

To See or Not to See: The Viability of Visibility at the Grand Canyon

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I. INTRODUCTION

On October 4, 1993, the United States Supreme Court denied the petition of several Arizona water authorities challenging the promulgation of an Environmental Protection Agency ("EPA") rule that requires the Navajo Generating Station ("NGS") in Page, Arizona to reduce emissions by ninety percent over the next few years.¹ With the denial of the petition, the Supreme Court allowed the 9th Circuit's decision in *Central Arizona Water Conservation District v. United States Environmental Protection Agency*² ("CAWCD") to remain in effect. The 9th Circuit upheld the validity of the EPA rule requiring NGS to reduce emissions. Thus, the EPA has taken direct action to protect visibility under the Clean Air Act³ for the first time since Congress made protecting visibility a goal of the Clean Air Act in 1977.⁴

At the same time that EPA was promulgating the rule challenged in *CAWCD*,⁵ Congress, dissatisfied with the lack of progress since the 1977 Amendments,⁶ was again amending the

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1. Air Pollution: *Supreme Court Action Leaves EPA Order on Visibility in Grand Canyon Undisturbed*, [Current Developments] 24 *Env't. Rep. (BNA)* 1077 (Oct. 8, 1993).

2. 990 F.2d 1531 (9th Cir. 1993), *cert. denied*, 114 S. Ct. 94 (1993).

3. 42 U.S.C. § 7491 (1988).

4. Clean Air Act Amendments of 1977, Pub. L. No. 95-95, 91 Stat. 742 (codified at 42 U.S.C. §§ 7491-7671q (1988 & Supp. V 1993)).

5. 56 Fed. Reg. 50,177 (1991).

6. *See, e.g.*, 136 CONG. REC. S16992 (1990) (statement of Sen. Reid). Senator Reid expressed the attitude of many other Senators and Congressman when he said,

Clean Air Act.⁷ The 1990 amendments further addressed visibility protection. The addition of Section 169B to the Clean Air Act authorized new EPA action to protect visibility,⁸ including the creation of regional visibility transport commissions to address the problems of regional haze and interstate pollution.⁹ Section 169B also mandated the creation of the first of these regional visibility transport commissions, the Grand Canyon Visibility Transport Commission¹⁰ ("GCVTC"), to confront reduced visibility at the Grand Canyon. Congress took this action to complement the pending EPA rule for NGS because of a realization that, while a significant cause, NGS was not the only cause of reduced visibility at the Grand Canyon.¹¹ Clearly, Congress and EPA hope that by reducing emissions at NGS and implementing the recommendations of the GCVTC, EPA and the states will achieve the goal Congress set forth in Section 169A in 1977; "... the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas¹² which impairment results from manmade air pollution."¹³

This paper focuses on the efforts of EPA and the states to protect visibility at the Grand Canyon. Part II assesses the need for visibility protection and EPA's history and performance regarding visibility protection. Part III addresses the specific problems of the Grand Canyon and the measures that EPA and the states are presently implementing to correct visibility impairment. Part IV sets forth what additional measures are necessary to make

"[t]he short shrift given to visibility improvement in our national parks and wilderness areas over the past decade will be tolerated no more." *Id.*

7. Clean Air Act Amendments of 1990, Pub. L. No. 101-549, 104 Stat. 2399 (codified as amended at 42 U.S.C. §§ 7401-7671q (1988 & Supp. V 1993)).

8. 42 U.S.C. § 7492 (Supp. V 1993).

9. *Id.* § 7492(c).

10. *Id.* § 7492(f).

11. *Central Ariz. Water Conservation Dist. v. United States Environmental Protection Agency*, 990 F.2d 1531, 1540, n. 9 (9th Cir. 1993) (citing 136 CONG. REC. S2890 (March 21, 1990)). Even EPA acknowledged that "NGS is not the only source of visibility impairment" at the Grand Canyon and that regional haze also adversely affects visibility there. 56 Fed. Reg. 50,172, 50,177 (1991).

12. Class I Federal areas are those areas where the need for visibility protection is the highest. These consist of national parks in excess of 6,000 acres and national wilderness areas, national monuments and international parks in excess of 5,000 acres. 42 U.S.C. § 7472(a) (Supp. V 1993). Grand Canyon National Park was classified as a class I Federal area in 1979. 44 Fed. Reg. 69,122 (1979). For a complete list of class I Federal areas, see 40 C.F.R. pt. 81, subpart D (1993).

13. 42 U.S.C. § 7491(a)(1) (1988).

“reasonable progress” towards the national goal that Congress created in 1977.

II.

VISIBILITY PROTECTION AND EPA

A. *Why Protect Visibility?*

When Congress made visibility protection a goal of the Clean Air Act Amendments of 1977,¹⁴ its motivation was based on economic factors and its recognition that “[t]he current national ambient air quality standards are not adequate to protect visibility.”¹⁵ The 1977 legislative history reveals a monetary view of the need to protect visibility. Congress focused on the economic viability of areas near such places as Grand Canyon and Yellowstone National Parks. These parks have breathtaking panoramas and attract millions of tourists.¹⁶ The legislative history intimates that decreasing visibility at areas such as the Grand Canyon would reduce the number of tourists, which would have detrimental economic effects on those areas near national parks. Even after the passage of Section 169A, this economic viability concern lingered.¹⁷

Economic concerns are still a legitimate reason for protecting visibility. Just as in 1977, the Grand Canyon and other national parks continue to attract millions of tourists who come to see the grand vistas. Without adequate protection of visibility in parks and other class I Federal areas, the number of tourists may begin to decline, which will harm the economies of communities near national parks and wilderness areas.

Determining the economic benefits of visibility protection remains a focal point because of the potentially high cost of protecting visibility. For example, the EPA rule compelling NGS to reduce emissions by ninety percent requires an initial capital outlay estimated at \$430 million, with annual costs estimated at

14. Pub. L. No. 95-95, 91 Stat. 685 (codified as amended at 42 U.S.C. §§ 7401-7671q (1988 & Supp. V 1993)).

15. H.R. REP. NO. 294, 95th Cong., 1st Sess. 204 (1977), reprinted in 1977 U.S.C.C.A.N. 1077, 1283.

16. *Id.* at 203-04.

17. See *Impacts of Air Pollution on National Park Units: Hearings Before the Subcomm. on National Parks and Recreation of the House Comm. on Interior and Insular Affairs*, 99th Cong., 1st Sess. 235 (1985) [hereinafter *Impacts of Air Pollution*] (statement of Susan Buffone, Program Coordinator, National Parks and Conservation Association).

\$89.6 million.¹⁸ In contrast, there is no easy way to quantify the benefits of visibility.¹⁹ However, policy makers must continue trying to quantify the benefits of improved visibility to justify the expenditures visibility protection requires. Additionally, quantifying the benefits of improved visibility will allow policy makers to use these benefits to help justify the large expenditures needed to meet the Clean Air Act's primary standards because actions under other aspects of the Clean Air Act can benefit visibility as well.²⁰

18. *Central Ariz. Water Conservation Dist. v. EPA*, 990 F.2d 1531, 1533 (9th Cir. 1993). The high cost of visibility protection is a major issue, and is typically one which opponents of visibility protection point to when arguing against further action under Section 169. See, e.g., 136 CONG. REC. S16,989 (1990) (statement of Sen. Helms). Senator Helms opposed the Clean Air Act Amendments of 1990 based on the allegedly excessive costs of environmental protection and the threat to jobs.

Similarly, industry groups such as the Western Regional Council lobbied against further measures to control acid rain and protect visibility because of the cost, since Western coal-fired plants were already subject to strict and costly emissions limitations. Additionally, the Council contended that while visibility protection of class I Federal areas is important, action should be delayed due to insufficient information on the link between man-made pollution and regional haze. The Council also claims that EPA visibility regulations overstep the authority granted by the Clean Air Act by including integral vistas located outside of class I Federal areas. *Impacts of Air Pollution*, *supra* note 17, at 315-33 (1977) (statements of J. Robert White and Edward Haase of the Western Regional Council).

19. There have been several attempts to quantify the benefits of visibility. See UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, DEVELOPING LONG TERM STRATEGIES FOR REGIONAL HAZE: FINDINGS AND RECOMMENDATIONS OF THE VISIBILITY TASK FORCE App. C, at 9-48 (1985) [hereinafter VISIBILITY TASK FORCE]. The task force's report discusses several different methods used to value visibility and looks at case studies using contingent valuation methods (asking people how much they would be willing to pay for improved visibility) and property value methods (determining how much more a person would pay for a home if its views were better due to increased visibility). See also UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, PROTECTING VISIBILITY: AN EPA REPORT TO CONGRESS § 1.4 (1979) [hereinafter PROTECTING VISIBILITY: AN EPA REPORT TO CONGRESS]; ROBERT D. ROWE & LAURINE G. CHESTNUT, THE VALUE OF VISIBILITY: THEORY AND APPLICATION (1982). Rowe and Chestnut provide a detailed means of assessing the economic value of visibility through a variety of models and case studies. They determine that the value of visibility can be quantified and that to do so will lead to more informed policy choices. However, they also conclude that more work is "needed in order to improve the reliability and credibility of the results." *Id.* at 212.

