes that the BART Guidelines are outdated in certain respects, and should be revised.

¹⁵See 40 CFR 60 subpart Da.

¹⁶BART Guidelines at 1.

¹⁷Id. at 20.

¹⁸Id. at 20-21.

The 1990 Amendments embody certain statutory changes that represent a general Congressional policy judgment to move away from rigid control technology requirements and towards an emphasis on air pollution control strategies that reflect flexibility and market-based incentives. In particular, section 403 of the Amendments revised section 111(a)(1) of the Act to repeal the percent reduction requirement under the NSPS program. Also, Title IV of the Amendments added an acid deposition control program, the essence of which is the use of market-based incentives (through freely tradable allowances under section 403 of the revised Act) to achieve the greatest reductions in SO₂ emissions at the least cost.

In light of these developments, and considering the statutory mandate in section 169A to consider the various BART factors of cost, energy effects and the degree of visibility improvement, EPA believes it would be inappropriate to base BART analyses on NSPS-level controls. In this case, EPA has conducted a thorough analysis of the statutory BART factors that is consistent with the existing Guidelines, rather than base its analysis on NSPS controls. The Agency believes that all future BART analyses should also carefully balance the statutory BART factors. Accordingly, by this notice EPA solicits comment on the BART Guidelines, and specifically on whether the BART Guidelines should be amended concurrently with this BART rulemaking.

Based on those comments, EPA will decide at the time of final action on today's BART proposal for NGS whether to amend the Guidelines.

In addition, EPA notes that the value of marketable allowances under section 403 of the Clean Air Act as amended by the Clean Air Act Amendments of 1990 will be made available to SRP should BART be installed. The EPA has factored the value of these allowances into its calculations of the cost of BART. The Agency believes that this is consistent with the estimation of BART costs under the BART Guidelines. However, EPA also solicits comments on whether the BART Guidelines should be revised as part of this rulemaking in order to consider the value of marketable allowances available under section 403 of the Act.

In today's action, EPA proposes to revise the FIP for Arizona to include this emission limit representing BART to address the visibility impairment observed in the Grand Canyon. Because of the uncertainty in determining the improvement in visibility expected as a result of reducing emissions at the NGS, EPA is considering and solicits comment on four options for BART at NGS:

1. A continuous SO₂ emission limitation of 0.30 pounds per million British Thermal Units (lbs/MMBtu). Compliance would be determined on a 30 day rolling average and would be phased in between 1995 and 1999.

2. A continuous SO₂ emission limitation of 0.50 lbs/MMBtu. Compliance would be determined on a 30 day rolling average and would be phased in between 1995 and 1999.
3. A continuous SO₂ emission limitation of 0.10 lbs/MMBtu. Compliance would be determined on a 30 day rolling average and would be phased in between 1995 and 1999.
4. SRP would test alternating control technologies and if one of the technology met a minimum removal efficiency at a set cost the NGS would install that technology and operate it in the winter time. If none of the technologies met the test criteria, NGS would reduce it emission by 70 percent (0.30 lbs/MMBtu emission limit) measured on an annual basis by the year 2000.

More details on these options are provided these below.

The EPA is proposing this first option of 0.30 lbs/MMBtu emission limit. That option includes a 30 day rolling average but EPA is requesting comment on whether a different averaging period may be more appropriate.

The EPA also invites comments on the legal and regulatory issues raised by SRP and others. These issues are identified and discussed in a later section.

A public hearing on this action will be on Monday, March 18, 1991 at 1:00 p.m. in the Maricopa County Auditorium, 201 West Jefferson, Phoenix, Arizona.

A. Discussion of Impairment

The DOI has documented the occurrence of visibility impairment at the Grand Canyon during winter (November - March) inversion conditions (see discussion at 52 FR 7802). This Park is a mandatory Class I Federal area located in the Colorado River area of the Colorado Plateau. The visibility impairment identified in this National Park during the winter months has been described as a haze "with a bright white layer and a distinct upper edge and it occasionally includes one or more perceptible layers."¹⁹

The WHITEX study, a 6-week study conducted in January and February 1987 in the Colorado River area, was designed to evaluate the ability of a variety of receptor modeling approaches to attribute all or a meaningful portion of the visibility impairment in several Class I areas. The NGS was chosen as the test candidate because 1) it had documented build up of haze layers around the facility, 2) it was the largest uncontrolled power plant in the Southwest, 3) it is located a few miles from the Grand Canyon and near several other National Parks, and 4) it is a large isolated source. The WHITEX study was a cooperative effort between several

¹⁹Malm, et al., "The National Park Service Report on WHITEX Final Report," December 4, 1989, pg. 4.

utility groups including SRP--the operators of NGS--and several government agencies including NPS. The WHITEX study employed several attribution methodologies including the use of a unique tracer injected into the NGS stack to track the power plant's plume. A meteorological analysis was conducted to document the wind flow patterns and stagnation events occurring during the winter months.

The study area consisted of three major and nine surrounding monitoring sites. Major monitoring sites were located in the Grand Canyon (at Hopi Point), Canyonlands National Park, and Page, Arizona (near the Glen Canyon Dam). The surrounding sites were located in potential transport pathways in the study area. Extensive air quality monitoring was conducted at these sites to evaluate NGS' contribution to visibility impairment in the area.

The NPS calculated a light extinction budget for each of the three major sites based on optical and aerosol measurements taken simultaneously at each site. The light extinction budgets express the relative contribution to light extinction by various aerosol constituents (e.g., sulfates or organics) or the type of extinction observed (e.g., scattering or absorption). Light extinction, a standard measure of visibility impairment, is the combined effect of light scattering and absorption. The NPS found that scattering due to fine particle sulfates accounted for

the largest share of anthropogenic visibility impairment during the WHITEX study period in the Grand Canyon.

The NPS then attributed the extinction (due to fine particle sulfates) to specific source(s) using various receptor modeling techniques. Both statistical methods and a deterministic model were used to estimate the relative contributions of sources within the study area to visibility impairment observed during the 6-week study. Other less quantitative techniques were also used to attribute the impairment observed to specific sources. An emissions analysis was conducted along with a meteorological analysis and an analysis of the spatial patterns and temporal trends in ambient sulfate concentrations.

The NPS report on WHITEX concludes that NGS was the largest single contributor to visibility impairment in the Grand Canyon during the days for which tracer data were available. The analytical techniques conducted by the NPS indicate that under certain meteorological conditions which are common in the area during the winter months, large quantities of SO₂ and sulfate from NGS are transported into the Grand Canyon. The tracer analysis included measurement at Hopi Point (on the rim of the Grand Canyon) of the unique tracer, deuterated methane, which was injected into the NGS stack. An analysis of synoptic meteorology showed that the high sulfate episodes observed during the WHITEX study

period were typical results of transport and transformation of pollutants during the wintertime.

The NPS analyzed extensively the data collected at Hopi Point during the three major sulfate episodes. All of the analytical techniques used by NPS suggest that NGS is a significant contributor to visibility impairment during the winter months in the Grand Canyon. The NPS data indicate that, for days tracer data are available, NGS contributes approximately 40 percent on the average to the observed wintertime visibility impairment and approximately 60-70 percent during the worst visibility impairment episodes. During some episodes, the NPS analysis identified copper smelters located in southern Arizona and Mexico as probable major contributors to visibility impairment. It is important to note that subsequent to the 1987 study timeframe, these sources have either been controlled to reduce emissions or shut down.

Using the draft NPS report on WHITEX as a basis, EPA, on September 5, 1989, proposed to find that NGS may reasonably be anticipated to cause or contribute to visibility impairment in the Grand Canyon during the winter months. A copy of the final report has been placed in Docket A-89-02. As required by section 169A of the Act, EPA conducted a BART analysis to determine if new emission limits were required to address this impairment. The

results of the BART analysis are discussed later in this notice.

National Academy of Sciences Review of WHITEX

In early 1990, the National Research Council of the NAS established the Committee on Haze in the National Parks and Wilderness Areas to address issues related to visibility degradation in these protected areas. The Committee was asked by the DOI to consider the relative importance of human-derived and natural emissions that contribute to visibility reduction in these locations and to evaluate possible source-control approaches. As part of its charge, the Committee was asked to evaluate the WHITEX report and its conclusion that the NGS contributed to wintertime visibility impairment in the Grand Canyon. The Committee met at the Grand Canyon from March 28-31, 1990. The Committee issued its report on WHITEX on October 11, 1990, a copy of which is in the docket. On the basis of the data presented to the Committee in the NPS-WHITEX report, the Committee concluded that, at some times during the study period NGS contributed significantly to haze in the Grand Canyon. This finding supports EPA's proposed attribution decision. However, the Committee also concluded that WHITEX did not quantitatively determine the fraction of sulfate aerosol and resultant haze in the Grand Canyon that is attributable to NGS. The Committee cited problems with the tracer mass balance regression (TMBR) and differential mass

balance (DMB) regression calculations which, in the Committee's judgment, prevent the quantification of NGS' contribution to haze due to sulfate at the Grand Canyon. The key deficiencies cited for TMBR were lack of tracers for other than NGS sources of sulfur, insufficient investigation of the covariance between NGS emissions and other sources, and limited evaluation of the conversion rate of SO₂ to sulfate. For DMB calculations, the Committee cited the lack of data below the rim of the canyon and that background measurements were not adequately incorporated into the data analyses, as well as the limited evaluation of the conversion rate.

For illustrative purposes, the Committee then used the WHITEX data in a simple technique to estimate the ranges of possible impacts from NGS. The actual impact of NGS on haze depends on a variety of factors including the rate of conversion of SO₂ to sulfate. The Committee concluded that if NGS emissions were controlled, then wintertime haze at the Grand Canyon would most likely be reduced, but not eliminated.