20. See, e.g., *EPA Releases Implementation Plan for Cleaner Air in Three Air Basins*, Cal. Env't Daily (BNA) (Feb. 17, 1994). If successful, this Federal Implementation Plan ("FIP") for the Los Angeles, Ventura and Sacramento air basins will result in reductions of overall emissions. While the FIP is an attempt to bring these three air basins into compliance with the Clean Air Act's health based ambient standards, the reduction in overall emissions will benefit visibility.

There are also non-economic reasons for protecting visibility in national parks and wilderness areas. First, and perhaps foremost, is "the importance of preserving our natural heritage."²¹ This objective has long been recognized in the United States, as seen by the passage of the National Parks Organic Act of 1916²² that created the National Park Service and charged it "to conserve the scenery . . . and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."²³ This value remains important. During the discussions of the Clean Air Act Amendments of 1990, lawmakers referred to the national parks as the "Nation's jewels" and the "Nation's treasures."²⁴ Often, it is difficult to put into words why this is an important value. Perhaps one author put it best when, regarding the grand vistas of the American West he wrote, "[t]he awe which these special places inspire created the unquestioned consensus among Americans that these places should forever be preserved, not only for ourselves but for posterity."²⁵

Aesthetic concerns also provide a basis for protecting visibility. EPA noted this in its 1979 report to Congress, stating that "the aesthetic component of visibility is a major component of visibility valuation."²⁶ While viewing aesthetics in terms of their economic effects, the report noted that one of the primary reasons for a visit to a place such as the Grand Canyon is to see the vistas.²⁷

Closely related to aesthetic values are what experts and researchers term the psychological benefits of visibility protection. These benefits stem from the knowledge that a place such as the Grand Canyon and its majestic vistas are not only protected, but

21. PROTECTING VISIBILITY, AN EPA REPORT TO CONGRESS, *supra* note 19, at § 1.4.1.

22. 39 Stat. 535 (codified at 16 U.S.C. §§ 1,2,4 (1988)).

23. 16 U.S.C. § 1 (1988).

24. 136 CONG. REC. S16992 (1990) (statement of Sen. Reid). Similar sentiments were echoed by Rep. Conte in his support of the initial amendment to increase visibility protection in the national parks. 136 CONG. REC. H2817 (1990).

25. Robert E. Yuhnke, *The Importance of Visibility Protection in the National Parks and Wilderness*, in *MANAGING AIR QUALITY AND SCENIC RESOURCES AT NATIONAL PARKS AND WILDERNESS AREAS* 296 (Robert D. Rowe and Lauraine G. Chestnut eds., 1983).

26. PROTECTING VISIBILITY, AN EPA REPORT TO CONGRESS, *supra* note 19, at § 1.4.2.1.

27. PROTECTING VISIBILITY, AN EPA REPORT TO CONGRESS, *supra* note 19, at § 1.4.2.1.

unimpaired.²⁸ As EPA noted, the benefit arises from knowing that the option is available to view a scenic vista at the Grand Canyon.²⁹ Alternatively, the benefit can derive from the good feeling a person has simply knowing that a scenic vista exists, whether or not the person intends to actually travel to see that particular picturesque overlook.³⁰ Simply put, "we are enriched by the existence of things"³¹ such as a majestic view or grand vista at the Grand Canyon, and "diminished when they cease to exist."³²

In addition to the above reasons for protecting visibility at class I Federal areas, there is an indirect reason. Better visibility at class I Federal areas would mean better visibility outside these areas as well.³³ Regional haze does not only reduce visibility at class I Federal areas, but in fact has its largest impact on visibility in urban areas.

In many areas visibility is extremely low compared to what it could be. For example, in the East, regional haze often results in visual ranges of less than 6 miles.³⁴ Similarly, in California visual ranges are below 10 miles in Los Angeles, and are between 10 and 15 miles in other areas of California, such as the San Fran-

28. PROTECTING VISIBILITY, AN EPA REPORT TO CONGRESS, *supra* note 19, at § 1.4.2.2.

29. PROTECTING VISIBILITY, AN EPA REPORT TO CONGRESS, *supra* note 19, at § 1.4.2.2.

30. Daniel R. Talheim, *Unrevealed Extramarket Values: Values Outside the Normal Range of Consumer Choices*, in *MANAGING AIR QUALITY AND SCENIC RESOURCES AT NATIONAL PARKS AND WILDERNESS AREAS* 275-6 (Robert D. Rowe & Lauraine G. Chestnut eds. 1983). Professor Talheim states that policy makers must include existence value in their decision making process, stating that "[e]xistence value, for example, can be thought of as part of our 'real' wealth." *Id.* at 285. In the same article, Professor Talheim also tries to quantify option values, similar to what EPA refers to in its report to Congress. *Id.* at 281.

31. *Id.* at 285.

32. *Id.*

33. COMMITTEE ON HAZE IN THE NATIONAL PARKS AND WILDERNESS AREAS, *PROTECTING VISIBILITY IN NATIONAL PARKS AND WILDERNESS AREAS* 10 (1993) [hereinafter *PROTECTING VISIBILITY IN NATIONAL PARKS*]. The National Research Council ("NRC") believes that the sources of impaired visibility in class I Federal areas are often located hundreds of miles away from the actual area. This is one reason NRC recommends that solutions be made on a regional basis, rather than a local one. *Id.* at 7. See also *Impacts of Air Pollution*, *supra* note 17, at 294-302 (statement of Douglas A. Latimer and accompanying report *Everything Is Hitched to Everything Else*).

34. VISIBILITY TASK FORCE, *supra* note 19, app. A at 7. Depending on the season, the median visual range in many parts of the East is between 4.3 and 8.7 km. See *PROTECTING VISIBILITY IN NATIONAL PARKS*, *supra* note 33, at 30-40. Even in many non-urban areas the median visual range is below 30 km in the East.

cisco Bay Area, the San Joaquin Valley and Southern California outside Los Angeles.³⁵ In contrast, ranges in excess of 100 miles exist in areas such as the Colorado plateau.³⁶

Better visibility in areas outside class I Federal areas is desirable for several reasons. First, better visibility enhances property values. This was one of the conclusions of a report prepared for the California Air Resources Board in 1986³⁷ which found that property values would increase with changes in the visual range, leading to a significant overall benefit in the larger urban areas. Similar conclusions were found in other studies done in both the East and California.³⁸ Second, improved visibility in general would indicate an overall decline in air pollution, as many of the causes of visibility impairment also cause acid rain and non-attainment of the Clean Air Act's health based ambient standards.³⁹ Finally, while never cited as a primary factor in any airplane accidents, "pilots and non-pilots assume that reduced visibility degrades the level of safety of flight operations."⁴⁰

Thus, in addition to the direct economic, aesthetic, psychological and conservationist reasons for protecting against further impairment and even improving visibility in class I Federal areas, there are potential indirect benefits that further justify the enormous task of protecting visibility and trying to achieve the goal Congress first set forth in 1977.

B. *Historical Background of Visibility Protection*

Visibility protection became an issue due to a series of reports and congressional hearings that showed a general decline in visibility from the late 1940s through the mid 1970s.⁴¹ These hear-

35. VISIBILITY TASK FORCE, *supra* note 19, app. A at 21.

36. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 30-31.

37. ROBERT D. ROWE ET AL., THE BENEFITS OF AIR POLLUTION CONTROL IN CALIFORNIA 2-41 (1986).

38. VISIBILITY TASK FORCE, *supra* note 19, app. C at 15-24.

39. *Impacts of Air Pollution*, *supra* note 17, at 295 (statement of Douglas A. Lattimer); PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 10.

40. VISIBILITY TASK FORCE, *supra* note 19, app. C at 49.

41. See S. REP. NO. 1015, 92d Cong., 2d Sess. (1972) ("Problems of Electric Power Production in the Southwest"); H.R. REP. NO. 294, 95th Cong., 1st Sess. 204-05 (1977) reprinted in 1977 U.S.C.A.N. 1077, 1283-84 (citing testimony by the National Parks and Conservation Association and the John Muir Institute before the Health and Environment Subcommittee earlier in 1977 and a July 1975 article in the ENVTL. JOURNAL entitled *Smog Alert for Our Southwestern National Parks*); See also VISIBILITY TASK FORCE, *supra* note 19, app. A (visibility reduction was a regional, rather than local, phenomena by 1972 and reduced visibility occurred regard-

ings revealed that visibility had deteriorated over time at several national parks known for their grand vistas.⁴² These reports and hearings prompted Congress to add Sections 160-69⁴³ and 169A⁴⁴ to the Clean Air Act Amendments of 1977. Sections 160-69 are the Prevention of Significant Deterioration ("PSD") program which Congress envisioned as a means of preventing construction of new stationary sources if they would lead to degradation of air quality.⁴⁵ Congress created Section 169A as a complement to the PSD program. Section 169A addressed existing visibility impairment and specifically authorized EPA to 1) identify mandatory class I Federal areas where visibility is an important value;⁴⁶ 2) study and report to Congress on the available methods for implementing Section 169A;⁴⁷ and 3) promulgate regulations to assure progress towards the national goal.⁴⁸

Responsibility for carrying out EPA's visibility rules is with the states. States must incorporate visibility protection into their State Implementation Plans ("SIP").⁴⁹ If a state's SIP fails to include adequate provisions for visibility protection, the Clean Air Act authorizes EPA to issue a Federal Implementation Plan ("FIP") for the state.⁵⁰

In 1980 the EPA promulgated visibility regulations under section 169A.⁵¹ EPA elected to use a "phased approach to visibility protection,"⁵² with Phase I directed at controlling what EPA

less of the prevailing weather conditions based on the analysis of data the National Weather Service compiled since 1948).

42. H.R. REP. NO. 294 at 204-05.

43. 42 U.S.C. §§ 7470-79 (Supp. V 1993).

44. *Id.* § 7491 (1988).

45. The program created a system of initial classifications for different areas, with class I areas encompassing national parks, wilderness areas and monuments. 42 U.S.C. § 7472 (Supp. V 1993). To protect class I areas, any proposal to construct a major emitting facility that will affect a class I area must obtain a permit approved by the appropriate federal land manager, employ best available control technology or show that emissions from the facility will not violate any air quality or emission standards. *Id.* § 7475 (1988). EPA or the states are authorized to take whatever measures are necessary to ensure conformity. *Id.* § 7477 (Supp. V 1993).

46. *Id.* § 7491(a)(2) (1988).

47. *Id.* § 7491(a)(3) (1988). EPA completed this report within the statutory time frame and delivered it to Congress in 1979. See PROTECTING VISIBILITY: AN EPA REPORT TO CONGRESS, *supra* note 19.

48. 42 U.S.C. § 7491(a)(4) (1988).

49. *Id.* § 7410(a) (Supp. V 1993).

50. *Id.* § 7410(c).

51. 45 Fed. Reg. 80,084 (1980) (codified at 40 C.F.R. §§ 51.300-.307).

52. *Id.* at 80,085.

termed "plume blight"⁵³ and Phase II focused on "regional haze."⁵⁴ Phase I required states to identify sources of visibility impairment caused by plume blight and to take sufficient measures to ensure "reasonable progress" towards the national goal.⁵⁵ Sufficient measures included emissions limitations and the development of a long term strategy to reduce emissions.⁵⁶ For Phase II, however, EPA chose to defer action until "improvement in monitoring techniques provides more data on source-specific levels of visibility impairment, . . . and our scientific knowledge about . . . visibility impairment improves."⁵⁷

Phase I regulations required that any state with a mandatory class I Federal area revise its SIP within nine months of the promulgation of the rule.⁵⁸ After the nine month period had elapsed, all but one state had failed to submit a revised SIP.⁵⁹ After EPA inaction, the Environmental Defense Fund and other environmental groups brought a citizen suit⁶⁰ against EPA to force the agency to promulgate FIPs as required under section 110 of the Clean Air Act.⁶¹ This lawsuit was settled by a 1984 consent decree that "required EPA to review existing SIPs for deficiencies and allow states to cure those deficiencies."⁶² Three years later EPA disapproved the SIPs of twenty-nine states for failing to comply with visibility regulations⁶³ and thereafter incorporated its own visibility FIP⁶⁴ into the SIPs of the 29 states. While incorporating FIPs for visibility protection, EPA deferred action in every case because it attributed visibility impairment to regional haze or lacked "sufficient documentation or technical

53. *Id.* "Plume blight" refers to impairment "that can be traced to a single existing stationary facility." *Id.*

54. *Id.* EPA defined "regional haze" as "widespread, regionally homogenous haze from a multitude of sources which impairs visibility in every direction over a large area." *Id.*

55. 42 U.S.C. § 7491(b)(2) (1988). See also 40 C.F.R. § 51.302(c)(i)(i) (1993).

56. 42 U.S.C. § 7491(b)(2) (1988).

57. 45 Fed. Reg. at 80,086.

58. *Id.* at 80,085.

59. *Central Ariz. Water Conservation Dist. v. EPA*, 990 F.2d 1531, 1535 (9th Cir. 1993).

60. The Clean Air Act authorizes citizen suits if there are alleged violations of emission standards, a failure of the Administrator to perform nondiscretionary duties under the act, or attempts to construct a major emitting facility without or in violation of a permit. 42 U.S.C. § 7604 (Supp. V 1993).

61. *Environmental Defense Fund v. Reilly*, No. C82-6850-RPA (N.D. Cal. Apr. 20, 1984).

62. *CAWCD*, 990 F.2d at 1535.

63. 52 Fed. Reg. 45,132, 45,133 (1987) (codified at 40 C.F.R. §§ 52, 81).

64. 40 C.F.R. § 52.29(a) (1993).

support to positively identify any specific source"⁶⁵ The only action EPA took at that time was to continue research and monitoring activities.⁶⁶ EPA has taken no further action under Phase I with the exception of the rule promulgated specifically for NGS in 1991.⁶⁷

Under Phase II there has been no regulatory activity at all. A direct challenge to EPA inaction occurred in 1986⁶⁸ when the state of Vermont submitted its proposed plan addressing visibility impairment at the Lye Brook National Wilderness Area, Vermont's only class I Federal area. Vermont proposed a federally enforceable long term strategy to combat the effects of regional haze at Lye Brook, including emissions reductions of sulfates across the nation.⁶⁹ Vermont also asked EPA to disapprove and revise the SIPs of eight upwind states which were major contributors to visibility impairment at Lye Brook.⁷⁰

EPA ultimately decided to take "no action" on those parts of Vermont's SIP addressing regional haze and refused to disapprove the SIPs of the eight upwind states.⁷¹ EPA stated that Vermont's proposal was outside the scope of existing EPA regulations and that action on regional haze was not federally enforceable until EPA promulgated rules to control regional haze.⁷² Vermont then filed a petition for review of EPA's decision.⁷³ While lamenting the continued impairment of visibility at Lye Brook, the Second Circuit nevertheless upheld EPA's actions, reasoning that EPA rules did not require Vermont to include regional haze measures in its SIP.⁷⁴ The court asserted

65. 52 Fed. Reg. at 45,133. Grand Canyon National Park was one of seven class I Federal areas on which EPA deferred action pending more scientific data even though it believed the area had visibility impairment due to certain local sources.

66. *Id.* at 45,134-36.

67. 56 Fed. Reg. 50,177 (1991) (codified at 40 C.F.R. § 52, subpart D (1993)).

68. *Vermont v. Thomas*, 850 F.2d 99, 101 (2d Cir. 1988).

69. *Id.*

70. *Id.*

71. 52 Fed. Reg. 26,973-74 (1987).

72. *Id.* at 26,974.

73. Under 42 U.S.C. § 7607(b)(1) a party may challenge any "final rule" issued by EPA as an administrative action "not in accordance with law." 42 U.S.C. § 7607(d)(9)(A) (1988); 5 U.S.C. § 706(2)(A) (1988). However, the courts, "in view of the EPA's responsibility to administer the Clean Air Act . . . give great deference to the Administrator's interpretation of the statute." *Vermont v. Thomas*, 850 F.2d at 102 (citing *EPA v. National Crushed Stone Ass'n*, 449 U.S. 64, 83 (1980)). This deference is even greater when the Administrator is interpreting agency regulations. *Udall v. Tallman*, 380 U.S. 1, 16 (1965).

74. *Vermont v. Thomas*, 850 F.2d at 104.

that while Vermont was free to adopt more stringent regulations pursuant to section 116 of the Clean Air Act, it could not impose its standards on upwind states⁷⁵, which would occur if EPA incorporated regional haze control measures in a federally enforceable SIP for Vermont. The only remedy the court offered Vermont was to petition EPA for rule making under the Administrative Procedure Act⁷⁶ to address regional haze.⁷⁷

EPA has continued to research ways of combatting regional haze. For example, in 1984 EPA organized an interagency task force to develop long term strategies for addressing regional haze.⁷⁸ The task force published its findings in April 1985⁷⁹ and made several recommendations in the areas of research, policy analysis and regulatory and legislative action.