The NPS issued a technical response document to the NAS committee report on October 30, 1990. That document responds to the key points of the NAS report. The key issues of assessment of background sulfate measurements and analysis, measurements of sulfate below the rim of the canyon, and rates of conversion were addressed. The NPS

response has been placed in Docket A-89-02A. The NPS points out that the NAS review did not fully consider supplemental techniques such as empirical orthogonal function analysis to TMBR and DMB which were in the WHITEX report. These supplemental analyses provided by NPS seek to address the issue of other sulfur sources and support the reasonableness of the attribution range derived in WHITEX.

1988 Visibility Follow-Up Study

The NPS has submitted a report to EPA presenting the preliminary findings of a follow-up visibility study conducted during the winter of 1988 (January 27 - February 16) at Indian Gardens in the Grand Canyon. Visual examination of photographic data collected during the WHITEX study showed that haze built up within the canyon and only impacted the monitoring site (Indian Gardens) at Hopi Point after the mixing height had reached above the canyon rim. This prompted NPS researchers to locate a monitoring site for the 1988 study within the canyon to assess the concentration and estimate the origin of the aerosols within the canyon. The Indian Gardens site was located some 4,000 feet below the rim of the canyon.

Preliminary results of the study indicate much higher sulfate concentrations within the canyon than those collected on the rim during the WHITEX study. These results also show a strong relationship between total sulfur and selenium concentrations, suggesting that sulfur compounds in

the canyon are a result of emissions from coal-fired sources. The WHITEX study showed that the NGS plume was rich in selenium. Finally, an examination of meteorology and photography data collected during the 1988 study indicate transport conditions similar to those documented for the highest WHITEX sulfate episode. The clouds are shown to roll in from the direction of Page, Arizona, and fill the canyon with haze. The NPS is continuing its analysis of data collected during this study.

Although the study conducted by the NPS in the winter of 1988 cannot be used to confirm the NPS analyses of the WHITEX data, the EPA believes that the preliminary findings of this study are consistent with those of WHITEX and generally support its previously proposed attribution decision and range of attribution used in the BART analysis. A copy of the preliminary report submitted to EPA by the NPS has been placed in Docket A-89-02A.

SRP Winter 1990 Visibility Study

In the winter of 1989-1990, SRP conducted its own monitoring study including release of tracer from NGS. Preliminary results of that study and subsequent data analysis were sent to EPA and NPS in September and December, 1990. Initial data analysis by SRP indicates that the overall contribution of NGS to haze at the Grand Canyon during the study period was less than that computed from WHITEX data. All data and analyses received have been

placed in Docket A-89-02A. However, preliminary data on episodic impairment levels and seasonal average data are substantially the same as ranges found in the WHITEX study that were used in the BART analysis. The EPA believes it is inappropriate to alter the conclusions reached in EPA's attribution finding given the preliminary and inconclusive nature of the SRP data. The EPA will consider all analyses and data provided during the comment period. As stated earlier, if EPA receives the final study results and report during the comment period and if EPA's review of the report indicates that the latest information would materially affect the proposed attribution decision, EPA will reopen the public comment period to consider such additional information.

EPA's Position on the Ability to Determine NGS' Contribution to Visibility Impairment at the Grand Canyon

The EPA reviewed the WHITEX report, the NAS report, NPS response to the report, and the preliminary data on the SRP 1990 tracer study. Based on this review, EPA has found no reason to change its determination that visibility impairment at the Grand Canyon can be attributed to NGS. Because of the uncertainty in the source-impairment relationship EPA is seeking additional comment on it. But for the purpose of this proposal, EPA continues to believe that a relationship can be reasonably made.

B. BART Analysis

The EPA conducted a BART analysis for the NGS pursuant to the procedures found in the BART Guidelines as required by section 169A(b) and the visibility regulations promulgated at 40 CFR 51.302(c)(4)(iii).²⁰ A copy of EPA's BART analysis for NGS has been placed in Docket A-89-02A. Considering the requirements found in this document, EPA divided the BART analysis into two major parts. In the first part, EPA identified the SO₂ emission controls that are readily available to the source, the costs of such controls, and other impacts of installing and operating the controls. In the second part of the BART analysis, EPA attempted to define the source-impairment relationship which was then used to predict the improvements in visual air quality that can reasonably be expected to occur as a result of installing and operating the controls defined in the control technology analysis. Because EPA was faced with some uncertainties in each of the parts of the BART analysis, EPA bounded its results by giving low and high estimates.

In addition to the key areas discussed below, EPA was also required to consider the time, frequency, and duration of the visibility impairment episodes in the Grand Canyon. This proposal focuses on impairment observed during the winter season (between November 1 and March 31). Based on

²⁰U.S. EPA, "Draft Report on Best Available Retrofit Technology (BART) Analysis for the Navajo Generating Station in Page, Arizona," January 1990.

information from the WHITEX study and previous air quality monitoring, the visibility impairment episodes were determined to occur approximately 10 to 15 times throughout the winter months, generally lasting from 3-5 days. The NPS submitted information to EPA indicating that approximately 800,000 people visited the Grand Canyon during the winter of 1989. This figure represents about 21 percent of the total annual visitation to the park. Documentation for visitation rates to the Grand Canyon has been placed in Docket A-89-02.

1. Control Technology Analysis

As part of the BART analysis, EPA investigated the costs and other impacts associated with proven SO₂ removal systems at three levels different emissions limitations 0.50 lbs/MMBtu (approximately 50 percent control), 0.30 lbs/MMBtu (approximately 70 percent control), and 0.10 lbs/MMBtu (approximately 90 percent control). It was not the intent of the Agency to design an SO₂ control system for the NGS, but rather to evaluate the potential impacts to NGS of SO₂ control systems that have been used successfully in prior retrofit cases. Both wet and dry scrubbing technologies were evaluated in the control technology analysis. The EPA solicits comments on other available technologies which can reduce SO₂ emissions at NGS to achieve the proposed or alternative limits and which may require less capital

investment and/or operating expenses than those technologies evaluated in the BART analysis.

The EPA used the Integrated Air Pollution Control System (IAPCS) cost model to predict the capital and operating cost estimates for the control systems analyzed.²¹ This model was developed by EPA for the National Acid Precipitation Assessment Program and has been used to estimate SO₂ and NO_x retrofit control costs for 200 power plants. The case-specific input parameters were determined through documents obtained from the NGS information collected during the site visit by an EPA contractor and other government records. As mentioned previously, lower and upper bound limits were generated for each control option. The results from IAPCS indicated that wet flue gas desulfurization (FGD) achieving a 0.3 lbs/MMBtu emission limit for all three units is estimated to have total capital cost requirements of between \$245.9 million and \$402 million with total levelized annual costs (including amortized capital, interest, operating, and maintenance costs) estimated to be between \$91.9 million and \$128.3 million.²² The levelized annual costs for 0.3 lbs/MMBtu wet FGD are less than those for lime spray drying or dry sorbent injection at the same emission rate. The wet

²¹Integrated Air Pollution Control System Costing Program, Version 3.0, copyright PEI and Associates, Inc., 1989.

²²All dollar amounts herein are measured in 1988 dollars.

FGD control option to meet a 0.10 lbs/MMBtu emission limitation is estimated to require a total capital investment of between \$275.7 million and \$453.2 million for all three units with total levelized annual costs estimated to be between \$103.5 million and \$145.2 million. A 0.5 lbs/MMBtu emission limitation met by a wet FGD control option is estimated to require a total capital investment of between \$213.3 million and \$357.0 million for all three units with total levelized annual costs estimated to be between \$79.5 million and \$112.2 million.

Using the costs generated by IAPCS, and the methodology originally used in the RIA for NGS, EPA estimated the increases in the average SRP's and Nevada Power Company's residential customers' electric utility bills if wet FGD were selected to decrease NGS SO₂ emissions to 0.30 lbs/MMBtu. This increase is expected to be no greater than 2.8 percent (about \$2.30 per month) for the SRP customer and no greater than about a 3.9 percent increase (again, approximately \$2.30 per month) for the Nevada Power Company customer. Because SRP and Nevada Power Company receive a higher percentage of their total system power from NGS than do other co-owners of NGS and have a lower average cost per kilowatt hour, these estimated 2.8 to 3.9 percent increases are expected to be the maximum percentage increase in power costs experienced by residential customers of NGS. These price increases would be lower for the 0.50 lbs/MMBtu

control option. It is important to note that these estimates are based upon increasing consumer costs by the percentage increase cost of producing the electricity. They do not consider that part of the consumer rates which include transmission costs; considering those costs could dampen the effect on the consumer. The actual increase to the average SRP or Nevada Power Company residential customer is expected to be somewhat less since the transmission costs are not affected by the BART requirements.

Other persons potentially affected by an increase in NGS power are customers of the Central Arizona Project (CAP). The CAP is an organization established by the U.S. Bureau of Reclamation to provide government-subsidized irrigation water to south central Arizona farmers. The CAP relies heavily on electricity from the NGS to pump and provide this water. It was estimated that if wet FGD were selected to decrease NGS SO₂ emissions to 0.30 lbs/MMBtu, the cost of water to users would increase approximately \$10 per acre foot or about 3 cents per 1,000 gallons. This increase in irrigation costs could raise the farmers' total variable costs by 2 percent to 4 percent per year. However, if, as expected, the CAP phases down its obligation to supplying water to the farmers, the increase in total variable costs would only be approximately 2 percent per year. Again, the cost increases would be lower for the 0.50 lbs/MMBtu control option. A more detailed discussion of

these impacts may be found in the RIA and in factual memorandum ²³ placed in Docket A-89-02A.