To improve research efforts the task force recommended establishing and maintaining EPA led research programs with other agencies, private industry and environmental groups.⁸⁰ The task force also commented on lost opportunities due to budgetary constraints and intimated that more funding was necessary. Regulatory and legislative recommendations included: 1) recognizing and acting on the linkage between visibility and regional sulphur oxide emissions in the East; 2) vigorous enforcement of existing regulations in the West; and 3) implementing visibility regulations under Phase I with a consideration of future regulation under Phase II.⁸¹

A second major research effort into regional haze began in 1990 under the guidance of the National Research Council's Committee on Haze in National Parks and Wilderness Areas. The committee report, published in January 1993, stated that current approaches to identify and regulate causes of haze cannot eliminate the problem, and that "[a] program that focuses solely on determining the contribution of individual emission sources to visibility impairment is doomed to failure."⁸² Instead, the NRC proposed that strategies should "consider many sources simulta-

75. *Id.* (citing *Air Pollution Control Dist. v. EPA*, 739 F.2d 1071, 1037-88 (6th Cir. 1984)). For a discussion of this case, see *infra* notes 187-92 and accompanying text.)

76. 5 U.S.C. § 553(e) (1988).

77. *Vermont v. Thomas*, 850 F.2d at 103.

78. 49 Fed. Reg. 44,770 (1984).

79. VISIBILITY TASK FORCE, *supra* note 19.

80. VISIBILITY TASK FORCE, *supra* note 19, at 18-19.

81. VISIBILITY TASK FORCE, *supra* note 19, at 20-21.

82. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 7.

neously on a regional basis"⁸³ The report additionally noted that different strategies are needed in the East and West due to different sources of visibility impairment.⁸⁴ Finally, the report criticized government efforts to date, cited a "lack of commitment" to protect and improve visibility, and contended that regulatory agencies can act without complete scientific knowledge and still be effective in achieving the national goal.⁸⁵

EPA has not taken any new action since the issuance of NRC's report. However, action is anticipated after November 1995 when GCVTC delivers its report.⁸⁶ Regional haze is among the issues that GCVTC will address.⁸⁷ GCVTC should also recommend rules to protect against visibility impairment.⁸⁸ While improvements are anticipated in the near future, EPA's lack of action on regional haze to date has been disappointing and was one of the reasons why Congress created Section 169B in the 1990 Clean Air Act Amendments.⁸⁹

III.

VISIBILITY IMPAIRMENT AT THE GRAND CANYON

Visibility impairment at the Grand Canyon has been a significant issue for many years. Observers began to record visibility at the Grand Canyon in the 1960s, and researchers used these studies for comparison to results of studies conducted during a nine month strike at copper smelters in Southern Arizona.⁹⁰ The leg-

83. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 7.

84. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 9-10. The report notes that in the East, sulfur dioxide emissions from coal-fired plants account for about half of all visibility impairment. These emissions are predicted to decrease by about 33% over the next two decades due to the acid rain provisions of the Clean Air Act Amendments of 1990. 42 U.S.C. § 7651 et seq. (Supp. V 1993). While this will not eliminate regional haze in the East, there should be marked improvement in visibility.

In the West, on the other hand, there is no single source that contributes to as large a percentage of haze as coal-fired plants in the East. Thus, control efforts must include many sources, including coal-fired utility plants (such as NGS), automobiles, industrial plants, forest-management burning and "fugitive dust" from agricultural activities. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 9-10.

85. *Id.* at 11.

86. The GCVTC began meeting November 13, 1991. 56 Fed. Reg. 57,522 (1991). Its report to EPA is due within 4 years. 42 U.S.C. § 7492(d)(2) (Supp. V 1993).

87. 42 U.S.C. § 7492(d)(2)(C) (Supp. V 1993).

88. *Id.*

89. Statement of Sen. Reid, *supra* note 6.

90. PROTECTING VISIBILITY: AN EPA REPORT TO CONGRESS, *supra* note 19, at 8. Notable increases in visibility at the Grand Canyon were recorded during the nine month strike. This was early proof that pollutants were transported over long dis-

islative history of the Clean Air Act Amendments of 1977 cited reduced visibility at the Grand Canyon as one of the reasons for protecting visibility.⁹¹ Similarly, testimony at congressional hearings in the 1970s frequently cited reduced visibility at the Grand Canyon.⁹²

A. Sources of Visibility Impairment

Once impaired visibility at the Grand Canyon became an issue, several agencies focused on determining the causes of this impaired visibility. However, EPA was unable⁹³ to find any clear answers for several years, due mainly to a lack of effort.⁹⁴ For example, seven years after adopting the phased approach to protecting visibility in 1980,⁹⁵ EPA stated that Grand Canyon National Park was one of seven class I Federal areas where it believed "plume blight" was impairing visibility.⁹⁶ However, EPA went on to say it would take no action because it could not accurately determine the source of the impairment.⁹⁷

tances as the copper smelters affected by the strike were over 300 kilometers away from the Grand Canyon. Once the smelters were operating again, visibility declined at the Grand Canyon. See also John Trijonis, *Visibility in the Southwest - An Exploration of the Historical Data Base*, 13 *ATMOSPHERIC ENV'T* 833 (1979).

91. H.R. REP. NO. 294 at 203-04.

92. *Impacts of Air Pollution supra* note 17.

93. EPA was also unwilling to implement the visibility protection program it promulgated in 1980 due to the anti-regulatory agenda of the Reagan Administration. PROTECTING VISIBILITY: AN EPA REPORT TO CONGRESS, *supra* note 19, at 69. Cf. Ruckelshaus *Widely Applauded for Making EPA Work Again, But Critics See Lack of Leadership on Issues Before Congress*, 15 *Env't. Rep. (BNA)* 56 (May 11, 1984) (discussing Ruckelshaus's first year as EPA administrator and the anti-environment and anti-regulatory policies of the Reagan administration); David Hoffman, *Election '84: The Reagan Record*, WASH. POST, Jan. 31, 1984, at A6 ("Administration efforts to soften provisions in many of the major environmental laws, for example, have succeeded only in galvanizing conservation and public health groups into a formidable counterforce."); Kathleen Hughes, *As the Environment Suffers, Ruckelshaus Balks*, N.Y. TIMES, May 2, 1984, at A27 ("Right down the line, the EPA chief acts as a front man for Ronald Reagan's disastrous environmental policies.").

94. Implementation of the visibility protection requirements of Section 169A was not a high priority of EPA in the early years of the Reagan Administration, and action only began after several environmental organizations filed lawsuits. See *supra* notes 60-62 and accompanying text.

95. 45 Fed. Reg. at 80,085-86.

96. 52 Fed. Reg. at 45,132-34. The other six areas were Petrified Forest National Park and Saguaro Wilderness Area in Arizona, Moosehorn Wilderness Area in Maine, Roosevelt Campobello International Park in New Brunswick, Canada, Voyageurs National Park in Minnesota and Canyonlands National Park in Utah.

97. *Id.* at 45,134.

While EPA was taking no action, due in part to sharp drops in funding for visibility research and regulation,⁹⁸ the National Park Service ("NPS") was increasing its research and monitoring of visibility impairment at the national parks.⁹⁹ Additionally, other organizations, such as the North American Space Administration and the National Oceanic and Atmospheric Administration, were conducting research programs on issues such as acid rain that have benefits for visibility protection.¹⁰⁰

One element of NPS's efforts focused on determining the impact of the Navajo Generating Station ("NGS") in Page, Arizona on visibility in Grand Canyon National Park. NGS had long been suspected of impairing visibility at the Grand Canyon since it is located less than 25 kilometers from the eastern edge of the park and is only 110 kilometers away from the village on the south rim.¹⁰¹ Thus, in 1987 NPS employed the Winter Haze Intensive Tracer Experiment ("WHITEX") to determine the impact of NGS on visibility impairment at the Grand Canyon.¹⁰² The experiment involved the release of a tracer gas¹⁰³ from NGS, and subsequent monitoring for the "tracer" gas in the Grand Canyon. Upon completion of the experiment, NPS concluded

98. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 70.

99. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 72.

100. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 70.

101. *See, e.g.*, H.R. REP. NO. 294 at 204. *See also* 123 CONG. REC. 27,076 (1977) (statement of Rep. Waxman). Discussing the importance of protecting the Grand Canyon, Representative Waxman stated "[t]he Four Corners and Navajo powerplants can expect to retrofit with additional pollution controls to limit the vast deterioration in visibility which their plumes have caused." *Id.*

Ironically, NGS was built as a result of a victory of environmental groups in protecting Grand Canyon National Park. Plans initially existed to build a dam at Marble Canyon, inside the boundary of the park, to meet the growing need for power in the West. After the proposed dam was halted, NGS was constructed to meet the power needs of cities such as Los Angeles, Las Vegas, Phoenix and Tucson as well as irrigation projects in Arizona. 137 CONG. REC. E355 (1991) (remarks of Rep. Miller of California, including submission to the record of Michael Satchell, *Power and the Glory — Should We Trade the Grand Canyon's Wonder for Cheap Electricity?*, U.S. NEWS & WORLD REP., Jan. 21, 1991).

Regarding the Four Corners Power Plant, its owner, Arizona Public Service Co., the state of New Mexico and several environmental groups entered into a stipulation in 1980. The stipulation required Arizona Public Service Co. to install controls sufficient to reduce emissions by 72%. *Environmental Improvement Div. v. Arizona Pub. Serv. Co.*, No. 79-1003 (N.M. Dist. Ct. Santa Fe, stipulation filed Aug. 26, 1980).

102. For a detailed description of the experiment and an analysis of it, see NATIONAL RESEARCH COUNCIL, HAZE IN THE GRAND CANYON: AN EVALUATION OF THE WINTER HAZE INTENSIVE TRACER EXPERIMENT (1990) [hereinafter HAZE IN THE GRAND CANYON].

103. The gas used was CD4, a gas not found in the ambient air. *Central Ariz. Water Conservation Dist. v. EPA*, 990 F.2d 1531, 1535 (9th Cir. 1993).

that NGS contributed up to seventy percent of the sulfates detected in the Grand Canyon.¹⁰⁴ These results prompted EPA to initiate rule making to address emissions from NGS. The EPA also invited comments on the merits of its decision to attribute visibility impairment at the Grand Canyon to NGS.¹⁰⁵

In response to EPA's preliminary attribution ruling, the Salt River Project ("SRP"), owner of NGS, conducted its own study of visibility impairment at the Grand Canyon.¹⁰⁶ While acknowledging that NGS contributed to reduced visibility at the Grand Canyon, SRP claimed that reducing emissions from NGS would only result in a two percent improvement in visual range and that "NGS was only part of a regional problem."¹⁰⁷

Simultaneously, EPA asked NRC to review the WHITEX results.¹⁰⁸ NRC concluded that "at some times during the study, NGS contributed significantly to haze" in the Grand Canyon.¹⁰⁹ But, NRC also determined that the exact amount of impairment attributable to NGS could not be established by the WHITEX data.¹¹⁰

EPA ultimately proposed a revision of its FIP for Arizona to require NGS to reduce emissions by seventy percent.¹¹¹ After the public comment period, EPA collaborated with SRP, the Grand Canyon Trust and other environmental groups to attain a result that was beneficial to all.¹¹² As a result of this collaboration, SRP agreed to implement emissions controls at NGS. The key factor for SRP was that its estimated cost for reducing emissions under the negotiated rule was \$2 billion dollars less than

104. *Id.*

105. 54 Fed. Reg. 36,948 (1989). This was a preliminary measure to the actual rule making. EPA commenced a formal rule making procedure in February, 1991. 56 Fed. Reg. 5,173 (1991).

106. *CAWCD*, 990 F.2d at 1536.

107. *Id.* (citing *SONOMA TECHNOLOGY INC., NAVAJO GENERATING STATION VISIBILITY STUDY*, 2-11 (L. Willard Richards et al. eds., 1991)).

108. This review led to *HAZE IN THE GRAND CANYON*, *supra* note 103.

109. *HAZE IN THE GRAND CANYON*, *supra* note 102, at 3, 37.

110. *HAZE IN THE GRAND CANYON*, *supra* note 102, at 3, 37.

111. 56 Fed. Reg. 5,173, 5,178 (1991).

112. For a thorough summary of these negotiations, see D. Michael Rappoport & John F. Cooney, *Visibility at the Grand Canyon: Regulatory Negotiations Under the Clean Air Act*, 24 *ARIZ. ST. L.J.* 627 (1992). Messrs. Rappoport and Cooney were two of the attorneys involved in the negotiations. In their article they discussed the negotiations that led to the rule EPA adopted for NGS. They also identified the factors present in the negotiations which made the rule making successful. *Id.* at 635-38.

under the rule EPA initially proposed.¹¹³ For environmental groups, the collaboration resulted in a planned reduction of total emissions by ninety percent, rather than the seventy percent that EPA initially proposed.

While the WHITEEX study by NPS eventually led to a successful program to reduce visibility impairment at the Grand Canyon, the study also highlighted the magnitude of the problem. Even if emissions are reduced to the levels projected by NPS, visibility at Grand Canyon National Park will still be impaired since NPS predicted a mere fourteen percent improvement in visual range.¹¹⁴ Both NPS and EPA have recognized that regional haze is a significant source of impaired visibility at the Grand Canyon.¹¹⁵ Thus, to effectively protect visibility NPS and EPA must determine the sources of the regional haze.

As mentioned above, NPS has been monitoring the air quality at Grand Canyon National Park for several years. Using this data and meteorological data, NPS has determined what it believes are the origins of "clean" and high sulfur content air in the Colorado Plateau.¹¹⁶ The Colorado Plateau includes the Grand Canyon as well as the other "Golden Circle" parks.¹¹⁷ According to NPS, dirty air, i.e., air with particulate matter that leads to regional haze and impairs visibility, most often comes from Southern California.¹¹⁸ Winds also carry dirty air to Grand Canyon National Park from Phoenix, Tucson, and several copper smelters in Southern Arizona and Southern New Mexico.¹¹⁹ Finally, under certain conditions, winds transport air to the Grand Canyon from the north. Since central Nevada and Utah are

113. *Id.* at 642.

114. 56 Fed. Reg. 50,172, 50,180 (1991).

115. NATIONAL PARK SERVICE, AIR QUALITY IN THE NATIONAL PARKS, 2-28 (1988) [hereinafter AIR QUALITY IN THE NATIONAL PARKS]; 56 Fed. Reg. 50,172, 50,177 (1991).

116. *Id.* at 2-28.

117. The "Golden Circle" includes Bryce Canyon, Canyonlands, Zion, Arches, Mesa Verde and Petrified Forest National Parks, as well as several Wilderness areas that are also class I Federal areas.

118. AIR QUALITY IN THE NATIONAL PARKS, *supra* note 115, at 2-28.

119. *Id.* See *supra* note 90, and accompanying text for a discussion of the impact on visibility at Grand Canyon National Park during the nine month strike that shut down the copper smelters in Southern Arizona in 1969-70. The impact of the smelters is decreasing due to strict emissions limitations imposed in the late 1970s and the fact that several of the smelters have closed.

sparsely developed, it is under these meteorological conditions that visual range at the Grand Canyon is the best.¹²⁰

While still an unsettled issue, several studies support NPS's position that pollution from the Los Angeles area is responsible for a large portion of the impaired visibility at the Grand Canyon. William Malm, an NPS scientist, reported the results of his studies at the Grand Canyon to the Subcommittee on National Parks and Recreation.¹²¹ Mr. Malm testified that the "Southern California plume" is "the single largest contributor to pollution at the Grand Canyon."¹²² He also identified copper smelters in Southern Arizona, NGS, the Four Corners power plant, and other facilities on the Colorado plateau as additional sources of pollution at the Grand Canyon.¹²³

Another study done in 1987 tracked an element of Los Angeles basin smog called methylchloroform, a halocarbon used in the aerospace and electronics industries.¹²⁴ Over the course of the study, elevated readings of the element were found at several monitoring stations east of Los Angeles, the last one being about 12 miles from the mouth of the Grand Canyon. The study found that "the chemicals exhibited a seven-day cycle that mimics the Los Angeles work week, with five days of elevated readings and two days of lower readings."¹²⁵ Thus, like the NPS studies, this study concluded that Los Angeles smog is a major contributor to pollution at the Grand Canyon.

120. AIR QUALITY IN THE NATIONAL PARKS, *supra* note 115, at 2-28. Since "[i]ncreases in pollution are more noticeable when the air is initially clean" the report actually seems most concerned with development north of the Grand Canyon in central Nevada and Utah. *Id.* at 2-25. It is this type of development that the Prevention of Significant Deterioration program was envisioned to control. See 42 U.S.C. §§ 7470-70 (Supp. V 1993).

121. *Impacts of Air Pollution*, *supra* note 17, at 147.

122. *Impacts of Air Pollution*, *supra* note 17, at 147.

123. *Impacts of Air Pollution*, *supra* note 17, at 147.