As a plausibility check for the costs generated by IAPCS, EPA requested information from the APS regarding the costs for FGD retrofit of units 4 and 5 at the Four Corners Power Plant located in Farmington, New Mexico. These units are similar to NGS in many respects including capacity and design, the burning of low sulfur coal, and the remote location of the plant. Information supplied by APS indicates that the capital investment for the wet FGD removal system (averaging 72 percent reduction in SO₂ emissions) at Four Corners Power Plant was \$119.8 million per unit. The IAPCS model generated costs for control at NGS ranging between \$82-\$134 per unit for the 0.30 lbs/MMBtu wet FGD control option. The EPA, therefore, concludes that the IAPCS model estimates are reasonable. A copy of the letter from APS has been placed in Docket A-89-02A.

Title IV (section 403) of the Clean Air Act Amendments of 1990 establishes a system of marketable sulfur emission allowances to help achieve the goal of reducing acid deposition. This provision does not waive any BART requirements for NGS. Nor does it require more controls than NGS currently has. However, the control cost incident with BART may be affected in part by NGS selling its excess

²³Memorandum from Gwen Jacobs to David Stonefield dated January 30, 1991.

emission reduction allowances. While the allowance system begins in 1995, western sulfur sources such as NGS are not included until 2000. The annual sulfur emission reductions at NGS due to the current proposed regulation could be offered for sale by NGS. The EPA estimates²⁴ the market value of sulfur reduction credits will be \$430/ton in 2000, increasing to \$590/ton in 2010. At an emission limit of 0.30 lbs/MMBtu, estimated total revenue for emission credits are \$21.4 million/year in 2000, increasing to \$29.4 million/year in 2010. Sale of emission credits would lower the estimated cost impacts on NGS during this period by 17 to 32 percent. The analysis of the acid deposition credit market, and analysis of the effect on NGS, have been placed in Docket A-89-02A.

In accordance with the procedures found in the BART Guidelines, the nonair quality environmental impacts of compliance were investigated. Impacts from increased water usage to operate SO₂ control systems, increased waste disposal, and effects of sludge from the SO₂ control system on ground or surface waters were examined in the BART analysis. Results from the BART analysis indicate that adequate space is available to dispose of additional wastes that would be generated by a control system. Also, the results show that the environmental effects of sludge

²⁴ICF Resources, Inc., 1990, "Comparison of the Economic Impacts of the Acid Rain Program of Senate Bill (S. 1630) and the House Bill (H.R. 3030).

disposal from the control system should present no increased threat to the environment beyond those currently being posed through fly-ash disposal. Finally, although SO₂ controls would require an increase in water usage, NGS is only utilizing approximately 68 percent of its water allotment. The remainder of its allotment should be adequate to operate a wet FGD or dry control system. In addition, water requirements for SO₂ controls can be reduced if as indicated in the environmental statement previously conducted for the NGS, the cooling tower blowdown water is utilized in the SO₂ control system.

2. Source-Impairment Relationship

One of the more complicated tasks in the BART analysis was defining the relationship between the SO₂ emissions at NGS and the visibility impairing sulfate (SO₄) in the Grand Canyon. This relationship had to be addressed in order to estimate the degree of improvement in visibility that could be anticipated to result from the use of the alternative SO₂ control systems.

Because of the complex terrain in and around the Grand Canyon, the EPA visibility models that are often used to estimate improvements in visibility (e.g., PLUVUE II) were determined to be inadequate for this BART analysis. Based on conversations with EPA researchers and modeling

experts,²⁵ the Agency decided to define this relationship using the ratio of SO₂ emissions at NGS to SO₄ in the Grand Canyon attributable to NGS as found in the final WHITEX report. Using this ratio, EPA then applied a linear rollback model. The NAS' Committee on Haze in National Parks and Wildernesses used the data in WHITEX and a series of mass-balance calculations on the basis of simple, but reasonable assumptions, to estimate the contribution of NGS on visibility impairment in the Grand Canyon during a haze episode. The Committee concluded that it could not confirm the WHITEX estimates because some measurements needed to confirm the assumptions were not made during WHITEX. The EPA believes that the NPS data from WHITEX and other monitoring coupled with assessment techniques that do not depend directly on mass-balance techniques provide adequate data concerning the NGS contribution of haze which could be used in the BART analysis. However, the uncertainties surrounding these analyses, as pointed out by the NAS committee on haze, requires that EPA consider a broad range of source-impairment relationships.

An important consideration in defining the source-impairment relationship was determining whether a proportional reduction in NGS SO₂ emissions would result in a proportional or less-than proportional reduction in

²⁵Memorandum from Terry Clark, Atmospheric Research and Exposure Assessment Laboratory, to James Dicke, OAQPS, December 18, 1989.

visibility impairment in the Grand Canyon attributable to NGS. Potential nonlinearities resulting from condensation of additional nitrate aerosol once the NGS sulfate is controlled were investigated.

The case mentioned above addresses the nonlinearity that may exist when SO_4 is taken out of the atmosphere. Ammonia that would have combined with the SO_4 to form ammonium sulfate would now be free to combine with nitric acid to form ammonium nitrate, an efficient light scatterer. By comparing the light extinction reduction resulting from SO_4 reduction to the net light extinction reduction resulting from the combined effects of SO_4 reductions and nitrate increases, a nonlinearity factor can be developed and applied to the rollback model calculations. The average nonlinearity factor for the hours for which all necessary data are available from the WHITEX study is 0.10. In other words, the relationship is estimated to be 90 percent linear.

The results of the rollback model (with the average nonlinearity factor applied) were used to estimate the improvements in visibility that would result from SO_2 emission limits of 0.10 and 0.30 lbs/MMBtu at NGS. Because no single standard method exists for measuring improvements in visibility, the EPA employed two of the most widely used techniques to define the improvements in visibility expected to occur in the Grand Canyon.

One of the methods used to estimate the visibility improvements in the Grand Canyon was analyzing the changes in contrast expected to occur as a result of reducing SO₂ emissions at NGS. The EPA believes that this method is particularly relevant because human observers use contrast to make judgments of how color and atmospheric clarity changes with pollutant concentration. The contrast is defined as the percent difference between the brightness of a scenic element and its background.

Using the information obtained during the WHITEX study and extrapolating it to a period from November 1 through March 31 based on historic particle composition data (and applying the nonlinearity factor), a 0.10 lbs/MMBtu SO₂ emissions rate at NGS would result in a "perceptible" change in the visibility conditions (4 percent change in contrast) approximately 65 percent of the time (100 days) during the winter season, a "quite noticeable" change in visibility conditions (10 percent change in contrast) 39 percent of the time (58 days) during the winter, and a "very apparent" change in visibility conditions (20 percent change in contrast) 14 percent of the time (21 days) during the winter.

Similarly, if SO₂ emissions are reduced to 0.30 lbs/MMBtu, the following changes in winter visibility conditions are expected: a very apparent change in visibility conditions 4.5 percent of the time (7 days), a

quite noticeable change in visibility conditions 28 percent of the time (42 days), and a perceptible change in visibility conditions 58 percent of the time (88 days).

Finally, it is estimated that during an additional 29 percent of the time (44 days) during the winter months, there would be a "perceptible" (or greater) improvement in visibility with an SO₂ emission limit of 0.10 lbs/MMBtu as compared to 0.30 lbs/MMBtu. Documentation for these numbers, including assumptions and methodology, has been placed in Docket A-89-02A.

In addition to analyzing the changes in contrast in order to describe the improvement in visibility expected to occur as a result of controlling SO₂ emissions at NGS, the EPA also estimated the improvements in visual ranges expected to occur. Although this method is somewhat less desirable than analyzing contrast changes (because it is sometimes misunderstood by the layman), it is often used by scientists to measure visibility improvements. Table 1 contains the estimated improvements in visual ranges calculated for the maximum measured light extinction day and for an average day during the WHITEX study for the 0.10 lbs/MMBtu and 0.30 lbs/MMBtu control options using the results from the tracer mass-balance regression analysis performed by the NPS using the WHITEX data. As noted above, however, the uncertainty of these analyses, as pointed out by the NAS Committee on Haze, suggests that the actual

effects of such emission reductions maybe substantially different from these estimates (higher or lower).

Table 1. Estimates of Improvements in Visual Ranges with SO₂ Control at NGS

SO ₂ Emission Limit (lbs/MMBtu)	Maximum Light Extinction Day Change in Visual Range	Average WHITEX Day Change in Visual Range
0.10	Increase from baseline of 150 km to 380 km	Increase from baseline of 200 km to 229 km
0.30	Increase from baseline of 150 km to 283 km	Increase from baseline of 200 km to 222 km

In addition to the wintertime in the Grand Canyon visibility impairment described above, it is believed that the control of SO₂ emissions at NGS may result in other visibility improvements. Although not specifically addressed in this rulemaking, EPA and NPS suspect that NGS emissions may contribute to visibility impairment in the Grand Canyon during other seasons of the year. Thus, a significant decrease in SO₂ emissions at NGS may improve visibility in other months as well as during the winter months. Furthermore, a decrease in SO₂ emissions from NGS may improve visibility in other Class I areas in the Colorado Plateau. The EPA seeks comment on the potential visibility impairment from NGS in other than the winter season.

C. Benefit Analysis

As stated previously in this notice, EPA was not required as a part of its BART analysis to estimate monetary benefits associated with improving visibility in the Grand Canyon. However, as a check of reasonableness for its approach, EPA evaluated and considered the benefit analysis developed as a part of the RIA.

Because of its size, unique rock formations, and sheer beauty, the Grand Canyon is considered by many to be one of our Nation's most prized national parks. Indeed, millions of people from the United States and all over the world travel to Arizona each year to view this national treasure. Placing a quantitative value on the protection of the beauty of the Grand Canyon is a formidable task. However, in conjunction with the BART analysis (and as part of the RIA), an attempt was made to identify some of the societal benefits related to the predicted improvements in wintertime visibility at the Grand Canyon due to reductions in sulfur emissions at NGS. The following paragraphs summarize the findings of the benefit analysis. A more detailed discussion of benefits may be found in the RIA developed for this rule. A copy of the draft RIA has been placed in Docket A-89-02A.

A key factor in assessing the benefits of visibility is understanding attitudes and preferences of individuals.

Surveys²⁶ of visitors to the Grand Canyon indicate that the vast majority (over 80 percent) view clean, clear air as very important or extremely important to their recreational experience and indicate the viewing-related activities are particularly important at the Grand Canyon. This research also shows that visitors are aware of increasing haziness and that it is strongly correlated with decreased enjoyment of the site and with increasing dissatisfaction with air quality. Studies at recreational sites, including the Grand Canyon, indicate that visitors would plan to, and do, reduce the length of park visits and time at vista points as visibility conditions are degraded.

General citizen surveys provide further support. One survey²⁷ found that the vast majority of Americans felt there should be no air pollution that would "interfere with recreation and natural resources." Another citizen survey²⁸ found that 80 percent of households would definitely agree to having their tax money spent on preserving and managing park areas, even if they personally could not visit them, and another 17 percent would possibly do the same.

²⁶National Park Service 1988, "Air Quality in the National Parks," Natural Resources report 88-1.

²⁷Opinion Research Corporation 1981, "Public Attitudes Toward the Clean Air Act."

²⁸Chestnut and Rowe, 1989, "Preservation Values for Visibility Protection at the National Parks," draft report to the U.S. Environmental Protection Agency.

Several studies have attempted to measure in dollar terms societal values for varying degrees of visibility protection at the Grand Canyon.^{29,30} Because visibility is not bought or sold in a conventional marketplace, researchers have used various survey approaches known as the "contingent valuation method." This research has consistently shown the public's collective willingness to pay to protect visibility at the Grand Canyon is substantial.

The benefit analysis for this rulemaking interprets and transforms the existing economic research. Uncertainties arise in this interpretation and transformation process. Consequently, results are reported and should be interpreted as depicting the direction, character and a general magnitude of the willingness-to-pay estimates. The benefit estimates developed here are based on the changes in visual range estimated by EPA in Table I. However, given the uncertainties surrounding these analyses (as discussed above), changes in visual range could be substantially different than the change used in developing these willingness-to-pay estimates. In addition, these willingness-to-pay estimates are based on responses elicited

²⁹Schulze, Brookshire, Walther and Kelley, 1981, "The Benefits of Preserving Visibility in the National Parklands of the Southwest," Vol. VIII, Methods Development for Environmental Control Benefit Assessment, U.S. EPA.

³⁰Rowe and Chestnut, 1983, "Valuing Environmental Commodities: Revised," Land Economics 59.

from contingent valuation studies that examined a substantial, year-round change in Grand Canyon visibility. While the analysis presented below attempted to adjust for differences between the contingent valuation studies and the specific visibility affects attributed to the Grand Canyon, there are important uncertainties with the willingness-to-pay estimates described below.

The benefit analysis for a 0.30 lb/MMBtu emission limit at NGS indicates in 1995 the average United States household would be willing to pay on the order of \$1.00 to \$1.90 per year per household. National total benefit estimates for 1995 range from \$100 to \$190 million. The annual benefits are expected to increase over time due to increasing population and income. The present value (using a 10 percent discount rate) of 30 years of benefits is \$1.6 to \$2.3 billion. Using a 3 percent discount rate, the present value of the benefits range from \$4.0 to \$5.5 billion.

The benefit analysis for a 0.10 lbs/MMBtu SO₂ emissions rate from NGS indicates in 1995 the average United States household would be willing to pay on the order of \$1.30 to \$2.50 per year per household. By this measure, national total benefit estimates for 1995 range from \$130 to \$250 million increasing over time due to growth in population and income. The present value, using a 10 percent discount rate, of 30 years of benefits is \$2.1 to \$3.1 billion. Using a 3 percent discount rate, the present value of the

benefits range from \$5.3 to \$7.4 billion. The annualized benefits are \$220 to \$330 million. The benefits for a 0.50 lbs/MMBtu SO₂ emission rate would be substantially less than those calculated for 0.30 lbs/MMBtu.

A household's willingness-to-pay for visibility improvement at the Grand Canyon arises from three different motivations. Across all United States households, 31 percent of the total willingness to pay is an option price, or the desire for the household members to be able to enjoy good visibility during their own visits to the Grand Canyon now and in the future. Estimates based on willingness-to-pay surveys (McFarland, et al,³¹ Schulze, et al³²) of visitors to the Grand Canyon suggest substantially lower willingness-to-pay, however, than would be expected from the "option" value estimate used in this benefits analysis. About 38 percent is bequest value, or the desire for other people to enjoy good visibility now and in the future, and about 31 percent is existence value, or the desire to protect the Grand Canyon even if no one were to ever visit.

In September 1990, EPA received a draft report of a new benefits study on improving visibility in the Grand Canyon.

³¹MacFarland, K. W. Malm, and J. Molenar. 1983. "An examination of methodologies and Social Indicators for Assessing the Value of Visibility." in Rowe and Chestnut (Eds.) Managing Air Quality and Scenic Resources at National Parks and Wilderness Areas Boulder, Colorado: Westview Press.

³²Schulze op. cit.

The report³³ details the methodology and results of a pilot contingent valuation willingness-to-pay study conducted on behalf of SRP in 1990. The draft report concludes that the benefits of reducing sulfur emissions from the NGS are substantially lower than those in EPA's draft RIA. The EPA's preliminary assessment of the SRP-sponsored draft report is that this conclusion results primarily from two factors. First, the SRP-sponsored draft report predicts visual range improvements which are much lower than EPA's estimates. Second, the SRP-sponsored draft report subjectively discards willingness-to-pay data for visual range improvement. The effect of the data adjustment is to lower the mean willingness-to-pay estimates by a factor of 20. A copy of the report was provided to EPA by SRP and has been placed in Docket A-89-02. By today's notice, the EPA solicits comments on this new information on benefits, as well as on the benefits analysis developed as part of the RIA.

D. Emission Limitations

Taking into consideration the uncertainties in the analyses, such as the attribution calculation and social benefits estimates, EPA is soliciting comments on four options and is proposing one of the options, (0.30 lbs/MMBtu

³³Development and Design of a Contingent Value Survey for Measuring the Public's Value for Visibility Improvements at the Grand Canyon National Park: Revised Draft Report," September 1990, Decision Focus, Inc.

emission limit). In addition the EPA solicits comment on, and will consider, any appropriate SO₂ emission limitation in its final determination of BART. The EPA is particularly interested in additional information that would show more precisely the range of visibility changes expected from changes in emissions from NGS, or better confirm the range used in the BART analysis as well as any quantitative information on the visibility improvements that could be expected in times other than winter, and in areas other than the Grand Canyon. Additional information on control alternatives and their costs as well as appropriate use of data on social benefit for improving visibility is also solicited. The proposed emission limitation is based on year-round control. However, EPA solicits comments on legal and policy issues relating to the use of seasonal controls instead. For a discussion of seasonal control, please refer to the section "Discussion of Seasonal Controls as a BART Emission Limitation" elsewhere in this notice. Consistent with the similar emission limitations implemented at other facilities over the past 10 years, EPA is proposing that compliance be determined on a 30-day rolling average. Nevertheless, EPA invites comments on other options for averaging times that could be used to determine compliance. Compliance with this limitation would be determined using continuous emission monitoring systems (CEMS).

Two other pollutants emitted by NGS, NO_x and PM, are known to contribute to visibility impairment in some circumstances.³⁴ The current emissions of NO_x and PM from NGS have not been identified as significantly contributing to the visibility impairment in the Grand Canyon. However, EPA is concerned based upon its technical judgment regarding the behavior of the pollutants as potential contributions to visibility impairment as a general matter, upon the amount of the pollutants emitted by NGS, upon the proximity of NGS to the Grand Canyon and upon the characteristics of the NGS plume shown by WHITEX and other studies, that increased emissions of these pollutants could result in impairment in the Grand Canyon. Although the NGS is not subject to any NO_x emission limitations, SRP has stated that NGS currently emits NO_x at a rate of 0.4 to 0.5 lbs/MMBtu. Therefore, EPA is proposing an NO_x emission limit consistent with NGS's existing emission rate, as well as the rate at other similar plants, of 0.5 lbs/MMBtu. As with the SO₂ emission limit, compliance would be determined using CEMS.

Particulate matter emissions for the NGS are currently limited in two ways. The Arizona SIP has both an emission rate limitation of 0.06 lbs/MMBtu and an opacity limit of 40 percent for NGS. The SRP has stated that NGS currently emits PM at a rate of 0.03 lbs/MMBtu with an opacity of between 10 and 15 percent. Thus, the opacity limit of

³⁴See, e.g., BART Guidelines at 12-13.

40 percent is well above the NGS existing emissions. Therefore, EPA is proposing a 20 percent opacity limitation consistent with current NGS emissions opacity in order to preclude any visibility deterioration that would be caused by an increase in PM emissions. Compliance would also be determined using CEMS. In conjunction with the proposed BART limits for SO₂ emissions, these emission limitations for NO_x and PM should result in reasonable progress toward the national visibility goal. The EPA solicits comments on whether these emission limitations are appropriate to remedy existing impairment or to prevent future impairment.