124. *Los Angeles Smog Greatest Contributor to Grand Canyon Haze*, ELECTRIC UTIL. WEEK, May 20, 1991 at 14; *Los Angeles Pollutants Said to Contribute to Canyon Haze*, UTIL. ENV'T REP., Feb. 22, 1991 at 18. Southern California Edison funded the study and researchers at Washington University in St. Louis, Mo., the Desert Research Institute in Reno, Nev. and the Scripps Institution of Oceanography in La Jolla, Cal. conducted the study.

125. *Los Angeles Smog Greatest Contributor to Grand Canyon Haze*, ELECTRIC UTIL. WEEK, May 20, 1991 at 14.

Finally, scientists analyzing the results of a Project VISTTA¹²⁶ study in 1979 reached a similar conclusion.¹²⁷ The study recorded three separate incursions of polluted air from Southern California in the Southwest. The authors concluded that pollution "from Southern California had a significant impact on the clarity and chemistry of air over 'pristine' areas at least 750 km downwind."¹²⁸ Furthermore, the authors suspected that Southern California pollutants were reaching Northern Arizona because they found "regional lead and sulfate burdens too large to be accounted for without including Southern California."¹²⁹ Thus, the authors drew direct links between pollution from Southern California and the presence of visibility impairing pollutants in Northern Arizona.

Although these studies have identified Los Angeles smog as a major contributor to visibility impairment at the Grand Canyon, other studies have shown that the "Southern California plume" is not the only source of air pollution at Grand Canyon National Park.¹³⁰ For example, improved visibility at Grand Canyon National Park during a nine month strike at copper smelters in Southern Arizona in the late 1960s provided evidence that emissions from these smelters directly affected air quality in the Grand Canyon.¹³¹ These conclusions were further supported by studies conducted during the 1980 copper strike when researchers again noted marked improvement in visibility at Grand Can-

126. Visibility Impairment due to Sulfur Transport and Transformation in the Atmosphere.

127. Edward S. Macias, et al., *Regional Haze Case Studies in the Southwestern U.S.: II. Source Contributions*, 15 *ATMOSPHERIC ENV'T* 1987 (1981). This article was based on a paper the authors presented at the Symposium on Plumes and Visibility: Measurements and Model Components. Grand Canyon, Arizona, November 10-14, 1980. *ATMOSPHERIC ENVIRONMENT* dedicated an entire issue to the Symposium, and several other researchers wrote articles with conclusions similar to those of Macias, et al. See, e.g., D.L. Blumenthal, et al., *Effects of a Coal-Fired Power Plant and Other Sources on Southwestern Visibility (Interim Summary of EPA's Project VISTTA)*, 15 *ATMOSPHERIC ENV'T* 1955 (1981).

128. Macias, et al., *supra* note 127.

129. Macias, et al., *supra* note 127, at 1994.

130. *Impacts of Air Pollution*, *supra* note 17, at 147. In his testimony to the subcommittee, William Malm of NPS identified several sources of visibility impairment at the Grand Canyon, including Southern Arizona, which is home to Phoenix and several large copper smelters.

131. *PROTECTING VISIBILITY, AN EPA REPORT TO CONGRESS*, *supra* note 19, at 6, 4-24-27. See also John Trijonis, *Visibility in the Southwest — An Exploration of the Historical Data Base*, 13 *ATMOSPHERIC ENV'T* 833 (1979) (emissions of the southern Arizona copper smelters provided 40-70% of the sulfate at the Grand Canyon in the late 1960s).

yon National Park and other nearby class I Federal areas.¹³² In its 1988 report, NPS arrived at a similar conclusion, charging that "dirty" air came from Southern Arizona under certain meteorological conditions.¹³³ However, the current impact of the smelters is lower due to reduced emissions¹³⁴ and the closure of several of the copper smelters over the past decade for economic reasons.

In addition to the studies of the copper smelters, studies of NGS also show that Los Angeles smog is not the only source of impaired visibility.¹³⁵ In fact, these studies identify NGS as a major source of sulfates at the Grand Canyon in the winter, while Los Angeles smog is a major source of sulfates in the summer.¹³⁶ Given the variety of sources that contribute to impaired visibility at the Grand Canyon, it is easy to see why EPA has not taken any further action outside promulgation of the rule for NGS and why NRC states that protecting visibility will require regional solutions and actions.¹³⁷

B. *Current Efforts to Improve Visibility*

Although progress has been slow since the Clean Air Act Amendments of 1977 made protecting visibility a national goal, recent years have shown an increasing amount of activity that should have positive impacts on the visual range at the Grand Canyon and other class I Federal areas of the Colorado plateau.

The most obvious action has been the promulgation of the rule requiring NGS to reduce emissions by ninety percent.¹³⁸ Even though studies of NGS disagreed on the amount of improvement in visual range that the emissions reductions will cause,¹³⁹ all

132. See Jerome Ostrov, *Visibility Protection Under the CAA: Preserving Scenic and Parkland Areas in the Southwest*, 10 *ECOLOGY L. Q.* 397, 412-14. (1982) (citing several studies on the effects of the copper smelters on visibility at Grand Canyon National Park).

133. AIR QUALITY IN THE NATIONAL PARKS, *supra* note 115, at 2-28.

134. See Macias et al., *supra* note 127, at 1994.

135. HAZE IN THE GRAND CANYON, *supra* note 102.

136. HAZE IN THE GRAND CANYON, *supra* note 102. NPS studied NGS emissions only in the winter for this very reason. Similarly, studies have shown that visibility in southern California and Arizona is the lowest in the summer. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 39.

137. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 6-7.

138. 56 Fed. Reg. 50,172 (1991) (codified at 40 C.F.R. § 52).

139. See *Central Ariz. Water Conservation Dist. v. United States Environmental Protection Agency*, 990 F.2d 1531, 1544 (9th Cir. 1993). The range of estimated improvement is from a low of 2% (study commissioned by Salt River Project, owners of NGS) to a high of 14% (NPS study).

studies agree there will be improvement as a result of the negotiated rule.¹⁴⁰

Another significant step is the creation of GCVTC.¹⁴¹ GCVTC began meeting in November 1991,¹⁴² and should issue a report to the EPA administrator by November, 1995 assessing the available and forthcoming scientific and technical data.¹⁴³ The report is required to address at least three measures: 1) the establishment of clean air corridors where additional restrictions on emissions are appropriate; 2) the imposition of the requirements of the PSD program where appropriate; and 3) the promulgation of rules under section 169A of the Clean Air Act to address regional haze.¹⁴⁴ Once the commission delivers the report, the administrator must carry out EPA's regulatory responsibilities within 18 months.¹⁴⁵

The expectations of the GCVTC are high. During debates that led to the Clean Air Act Amendments of 1990, Senator McCain stated:

[t]he amendment will further lead to visibility improvement at Grand Canyon National Park by creating a Grand Canyon Visibility Transport Commission. This commission will provide a coordinated means of identifying and addressing all sources of visibility degradation. The Commission should be especially helpful in addressing pollution sources outside of the immediate vicinity of the canyon, particularly the impact we suffer from pollutants emanating from the Los Angeles Basin.¹⁴⁶

With Senator McCain's tall order in place, GCVTC has met several times¹⁴⁷ operating under a "Work Plan" that calls for

140. *Id.*

141. Clean Air Act Amendments of 1990, Pub. L. No. 101-549, 104 Stat. 2399 (1990) (codified at 42 U.S.C. § 7492(f)).

The commission initially consisted of representatives from Arizona, California, Colorado, Nevada, New Mexico, Oregon and Utah. WESTERN VISTAS (newsletter of the Grand Canyon Visibility Transport Commission), Nov. 23, 1992, at 2. Ex-officio members represent EPA, Bureau of Land Management, NPS, U.S. Forest Service and U.S. Fish and Wildlife Service. *Id.* Wyoming was added as another member in April 1993. WESTERN VISTAS, Apr. 2, 1993 at 3. Finally, additional ex-officio members representing the Navajo, Hopi and other Indian tribes recently joined the commission. WESTERN VISTAS, Sept. 1994, at 1.

142. 56 Fed. Reg. 57,522 (1991).

143. 42 U.S.C. § 7492(d)(2) (Supp. V 1993).

144. *Id.*

145. *Id.* § 7492(e)(1) (Supp. V 1993).

146. 136 CONG. REC. S3815 (1990) (statement of Sen. McCain).