E. Emission Limitation Compliance Schedule

Section 169A requires BART to be applied "as expeditiously as practicable, but in no event later than 5 years after the date of approval." However, the operators of NGS may be able to develop in the next few years technologies capable of meeting the same stringent BART limitation proposed today at costs substantially lower than those we have assumed using currently demonstrated technologies. Given that, EPA proposes the required emission limitation to be achieved in three phases. The final BART emission limitation would need to be met on one unit by January 1, 1995; on two units by January 1, 1997; and on all three units by January 1, 1999. This flexibility would allow the operators ample time to install, test, and

evaluate innovative technologies in meeting the emission limitations.

The EPA is also considering allowing the operators the option of averaging the needed emission reductions across all three units during each milestone of the phase-in period. This would allow, if the 0.30 lbs/MMBtu emission limitation is selected as BART for example, 25 percent emission reductions at two units and 20 percent reductions at the third unit by 1995 rather than achieving the 0.30 lbs/MMBtu limit by 1995 at just one unit. This would provide greater flexibility in study and design of new control approaches than a strict unit-by-unit requirement. The EPA is aware that this approach will raise questions regarding regulatory intent for installation of BART. Under this approach, BART would begin before the 5-year requirement and controls would be installed on all three units within an average of 5 years.

The EPA solicits comments on whether it is legally permissible and, in the final analysis, appropriate from a policy perspective to rely on the date of controls on the first unit or the average date of controls on all units in complying with the timing requirements of the statute. In addition, EPA solicits comments on the averaging of the phasein across units in order to provide the maximum flexibility in evaluating alternative control technologies.

Proposal from Salt River Project

On January 10, 1991, EPA received a proposal from representatives of SRP as an alternative to BART. The proposal addresses a broader scope of issues, including the contribution that NGS makes to the existing regional haze problem in the desert southwest region, which includes many Class I areas including the Grand Canyon, Canyonlands, Bryce Canyon, Petrified Forest, Zion, and other national parks and wilderness areas. The proposal has four components: (1) SRP help fund and cooperate fully with the regional haze studies that EPA is required to conduct under the new section 169B of the Act; (2) EPA would expedite establishment of the Grand Canyon Visibility Transport Commission, and SRP would cooperate with the governors of the affected States and the Commission in conduct of its inquiry and mandated report to the Administrator on appropriate action to address regional haze; (3) SRP would undertake tests to try to demonstrate the feasibility of several promising clean coal technologies that may provide much lower cost alternatives to conventional scrubbers or current dry technologies on plants fired by low sulfur western coal (If one of the technologies were demonstrated to achieve an agreed-upon minimum removal efficiency at an agreed-upon cost, SRP would commit to install that technology and operate it on a seasonal basis to address the alleged effect of NGS on wintertime visibility.); and (4) SRP would agree that if none of the technologies met the

test criteria, it would then install pollution control devices that would remove at least 70 percent of the uncontrolled SO₂ emissions (emission limit of 0.30 lbs/MMBtu) measured on an annual basis by January 1, 2000, the year upon which the first allowances would be issued to the plant under the 1990 Amendments. A copy of the letter containing the full explanation of this offer is in Docket A-89-02A. EPA is requesting public comment on how this proposal, legally and technically, may fulfill section 169A, as well as the provisions of section 169B. With respect to this proposal, EPA has concerns about the delay in application of controls so far beyond any interpretation of the 5-year statutory requirement. In addition, EPA requests comment on the proposal's usefulness in addressing new legislative requirements on EPA to conduct regional haze studies and on the role of cooperation with industry in addressing regional haze through the Grand Canyon Visibility Transport Commission.

Legal and Regulatory Issues

On May 15, 1989, the SRP submitted comments on various legal and regulatory issues pertaining to potential BART emission limits affecting NGS. In addition, SRP and Alabama Power Company, et al., a consortium of utility groups (referred to collectively in this section as "SRP"), have submitted various motions to the court in EDF v. Reilly seeking to modify and delay the settlement agreement

governing this rulemaking. The EPA addressed these issues and solicited comment on them in the September 5, 1989 notice. See 54 FR 36951-52. The EPA's earlier discussion is incorporated by reference as part of today's statement of basis and purpose. In comments on the September 5, 1989 notice, and in further pleadings in EDF v. Reilly, SRP and Alabama Power Company, et al., have continued to press these issues and to raise new ones. Similar views were also presented by other commenters on the September 5, 1989 notice. By its order of November 22, 1989, the court rejected all of SRP's arguments insofar as they sought to prevent EPA from proceeding with this rulemaking pursuant to the court's jurisdiction to oversee BART rulemaking under a FIP. The effect of that decision is to refer SRP's arguments to the rulemaking process and, ultimately, a decision by the Court of Appeals should SRP seek review of final rulemaking action by EPA under section 307(b) of the Act. For the benefit of comments on today's proposal, these issues are identified below, and EPA has set forth again its present position on these issues. The EPA will take a final position on all of these issues in response to comments on today's notice.

A. Scope of the Current Visibility Regulations

The SRP asserts that regulation of haze that cannot be attributed to a source through visual observation, but only through analytical techniques such as those used in WHITEX,

is beyond the scope of EPA's current visibility regulations. The EPA disagrees with this contention. The current regulations focus on impairment due to discrete, discernible plumes attributable to a source through visual observation, but they are not limited to the type of visibility impairment known as "plume blight." Rather, as to BART, the visibility rules regulate any impairment that is "reasonably attributable" to an existing stationary facility [see, e.g., 40 CFR 51.302(c)(4)(i)]. While such "reasonably attributable" impairment may be in the form of a haze, this is still distinguishable from impairment in the form of "regional haze" that is beyond the scope of EPA's current regulations because it cannot be attributed, in whole or significant part, to a single source or small group of sources.

B. Attribution Techniques

The SRP also claims that the visibility regulations prohibit EPA from basing a finding of reasonable attribution on the WHITEX study, asserting that sophisticated attribution techniques are beyond the scope of the 1980 visibility regulations. The EPA disagrees with this interpretation. While the 1980 regulations do not require the use of techniques other than visual observation, they do not prohibit them either.

The SRP also asserts that if sophisticated techniques are permissible at all, their use is limited to the States.

The SRP points to 40 CFR 51.302(s) which defines "reasonably attributable" as "attributable by visual observation or any other techniques the State deems appropriate." In SRP's view, the rules on their face authorize only States and not EPA to use techniques other than visual observation to make a reasonable attribution decision. The EPA disagrees with this view. The Part 51 visibility regulations, including the definition in question, contain numerous references to the duties of "States" in the SIP planning process for the obvious reason that those regulations' principal purpose is to set forth the requirements that SIP's must meet to comply with the regulations. In this instance, however, Arizona has defaulted on its responsibility as it has failed to submit a visibility SIP or any portion thereof despite EPA's notice of deficiency, and EPA has disapproved the SIP for such failure. Consequently, EPA has an obligation under section 110(c)(1) of the Act to promulgate such visibility measures as may be necessary to fulfill the requirements of the visibility regulations at 40 CFR 51.300, et seq. In so doing, EPA stands in the shoes of the defaulting State, and all of the rights and duties that would otherwise fall to the State accrue instead to EPA. Thus, in this instance, EPA is in effect acting as a "State" and may utilize any attribution technique it deems appropriate, not just visual observation. Moreover, there is no inherent reason why EPA should be limited to visual observation when it acts under

section 110(c) if a State is not so limited in developing a SIP. Similarly, 40 CFR 51.302(c)(4)(i) provides that the "State" must identify and analyze for BART any source as to which a reasonable attribution finding is made.

Nevertheless, where EPA is acting in place of the "State" under section 110(c), these duties, as well as all other duties of "States" under the Part 51 visibility regulations, fall to EPA. In this case, EPA is acting in the place of Arizona. The EPA has found that the Arizona SIP is deficient for failing to meet the requirements of 40 CFR 51.302, including reasonable attribution and BART requirements, and has disapproved the SIP for that failure [51 FR 3046, 3048 (January 23, 1986); 52 FR 45132, 45133].

The EPA believes that its position represents a reasonable interpretation of the Act and its own regulations and is fully in keeping with the language, goals, and purposes of the Act and those regulations. However, in the September 5, 1989 notice, EPA solicited comments on whether it would be appropriate to make changes in the definitional provisions of 40 CFR Part 51 in order to provide additional clarification on EPA's interpretation that the Administrator, like a "State," may utilize whatever techniques he deems appropriate in making any "reasonably attributable" findings in promulgating a plan under section 110(c) of the Act. By today's notice, EPA again solicits comments on this issue. Upon the close of the comment

period that commences today, EPA may proceed to make clarifying changes without further public notice.

C. Attribution of Impairment to a Significant Contributor

Section 169A(b)(2)(A) of the Act, 42 U.S.C. 7491(b)(2)(A), requires that emission limitations representing BART be established for an existing source which emits any air pollutant which may "reasonable be anticipated to cause or contribute to any impairment of visibility in any [Class I] area." The EPA regulations further refine this statutory requirement by limiting BART to cases of reasonably-anticipated impairment "where the impairment is 'reasonably attributable' to the source." 40 CFR 51.302(c)(4)(i). The SRP argues that a finding of reasonable attribution cannot be made unless one source (or a small group of sources) is the sole contributor to visibility impairment. In support of this view, SRP states that control of one source would result in significant improvement in visibility only if the impairment was being caused by that source alone, whereas if many sources are contributing, all must be controlled to result in improved visibility. The EPA disagrees because SRP's position appears to contravene the legal requirement flowing from the statute and regulation that BART be installed whenever a source may reasonably be anticipated to either cause or "contribute" to "any impairment" in "any" Class I area where

the impairment is "reasonably attributable" to that source. In addition, EPA preliminarily believes that SRP's position is flawed logically and assumes key facts that the WHITEX data indicate are untrue or which are contravened by EPA's BART analysis. Specifically, if NGS is a significant contributor to wintertime impairment in the Grand Canyon, notwithstanding that other sources may also contribute to the impairment, it follows that the addition of emissions controls at NGS alone may result in significant improvement in visibility. In addition, as discussed above, the WHITEX data indicate that NGS is, in fact, a significant contributor to wintertime impairment in the Grand Canyon. In its review of WHITEX, NAS likewise refuted SRP's reasoning when NAS concluded that if NGS were controlled then the wintertime haze of the Grand Canyon would likely be reduced. Thus, in today's notice, EPA has proposed to determine that the impairment in question may be reasonably attributable to NGS. In addition, today's notice reflects that EPA's BART analysis has concluded that control of NGS alone is likely to result in a significant improvement in visibility. Although EPA is seeking additional comment on these studies and is prepared to analyze any additional data that is submitted, it believes that these findings and interpretations are adequate to proceed at this time with its proposal of BART emission limits under the present visibility regulations to remedy this impairment.

The EPA specifically solicits comments on its view that it is appropriate under the current visibility rules to impose BART limits on a source which is a significant contributor to but not the sole source of a visibility impairment in a Class I area when that impairment may also be due in part to undifferentiated regional sources.

D. EPA's Present Authority to Conduct a BART
Rulemaking

The SRP and Alabama Power Company, et al., assert that, with respect to visibility impairment in the Grand Canyon, EPA has no present authority to conduct a BART analysis or propose or promulgate emissions limitations representing BART because there has been no valid certification of impairment, because there has been no finding of substantial inadequacy as to Grand Canyon impairments and subsequent failure by Arizona to remedy such inadequacy, and because the Administrator has not made a final reasonable attribution decision. The EPA disagrees with these assertions because they seriously misread the applicable statutory and regulatory requirements.

Regarding the certification of impairment, EPA believes that the DOI letters of November 14, 1985 and March 24, 1986 discussed above satisfy the certification requirements of the regulations because they represent the considered views of responsible DOI officials, and Arizona was given notice of them by the January 1986 notice of deficiency and March

1987 proposed SIP disapproval prior to EPA's disapproval of the Arizona SIP for failing to submit remedial measures in response.

Regarding the purported need to afford Arizona another opportunity to perform its own BART analysis, there is likewise no basis for such a requirement because Arizona has clearly defaulted on its obligations, and EPA must provide a complete visibility plan, including measures to remedy Grand Canyon impairment. Specifically, the prerequisites for remedial action by EPA to promulgate appropriate FIP measures under all of the subsections of section 110(c)(1) of the Act have already been met, although satisfying only one is adequate. As explained above, Arizona failed completely to submit any visibility SIP provisions, thereby satisfying the prerequisite in section 110(c)(1)(A). Moreover, EPA, in January 1986, issued a notice of SIP deficiency meeting the requirements of section 110(a)(2)(A) and afforded Arizona an opportunity to submit corrective measures. Arizona failed to submit the required plan revision to correct this inadequacy and so EPA satisfied the prerequisite in section 110(c)(1)(A)³⁵. There was no need to specifically identify Grand Canyon impairment in that

³⁵Prior to the revisions to section 110(c)(1) enacted by section 102(h) of the Clean Air Act Amendments of 1990, P.L. 101-549 (November 15, 1990), the failure of a State to make a required submission in response to a Notice of SIP inadequacy under section 110(a)(2)(H) was set forth in a separate subsection, 110(c)(1)(C), that has now been merged in to subsection 110(c)(1)(A).

notice because the State had been properly informed that the SIP as a whole was inadequate to remedy impairment which DOI certified as existing in all Class I areas within the State. In addition, EPA's proposed SIP disapproval in March 1987 specifically alerted Arizona to the presence of wintertime impairment in the Grand Canyon and the need for corrective action. See 52 FR 17804, 17806. Also, in November 1987, EPA disapproved Arizona's SIP for failure to provide remedial visibility SIP measures, thereby satisfying the prerequisite in section 110(c)(1)(B). Finally, in letters submitted to the docket for this rulemaking, the State of Arizona has stated its agreement that EPA, and not the State, should proceed to address BART to remedy Grand Canyon impairment without a further specific opportunity for rulemaking by the State. Clearly, under these circumstances, it would serve no purpose to take the additional steps suggested by SRP as both the letter and spirit of section 110(c)(1) have been satisfied.³⁶

³⁶On November 15, 1990, President Bush signed into law the Clean Air Act Amendments of 1990, Pub. L. 101-549. While the Amendments revised the Act in several areas, they do not include any changes that materially affect either prior FIP actions regarding Arizona or this rulemaking. In particular, section 102(h) of the Amendments revised the language and organization of section 110(c)(1) of the Act, but did not affect the standards for a default in Arizona's SIP planning obligations or EPA's FIP obligations arising from such failure in any material way. Section 101(c) of the Amendments added a savings clause as section 110(n)(1) of the revised Act that preserves implementation plan provisions already promulgated by the Administrator, including those portions of the Arizona FIP that have already been promulgated. A companion provision, section 108(1) of the Amendments, added a savings clause as section 193

Regarding the purported need for a "final" attribution

of the revised Act that preserves every regulation, standard rule, notice, order and guidance promulgated or issued by the Administrator, except as otherwise provided by or inconsistent with the Amendments, or revised by the Administrator. Section 108(j) of the Amendments adds a new section 302(y) to the revised Act that defines "federal implementation plan" in pertinent part to mean a plan or portion thereof promulgated by the Administrator to fill all or a portion of a gap or otherwise correct all or a portion of an inadequacy in a SIP, and which includes enforceable emission limitations. Section 816 of the Amendments added a new section 169B of the revised Act that calls upon EPA to study and possibly adopt a regulatory program to address the problem of regional haze in Class I areas.

Taken together, the FIP and savings clause provisions constitute an "anti-backsliding" approach by Congress, and do not affect any pre-existing actions of EPA, except to the extent that new or revised substantive provisions call into question the validity of those actions. Thus, prior visibility FIP actions affecting Arizona, in particular, Arizona's default with respect to its BART obligation and EPA's assumption of that obligation, remain in place. With respect to outstanding FIP obligations, there is no indication that Congress intended to disturb such obligations except where the Amendments alter the underlying SIP planning obligations in a manner that evinces congressional intent to reinstitute State primacy. Thus, for example, a court has relieved EPA of a preexisting obligation to promulgate a FIP to meet the ozone NAAQS in Southern California, because the Amendments granted States additional time to develop their own attainment plans for ozone. See Coalition for Clean Air v. EPA, (C.D. Cal., Order granting motion to vacate settlement agreement, Jan. 9, 1991) ("the structure of the amended Act, with revamped criteria and timing for SIPs, and with an obvious policy that the States are encouraged to take the lead, with the potential FIP to be the stick that drives them, is clear"). In contrast, with respect to this rulemaking, Congress took no action to suggest that it intended to alter either the substance or timing of the requirement to apply BART to sources that may reasonably be anticipated to cause or contribute to visibility impairment in Class I areas where, as here, EPA acts under its present regulations addressing impairment that can be "reasonably attributed" to a source. In particular, the regional haze provisions of section 169B do not affect the present action regarding "reasonably attributable" visibility impairment under section 169A and 40 CFR Part 51, Subpart P, and there are no other new or revised substantive provisions that would relieve EPA of its obligation to complete this FIP action. Thus, EPA's obligation to complete this BART rulemaking remains in place.

determination before proceeding to a BART analysis, there is no support in the regulations for the notion that EPA must proceed in this fashion. Indeed, 40 CFR 51.302(c)(4) speaks of a single requirement to "identify and analyze for BART." In its order of July 6, 1989, the court in EDF v. Reilly granted the EPA's and EDF's joint request that EPA be given a short additional time to conduct a BART analysis and issue a proposal on the need for BART (this time was further extended at SRP's request by the court's order of January 9, 1990), but the regulations do not suggest that it is necessary to formalize EPA's voluntary bifurcation of a single decision and make a "final" determination on the first portion before proceeding to the second. Nor is it necessary to proceed in the fashion these commenters suggest in order to satisfy the rulemaking requirements of the Act of the Administrative Procedure Act because neither a "proposed" nor a "final" reasonable attribution determination is a promulgated regulation or other "final action" within the meaning of those statutes and is not subject to judicial review. Rather, it is a preliminary finding that may lead to a final rule or other final action (i.e., a final decision that emission limitations representing BART are unnecessary, or the imposition of such limitations) that is subject to review.

E. Discussion of Seasonal Controls as a BART Emission

Limitation

In a letter dated January 14, 1990, SRP submitted a position paper to EPA raising the issue of whether EPA could lawfully provide for the seasonal application of pollution control technology in establishing BART. SRP's letter takes the position that the law allows seasonal controls in this case. For the reasons summarized below, EPA believes that at this time seasonal controls are not appropriate under the circumstances of this rulemaking. However, EPA solicits comments on (1) the appropriate use of seasonal controls as BART; and (2) whether, if seasonal controls may be allowed, the record of this rulemaking would support imposition of only seasonal controls at NGS.

In considering whether EPA's traditional interpretation of other provisions of the Clean Air Act regarding emission limitations applies with equal force to BART EPA believes the following relevant statutory provisions and legislative history should be weighed. BART is defined by the Act as "emission limitations" which "reflect" the best available retrofit "technology." See sections 169A(b) and (g)(2), 42 U.S.C. 7491(b) and (g)(2). The regulations likewise refer to BART as "emission limitations" and as an "emission standard." 40 CFR 51.302(c)(2)(iii) and 51.302(c)(4)(ii). The Act defines "emission limitation" and "emission standard" to require "continuous" emission reduction. Section 302(k), 42 U.S.C. 7602(k). The EPA regulations

explicitly require "continuous emission reduction" in any BART emission limitation. 40 CFR 51.301(c). In addition, section 123(a) provides that "[t]he degree of emission limitation required for control of any air pollutant under this title shall not be affected in any manner by . . . any . . . dispersion technique," while section 123(b) defines dispersion technique to include "any intermittent or supplemental control of air pollutants varying with atmospheric conditions." 42 U.S.C. 7423.