147. 57 Fed. Reg. 5,447 (1992); 57 Fed. Reg. 12,820 (1992); 57 Fed. Reg. 24,790 (1992); 57 Fed. Reg. 38,683 (1992); 57 Fed. Reg. 54,394 (1992); 58 Fed. Reg. 349 (1993); 58 Fed. Reg. 13,756 (1993); 58 Fed. Reg. 32,532 (1993); 58 Fed. Reg. 42,545

“concurrent performance of planning/guidance, technical assessment, communication, and reporting activities.”¹⁴⁸ Technical assessment is at the core of the work plan and focuses on “information that identifies pollutants that contribute to haze; location and strength of the sources, visibility benefits of all Clean Air Act emissions reductions; and future projections of haze, socioeconomic impacts and direct costs under various emission control strategies and growth scenarios.”¹⁴⁹

GCVTC is not due to deliver its report until November 1995, thus no recommendations are available for scrutiny. The commission, however, approved an outline of emission management options¹⁵⁰ and criteria for evaluating those options.¹⁵¹ The different management options include creating incentive programs to reduce emissions,¹⁵² establishing regional caps on emissions,¹⁵³ establishing visual air quality objectives for class I Federal areas,¹⁵⁴ forcing new technology,¹⁵⁵ enhancing new source review¹⁵⁶ and establishing clean air corridors.¹⁵⁷ The criteria that GCVTC will use to evaluate each option include effectiveness in reducing visibility impairment, economic effects, social effects, environmental effects, equity and administrative implementability.¹⁵⁸

In addition to establishing GCVTC, Congress authorized \$8,000,000 per year for five years to EPA to fund further research into sources of visibility impairment at class I Federal areas.¹⁵⁹ This funding could affect the Grand Canyon because Congress authorized these funds in part to give EPA the necessary re-

(1993); 58 Fed. Reg. 64,575 (1993); 59 Fed. Reg. 12,913 (1994); 59 Fed. Reg. 17,376 (1994).

148. GRAND CANYON VISIBILITY TRANSPORT COMMISSION, WORK PLAN 1 (1992) [hereinafter WORK PLAN].

149. *Id.* at 1, 7.

150. GRAND CANYON VISIBILITY TRANSPORT COMMISSION, OPERATIONS COMMITTEE, FINAL OUTLINE OF CANDIDATE EMISSION MANAGEMENT OPTIONS (1994) [hereinafter EMISSION MANAGEMENT OPTIONS].

151. GRAND CANYON VISIBILITY TRANSPORT COMMISSION, OPERATIONS COMMITTEE, OUTLINE OF CRITERIA FOR EVALUATION OF EMISSION MANAGEMENT OPTIONS (1994) [hereinafter CRITERIA].

152. EMISSION MANAGEMENT OPTIONS, *supra* note 150, at 10.

153. EMISSION MANAGEMENT OPTIONS, *supra* note 150, at 13.

154. EMISSION MANAGEMENT OPTIONS, *supra* note 150, at 15.

155. EMISSION MANAGEMENT OPTIONS, *supra* note 150, at 17.

156. EMISSION MANAGEMENT OPTIONS, *supra* note 150, at 21.

157. EMISSION MANAGEMENT OPTIONS, *supra* note 150, at 22.

158. CRITERIA, *supra* note 151.

159. 42 U.S.C. § 7492(a) (Supp. V 1993).

sources to study the impact on the Grand Canyon of the Mohave Generating Station in Southwest Nevada, 60 miles from the Grand Canyon.¹⁶⁰

While these direct actions can and should greatly benefit visibility at the Grand Canyon, other Clean Air Act programs not designed to directly enhance visibility should also have a beneficial impact. The most significant program is the renewed effort to control acid rain deposition.¹⁶¹ The new acid rain regulations should have a beneficial impact on visibility, not only at the Grand Canyon, but also throughout the country, because the pollutants that result in acid rain also impair visibility.¹⁶²

Similar benefits are also anticipated from effective implementation of plans to reduce ozone and other pollutants.¹⁶³ For example, EPA recently announced amendments to its FIP for California¹⁶⁴ that could result in better visibility at the Grand Canyon. The current FIP requires a variety of new controls and programs for both stationary and mobile sources and, if successfully implemented, could reduce overall pollutants by eighty to ninety percent.¹⁶⁵ The plan covers both Ventura and Los Angeles counties, two of the largest contributors to the Southern California plume. The new FIP's success at reducing overall emissions for California would decrease the concentrations of pollutants in the Southern California plume, which should result in improved visibility at the Grand Canyon. An important aspect of this potential improvement is that visibility could be enhanced without any additional costs above those of implementing the FIP to meet primary ambient standards. Given the large expense that pollution controls entail, achieving improvements in visibility at the Grand Canyon without further costs helps garner needed support towards achieving the goals set forth in 1977.¹⁶⁶

160. 136 CONG. REC. S3815 (1990) (statement of Sen. McCain). Senator McCain strongly supported this funding. The previous year he had personally written to the Administrator of EPA and asked the administrator to assess the impact of Mohave on Grand Canyon; EPA declined to act, citing a lack of available resources.

161. Clean Air Act, Pub. L. No. 101-549, 104 Stat. 2584 (1990) (codified at 42 U.S.C. §§ 7651-7651o).

162. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 10. See also *Impacts of Air Pollution*, *supra* note 17, at 295 (statement of Douglas A. Latimer and accompanying article *Everything Is Hitched to Everything Else*).

163. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 10.

164. EPA Releases Implementation Plan for Cleaner Air in Three Air Basins, Cal. Env't Daily (BNA) (Feb. 17, 1994).

165. *Id.*

166. 42 U.S.C. § 7491(a)(1) (1988).

IV.

RECOMMENDATIONS TO IMPROVE VISIBILITY

The previous section described several regulatory and legislative efforts to improve visibility at the Grand Canyon. These efforts are an exciting development after nearly 15 years of relative inaction following the passage of Section 169A. However, in spite of these developments, further actions are necessary from Congress, EPA, GCVTC and the general public to ensure that, at least for the Grand Canyon, progress is made towards achieving the goals Congress set in 1977 by passing the initial visibility protection provisions. Furthermore, the successes and failures of efforts to improve visibility at the Grand Canyon will serve as a model for future efforts to improve visibility at other class I Federal areas which are also suffering from impaired visibility.¹⁶⁷

A. *Congressional Action*

If protecting visibility at the Grand Canyon and other class I Federal areas is to be successful, Congress must take new steps to show its commitment to visibility protection. Its lack of sustained commitment is one of the main reasons that progress has been slow.¹⁶⁸ As NRC stated, “[t]he federal government has accorded the national visibility goal less priority than other clean-air objectives.”¹⁶⁹

To remedy this problem Congress first needs to make visibility protection a priority on par with the other requirements of the Clean Air Act. For example, Congress required reductions in emission from automobiles¹⁷⁰ and stationary sources within a specified time frame.¹⁷¹ In contrast, Congress stated that EPA “shall promulgate regulations to assure . . . reasonable progress toward meeting the national goal” for visibility protection under section 169A.¹⁷² The requirements under section 169B are

167. 136 CONG. REC. H12882 (1990) (statement of Rep. Vento); 136 CONG. REC. S13180 (1990) (statement of Sen. Lautenberg). When citing places that do suffer from impaired visibility, lawmakers would often refer to decreased visibility at Shenandoah National Park along with the Grand Canyon as examples of why visibility protection was important.

168. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 11.

169. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 11.

170. 42 U.S.C. § 7521 (Supp. V 1993) (four to eight years to reduce emissions of specified pollutants).

171. *Id.* § 7651b (five years to reduce emissions that cause acid rain to level of initial allocation).

172. *Id.* § 7491(a)(4) (1988).

equally ambiguous, only requiring EPA to carry out its regulatory duties under section 169A within 18 months of receiving a report from a visibility transport commission.¹⁷³ Faced with specific timetables for meeting acid rain and automobile emission reductions and no timetable for improving visibility, EPA will continue to allocate minimal resources to visibility protection, as it has since 1977. The result will be a dearth of action under sections 169A and B. That deadlines spur EPA to act is evidenced by the fact that under section 169A Congress did require EPA to complete a report detailing available methods for protecting visibility, and EPA completed the report on time.¹⁷⁴ Since EPA responds to deadlines,¹⁷⁵ Congress needs to amend Sections 169A and B by inserting target dates for EPA implementation of measures to protect and improve visibility at class I Federal areas.

Congress should also allocate sufficient resources to EPA, NPS and other pertinent agencies to take actions necessary for improving visibility, such as further research.¹⁷⁶ Congress did make progress in this direction recently. Section 169B provided \$40 million over five years to research the sources and effects of visibility impairment.¹⁷⁷ This funding is encouraging, but Congress needs to continue to commit financial resources to visibility protection research and implementation if the national goal is to be achieved. Historically, Congress expresses itself most forcefully through its appropriation powers. Thus, the financial commitment not only affords EPA, NPS and other agencies the ability to act, it also makes a clear statement that Congress wants to protect visibility at class I Federal areas.

In addition to making visibility protection a priority, Congress must strengthen the means by which EPA and the states can enforce the Clean Air Act's visibility protection provisions. For ex-

173. *Id.* § 7492(e)(1) (Supp. V 1993).