The language eventually enacted as section 123 originated in the House version of the 1977 Amendments. The House committee report defines dispersion techniques as "techniques which seek to reduce concentrations of pollutants not by reducing the amounts of pollutants emitted into the air, but rather by relying on the dispersion of pollution throughout the atmosphere."³⁷ (emphasis added).

Although the central focus of the congressional deliberations was on tall stacks and short-term adjustments in the amount of emissions from a source in order to meet SIP limits designed to achieve the national ambient air quality standards. EPA requests comments on the extent to which those concerns also apply to seasonal controls and BART emission limitations, which were not explicitly considered in this legislative history. The House committee report lists several "fundamental policy objections" to

³⁷H.R. Rep. No. 294, 95th Cong., 1st Sess. At 81 (1977).

intermittent controls or dispersion techniques that may be relevant to this rulemaking, including dubious reliability, concern over effects of secondary pollutants, transport of pollutants to other areas, acid rain effects, and simple prudence. See H.R. Rep. No. 294 at 82-88. Language nearly identical in pertinent part to the language eventually enacted in section 302(k) appears in both the House and Senate bills. In explaining the purpose of this language, the House committee report states:

By defining the terms "emission limitation," "emission standard," and "standard of performance," the committee has made clear that constant or continuous means of reducing emissions must be used to meet these requirements. By the same token, intermittent or supplemental controls or other temporary, periodic or limited systems of control would not be permitted as a final means of compliance.³⁸

The Senate committee report elucidates its reason for defining "emission limitation" as follows: "This bill includes a definition of the phrase 'emission limitation' to clarify the committee's view that the only acceptable basic strategy is one based on continuous emission control. Intermittent controls or dispersion techniques are

³⁸Id. at 92.

unacceptable as a substitute for continuous control of pollutants under this act."³⁹

The Senate committee report parallels the House committee report in its statement of reasons for disfavoring intermittent control strategies. The Senate committee report adds that "continuous emission reduction measures are available, they are reliable, and they are economically justified."⁴⁰

SRP's letter focuses exclusively on section 123 in asserting that seasonal controls are permissible as BART, and does not address section 302(k) or the legislative history noted above. In addition, SRP characterizes BART as exclusively directed toward "ambient objectives," citing instances in which EPA has allowed seasonal relaxations in SIP rules intended to achieve national ambient air quality standards.⁴¹ In doing so, SRP assumes that the prior experience regarding SIPs that it cites should govern here. EPA requests comment on SRP's contention that BART is strictly an ambient-based limit. In this regard, commenters should consider EPA's experience under other technology-based standards.

³⁹S. Rep. No. 127, 95th Cong., 1st Sess. 94 (1977).

⁴⁰Id. at 95.

⁴¹EPA notes that none of the examples cited by SRP involve technology-based standards under the Act. In addition, it is not clear that these cases involved "emission Limitations" under Section 110(a)(2)(B) as that term of art is defined in section 302(k), as opposed to other measures under section 110(a)(2)(b).

First, the language and structure of the BART requirement appear to delineate it as a technology-based standard. Second, the overall legislative scheme embodied in the visibility planning requirements of section 169A draw a distinction between the general requirement in section 169A(b)(2) to adopt SIPs that include "such emission limits, schedules of compliance and other measures as may be necessary to make reasonable progress," and the explicit requirement in section 169A(b)(2)(A) to employ BART as one such visibility measure.

Congress appeared to follow a similar pattern regarding the PSD and NSPS programs. For example, Congress adopted the PSD program to protect against actual or potential adverse effects from pollutants emitted to the ambient air by requiring states to adopt SIPs containing a host of emission limitations and other measures to achieve the goal of preventing significant deterioration of air quality. See sections 160(1) and 161, 42 U.S.C. 7470(1) and 7471. However, as one such specific PSD measure, Congress required major new or stationary sources to employ a technology-based emission limit -- the best achievable control technology. See sections 165(a)(4), 169(3), 42 U.S.C. 7475(a)(4), 7479(3). Similarly, under the NSPS program, EPA must publish a list of categories of stationary sources that cause or contribute to air pollution which may endanger public welfare, but Congress required EPA to address these

source categories contributing to ambient pollution problems through the technology-based new source performance standards. Compare section 111(b)(1)(A), 42 U.S.C. 7411(b)(1)(A), with section 111(a)(1), 42 U.S.C. 7411(a)(1). The EPA solicits comment on the use of seasonal controls in this BART rulemaking.

Should EPA decide that facts allow seasonal controls and that the statutory language and legislative history precludes seasonal controls, a possible statutory basis for a seasonal variance would be the procedures contained in the BART exemption provisions of section 169A(c)(2) and (3), and 40 CFR 51.303. The statute explicitly addresses the possibility of BART exemptions for large power plants such as NGS but establishes a very high hurdle for granting any such exemption. It requires the source owner or operator to demonstrate to the satisfaction of the Administrator "that such powerplant is located at such distance from all [Class I areas] that such powerplant does not or will not, by itself or in combination with other sources, emit any air pollutant which may reasonably be anticipated to cause or contribute to a significant impairment of visibility in any such area." It further requires the concurrence of the appropriate FLM's. Thus, if such a variance or exemption could be allowed, the burden would be upon SRP and/or its co-owners to make the necessary demonstration. Because there would be no need for a BART exemption until such time

as final BART emission limits are established, any such request for exemption should be submitted after completion of the BART rulemaking in the form of a request for partial (i.e., seasonal) relief from any final BART limits that might be established as a result of this rulemaking. See 40 CFR 51.303. Under the exemption regulations, in order to demonstrate no "significant impairment," i.e., the absence of "a level of impairment that interferes with the visitor's visual experience of the area," the owner or operator "should address the frequency, extent, time, intensity and duration of the impairment." See 45 FR 80084, 80087. Thus, the factual basis for such a demonstration with respect to this case would be a showing that NGS does not contribute to any significant impairment in any Class I area in seasons other than winter. In this regard, SRP contends that the record demonstrates that summer impairment at Grand Canyon is not attributable to NGS (SRP has not to date addressed potential impacts of NGS at other Class I areas in the vicinity, such as Bryce Canyon National Park, Zion National Park, and Canyonlands National Park). The limited information in the record at this time, however, suggests the contrary.^{42, 43, 44} As stated earlier, EPA and NPS

⁴²Summary Statement by Brand Niemann, March 21, 1990.

⁴³ Modeling Regional Haze in the Southwest: A Preliminary Assessment of Source Contribution (Systems Application, Inc. Feb. 1985).

suspect that emissions from NGS may contribute to regional visibility impairment during the entire year and that a decrease in SO₂ emissions from NGS may improve regional visibility in many Class I areas in the Colorado Plateau. The EPA solicits comment on whether a seasonal variance could be allowed under section 169A(c) in the manner discussed above or under some other statutory authority, on whether such a variance could be considered only after completion of this rulemaking, and (in the event that EPA concludes it would be appropriate to consider a seasonal variance in conjunction with the present proceeding) on the factual question of whether NGS contributes to any significant impairment in any Class I area.

F. The Adequacy of the September 5, 1989 Notice

The SRP asserts that the September 5, 1989 notice was inadequate to meet the requirements set forth in section 307(d)(3) of the Act for a statement of basis and purpose to accompany a notice of proposed rulemaking. The EPA agrees. However, as explained above, comments regarding the adequacy of the September 5, 1989 notice and the draft WHITEX report have been rendered moot by the fact that the NPS has now issued a final NPS report on WHITEX and by today's notice. This notice contains the complete statement of basis and purpose for a regulatory proposal required

⁴⁴ Calculations of the Haze Impacts of the Navajo Generating Station on Grand Canyon and Other National Parks in the "Golden Circle" of Utah and Arizona (D.A. Latimer Jan. 1991).

under section 307(d)(3) of the Act, and reopens the comment period on the issue of reasonably attributable impairment, as well as providing an opportunity to comment on all other issues relevant to this rulemaking. Moreover, EPA believes that insofar as the September 5, 1989 notice addresses the Grand Canyon, the preliminary attribution finding therein was not a regulatory proposal that triggered the requirements of section 307(d)(3).

The SRP also complains that EPA has not disclosed the criteria it is applying for attribution decisions or its position on the validity of the WHITEX report, and so interested parties are unable to prepare meaningful comments. The EPA disagrees. The analyses in the WHITEX report speak for themselves. Except where specifically noted otherwise, EPA agrees with the individual analysis conducted by NPS and with the report's conclusions that the NGS is a significant source of wintertime visibility impairment in the Grand Canyon. The EPA believes that this notice, together with the WHITEX report and the other analyses that have been placed in the docket, provides an adequate basis on which to prepare comments on the technical merits of WHITEX and on the merits of today's proposal in general. The EPA will respond to technical comments when it takes final action on today's proposal.

Regarding SRP's complaint about the absence of "standards" for deciding whether Grand Canyon impairment is

reasonably attributable to NGS, it appears that SRP is calling upon EPA to set a percentage benchmark for its attribution decision. The EPA tentatively believes that it is neither necessary nor appropriate under the visibility regulations to establish such a percentage criteria. The provision in 40 CFR 51.303 allowing exemptions from BART limits where a source owner or operator demonstrates that it does not cause or contribute to a "significant" visibility impairment strongly suggests that a percentage cutoff is inappropriate. Consequently, EPA believes that today's proposed finding of reasonably attributable impairment in the Grand Canyon due in a "substantial" or "significant" degree to emissions from NGS is satisfactory. However, EPA solicits comments on whether, in taking final action on today's proposal, it should establish a percentage criterion for determining whether impairment is reasonably attributable to a stationary facility.

Format for Remedial Action

With respect to past implementation of their visibility requirements and because of the large number of States involved and the ongoing nature of the regulatory requirements, EPA deemed it appropriate to promulgate generic Federal implementing regulations and insert them into the SIP's of the affected States. See, e.g., 40 CFR 52.26 (visibility monitoring strategy, implementing 40 CFR 51.305); 40 CFR 52.27 and 52.28 (visibility new source

review, implementing 40 CFR 51.307); 40 CFR 52.29 (implementing long-range strategies, 40 CFR 51.306); 40 CFR 51.145(b) and (c) (incorporating these provisions into the Arizona SIP). With respect to source attribution and BART, however, Arizona is the only State for which remedial Federal measures are even potentially needed at this time. Accordingly, EPA proposes to simply follow the appropriate provisions of the Part 51 visibility regulations in making source attribution and BART findings regarding NGS and, if those findings result in the imposition of actual emissions limitations under BART, to amend the visibility FIP for Arizona in 40 CFR 52.145 to incorporate such limitations.

Nonprecedential Effect of This Action

Today's proposal is limited to the rulemaking obligation currently before EPA: to determine whether to require the application of BART at NGS in order to remedy visibility impairment in the Grand Canyon. As such, it has no direct precedential effect on any other rulemaking action EPA might undertake in the future regarding other existing sources or Class I areas. This is so because the outcome of this rulemaking will be highly dependent upon facts and circumstances that are unique to this proceeding and thus may not be decisive for other cases. For example, the tracer studies and other analyses contained in the WHITEX report that are keyed to NGS are not necessarily determinative in any other rulemaking addressing other

potential sources of visibility impairment. Should EPA or State agencies conduct visibility rulemakings regarding other Class I areas and other existing sources of pollution in the future, they will need to rely on studies and analyses tailored specifically to the circumstances of those other areas and sources in order to make reasoned regulatory decisions. They will not be able to rely solely on WHITEX findings that specifically address the Grand Canyon and NGS to determine the existence of impairment that is reasonably attributable to any such other source. Likewise, the final BART emission limit that emerges from this rulemaking will not have direct precedential effect elsewhere. The statutory requirement that EPA weigh the costs of compliance, the expected improvement in visibility, and other BART factors before reaching a decision is by nature a case-specific process.

Upon completion of final rulemaking action regarding NGS, EPA will have completed its obligations under the settlement agreement in EDF v. Reilly and under the first round of SIP/FIP planning called for in the visibility regulations. The EPA will then focus its attention on establishing the visibility transport commissions and conducting the regional haze studies called for in new section 169B of the Act added by the Clean Air Act

Amendments of 1990. In addition, EPA plans to conduct a tracer study of emissions from the Mohave Power Plant.⁴⁵

Solicitation of Comments

The EPA solicits comments on all aspects of today's proposal to revise the FIP for the State of Arizona to include emission limits for NGS to address the visibility impairment observed during the winter months in the Grand Canyon.

Specifically, EPA is reopening the comment period for issues pertaining to today's proposed finding that a portion of the visibility impairment in the Grand Canyon is reasonably attributable to NGS.

In addition, EPA solicits comments on all aspects of the BART analysis for NGS including, but not limited to, the following: assumptions made in the IAPCS cost model, the model selected to determine the improvements in visibility expected to occur in the Grand Canyon as a result of SO₂ controls at NGS, the emission limits representing BART, and the appropriate averaging time to be used to determine compliance, the use of seasonal controls, and schedule for compliance. The EPA also solicits comments on the appropriateness of establishing opacity and NO₂ limits similar to plants with emission limitations developed over the past 10 years and NGS's existing emission rates. The

⁴⁵H.R. Rep. 900, 101st Congress, 2d Sess., at 88 (Oct. 1990).

EPA also solicits comments on the benefit analysis performed in conjunction with the BART analysis and on the pilot benefits study submitted to EPA by SRP.

EPA solicits comments on the legal and regulatory issues discussed above and on the format for remedial action.

Finally, SPA solicits comments on updating BART Guideline to delete the NSPS presumption.

The EPA has established a docket for this proposal, Docket Number A-89-02A. The docket is an organized and complete file of all significant information submitted to or otherwise considered by EPA during this proceeding. This docket will serve as the record in the case of judicial review under section 307(b) of the Act, 42 U.S.C. 7607(b).

Classification

Executive Order No. 12291 requires each Federal agency to determine if a regulation is a "major" rule as defined by the order and "to the extent permitted by law," to prepare and consider an RIA in connection with every major rule. Major rules are defined as those likely to result in:

- 1) an annual cost to the economy of \$100 million or more; or
- 2) a major increase in costs or prices for consumers or individual industries; or

- 3) significant adverse effects on competition, employment, investment, productivity, innovation, or international trade.

The EPA has judged the proposed BART regulation for NGS to be a major rule based on projected annualized costs potentially in excess of \$100 million. The EPA has prepared a preliminary RIA that includes estimates of costs, benefits, and net benefits for three control options. The preliminary analysis, titled "Regulatory Impact Analysis of a Revision of the Federal Implementation Plan for the State of Arizona to Include SO₂ Controls for the Navajo Generating Station," and an addendum, titled "Addendum to the Regulatory Impact Analysis of a Revision of the Federal Implementation Plan for the State of Arizona to Include SO₂ Controls for the Navajo Generating Station" are available in Docket A-89-02A.

The preliminary RIA finds that given the estimates and uncertainties captured by the benefit and cost analysis, a 0.10 lbs/MMBtu emission limit will result in potential economic gains to society among all examined alternatives, i.e., the net benefits (estimated benefits minus estimated costs) are positive. An examination of less stringent regulatory alternatives (e.g., a 0.30 lbs/MMBtu and 0.50 lbs/MMBtu SO₂ emission limit) resulted in smaller but still positive estimated net benefits. Taking into consideration the uncertainties in the analysis, the EPA is proposing a

0.30 lbs/MMBtu emission limit rather than the alternative that produces the maximum estimated economic gains. With implementation of the proposed regulation, the cost of power generation at NGS will increase. The projected cost increase is estimated to raise the average cost of power generation by less than 5 percent for utilities using NGS power. The cost impacts could be lower if the acid deposition allowances are sold.

In particular, the cost increase may be partially offset by revenue earned through the sale of SO₂ marketable allowances. The NGS may use this revenue to recover part of the cost of SO₂ control technology or may bank it against the operator's future expansion.

The preliminary RIA was submitted to the Office of Management and Budget (OMB) for review under Executive Order 12291. Written comments from OMB and written EPA response to these comments are available for public inspection at the docket office cited above. A final RIA will be issued at the time of the final rulemaking.

Paperwork Reduction Act

This rule will impose a modest reporting burden on the owners of the NGS to enable EPA to ensure compliance with the emission limits. Because the reporting burden affects only a single source, it is not subject to OMB review under the Paperwork Reduction Act.

Section 317(c) Economic Impact Assessment

The economic impact assessment required by section 317(c) of the Act is incorporated in the RIA.

Regulatory Flexibility Act

Under the Regulatory Flexibility Act (RFA), an agency proposing or promulgating a rule must determine if the rule will have a significant impact on a substantial number of small entities. If a significant impact on a substantial number of small entities is anticipated, an RFA must be prepared. None of the owners of the NGS are classified as small according to guidelines developed by the Small Business Administration.

For most of the utilities using NGS power, the impact on utility rates will be substantially less than 5 percent which applies to the most affected utility (Nevada Power Company).

Accordingly, I hereby certify that the proposed regulation will not have a significant impact on a substantial number of small entities. Therefore, this proposed regulation does not require an RFA.

1/31/91

Date



ACTING Administrator

* * *

40 CFR 52.145 is amended by adding

"(d) This paragraph is applicable to the fossil fuel-fired, steam-generating equipment designated as Units 1, 2, and 3 at the Navajo Generating Station in the Northern Arizona Intrastate Region (§81.270 of this chapter).

(1) No owner or operator of the fossil fuel-fired, steam-generating equipment to which this paragraph is applicable shall discharge or cause the discharge of:

(i) Sulfur oxides into the atmosphere in excess of 126 ng/J [0.30 pounds per million British thermal units (lbs/MMBtu)] heat input. Compliance with this emission limit to be determined on a 30-day rolling average.

(ii) Nitrogen oxides into the atmosphere in excess of 210 ng/J (0.50 lbs/MMBtu) heat input based on a 30-day rolling average.

(iii) Stack emissions which exhibit greater than 20 percent opacity (6-minute average) except for one 6-minute period per hour of not more than 27 percent opacity.

(iv) The owner or operator of the NGS shall install and maintain continuous emission monitors to determine compliance with the emission limitations in subparagraph (i), (ii), and (iii) above on a continuous basis. This equipment shall meet the specifications listed in Appendix B of 40 CFR Part 60. The facility shall comply with the

quality assurance procedures found in Appendix F of 40 CFR Part 60.

(2) The owner or operator of the fossil fuel-fired, steam-generating equipment to which this paragraph is applicable (i) shall notify the EPA Regional Office or its designee, of the SO₂, NO_x, oxygen and carbon dioxide emissions, and opacity according to the procedures found in 40 CFR 60.7.

(ii) Shall maintain records according to the procedures found in 40 CFR 60.7.

(3) The requirements of sections (1) and (2) of this paragraph shall be applicable to one unit at the facility by January 1, 1995, two units by January 1, 1997, and all units by January 1, 1999.