174. PROTECTING VISIBILITY, AN EPA REPORT TO CONGRESS, *supra* note 19.

175. The deadline set for preparation of the report was minor. For a more severe case of deadline setting, see generally Hazardous and Solid Waste Amendments of 1984, Pub. L. No. 98-616 (codified at 42 U.S.C. §§ 6901-6992k (1988 & Supp. V 1993)) ("HSWA"). The HSWA contained a "statutory hammer" that would have prevented hazardous waste disposal entirely if EPA did not promulgate appropriate regulations within the required time frame. 42 U.S.C. § 6924 (Supp. V 1993). EPA met the deadlines.

176. Reductions in federal funding for EPA research programs hampered research efforts. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 70. See also VISIBILITY TASK FORCE, *supra* note 19, at 18-19. ("... [S]ignificant opportunities were lost by subsequent reductions in EPA's visibility research program.")

177. 42 U.S.C. § 7492(a)(1) (Supp. V 1993).

ample, to address intrastate pollution, Congress has authorized EPA to disaffirm an SIP that fails to meet the requirements of the Clean Air Act. EPA can then require the state to prepare a new SIP or can promulgate an FIP for the state.¹⁷⁸ EPA can deny an SIP for the failure to adequately protect visibility at class I Federal areas.¹⁷⁹ To ensure that EPA performs its nondiscretionary duties, Congress also authorized citizen suits to compel EPA action.¹⁸⁰ Thus, for intrastate pollution, adequate enforcement measures exist to ensure that individual states are taking action to protect visibility of their class I Federal areas.

In contrast, the statutory provision for the abatement of interstate pollution, Section 126 of the Clean Air Act,¹⁸¹ is not as effective.¹⁸² First, like much of the Clean Air Act, Section 126 only pertains to stationary sources.¹⁸³ Second, EPA's application of Section 126 has limited the ability of states to use Section 126 to address pollution from another state. Before providing relief under Section 126, EPA requires that four elements be met: 1) relief is sought for a violation of a National Ambient Air Quality Standard ("NAAQS") for a specific pollutant or where PSD or visibility measures require action; 2) the alleged violation occurs in a specific geographic area; 3) the alleged interstate violation is resulting in a violation of an NAAQS or PSD increment or interferes with required SIP measures to protect visibility of the affected state; and 4) the out-of-state source makes a significant contribution to the levels of pollution causing the violation or visibility impairment.¹⁸⁴ These elements have been challenged and affirmed as reasonable interpretations of Section 126.¹⁸⁵

While meeting the first and second of EPA's requirements is relatively straightforward, two decisions under Section 126, *State*

178. 42 U.S.C. § 7410(c) (Supp. V 1993).

179. This was the basis of the lawsuit that ultimately led to the rule requiring reduced emissions at NGS. See *Environmental Defense Fund v. Reilly*, No. C82-6950-RPA (N.D. Cal. Apr. 20, 1984).

180. 42 U.S.C. § 7604 (Supp. V 1993).

181. 42 U.S.C. § 7426 (Supp. V 1993).

182. See FRANK P. GRAD, 1 *TREATISE ON ENVIRONMENTAL LAW* § 2.05 (1994). Enforcement across jurisdictional lines is a problem under the Clean Air Act since a state can only set standards for its own emissions, even if emissions of an upwind state are causing violations.

183. 42 U.S.C. § 7426 (Supp. V 1993). Furthermore, for purposes of protecting visibility, stationary sources were defined in 1977 as facilities less than 15 years old with a power generating capacity in excess of 750 megawatts. *Id.* § 7491(b) (1988).

184. 49 Fed. Reg. 34,856-58 (1984).

185. *New York v. EPA*, 852 F.2d 574, 577-78 (D.C. Cir. 1988) (citing *Chevron U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984)).

of *Connecticut v. United States Environmental Protection Agency*¹⁸⁶ and *Air Pollution Control District of Jefferson County, Kentucky v. United States Environmental Protection Agency*,¹⁸⁷ make meeting the third and fourth requirements difficult.

In *Connecticut v. EPA*, Connecticut and New Jersey challenged EPA's approval of a revision to New York's SIP to allow a one year test burn of fuel oil in electric generating facilities. The two states alleged that EPA must rule on their Section 126(b) petition before approving New York's revised SIP and that the test burn would have detrimental effects on their own air quality. The Second Circuit disagreed, holding that EPA's approval of the revised SIP for New York was separate from its ultimate handling of the Section 126(b) petitions.¹⁸⁸ Furthermore, the court held that in approving New York's revised SIP, "the proper inquiry is whether the particular revision itself will cause the plan to fail to meet the standards set forth in section 110(a)(2)."¹⁸⁹ By allowing EPA to approve SIP revisions regardless of the pending petitions, and by affirming EPA's interpretation that the proposed revision by itself must result in a violation of an NAAQS or PSD increment or impairment of visibility, the *Connecticut v. EPA* court created a substantial roadblock to a state's ability to seek EPA assistance under Section 126.

The *Air Pollution Control District* ("APCD") court expanded on *Connecticut v. EPA*'s holdings by upholding EPA's interpretation of "significant" contributions to NAAQS violations. In *APCD*, Jefferson County filed a petition under Section 126 for interstate pollution abatement from the Gallagher Power Station across the Indiana state line. EPA denied the petition, stating that Gallagher only contributed to three percent of the violations of NAAQS in Jefferson County and that three percent is not significant within the meaning of the Clean Air Act. The Sixth Circuit affirmed EPA's decision, stating that a three percent contribution is minimal, and that Jefferson County could not show that the Gallagher emissions alone resulted in non-attainment by the county.¹⁹⁰ Since typically no stationary source by itself results in non-attainment across state lines, the Sixth Cir-

186. 656 F.2d 902 (2d Cir. 1981).

187. 739 F.2d 1071 (6th Cir. 1984).

188. *Connecticut v. EPA*, 656 F.2d at 907-08.

189. *Id.* at 908. Section 110(a)(2) of the Clean Air Act sets forth the standards a state must comply with in its SIP. 42 U.S.C. § 7410(a)(2) (Supp. V 1993).

190. *APCD*, 739 F.2d at 1093-94.

cuit's holding means that a Section 126 petition will generally not trigger remedial action by EPA.¹⁹¹

EPA's application of Section 126 directly impacts the protection of visibility at the Grand Canyon. As shown above, Southern California air pollution is a major source of visibility impairment at the Grand Canyon. Thus, even if Arizona amends its SIP to employ maximum procedures to improve visibility at the Grand Canyon, the impact will be limited. Arizona could file a Section 126 petition for abatement of interstate pollution,¹⁹² but since it is doubtful that any one single source in Southern California can be shown to cause the impaired visibility, EPA could deny Arizona's Section 126 petition and have the denial upheld in court, relying on *APCD*. Furthermore, even if Arizona did adopt emission limitations more stringent than the federal standard to protect visibility at the Grand Canyon, *APCD* permits EPA to allow violations caused by Southern California pollution as long as the levels of pollution were at or below federal standards.

The above scenario and EPA's application of Section 126 show that Congress, if it is serious about protecting visibility, must amend Section 126 to strengthen abatement of interstate pollution.¹⁹³ One improvement would be a provision mandating that if a state achieves air quality that surpasses the federal standard through strict emissions controls and other regulatory programs, then EPA should require surrounding states to revise their SIP's to employ similar measures to improve air quality. Since the pollutants that cause violation of the Clean Air Act's primary air

191. Additionally, the *APCD* and *Connecticut v. EPA* courts stated that the Clean Air Act "does not require a state to respect its neighbor's air quality standards . . . if these standards are more stringent than the requirements of federal law." *Id.* at 1088 (citing *Connecticut v. EPA*, 656 F.2d at 909).

192. While California has some of the strictest anti-pollution laws in the country, enforcement remains an issue. See, e.g., *EPA Releases Implementation Plan for Cleaning Air in Three Air Basins*, Cal. Env't Daily (BNA) (Feb. 17, 1994). See also VISIBILITY TASK FORCE, *supra* note 19, at 21 (vigorous enforcement of current regulations to attain NAAQS will lessen the need for phase II regional haze regulations). One of the requirements for approval of an SIP is an effective enforcement program to ensure auto emissions are at or below the statutory standards. 42 U.S.C. § 7410(a)(2) (Supp. V 1993). Thus, Arizona could file a Section 126 petition with EPA to address interstate pollution caused by lax enforcement of auto emission standards.

193. Congress did amend Section 126 as part of the Clean Air Amendments of 1990. However, the amendment was merely technical and did not alter the holdings of *APCD* and *Connecticut v. EPA*. Pub. L. 101-549, 104 Stat. 2684 (1990).

quality standards also impair visibility, a strengthening of Section 126 in this manner will benefit visibility at class I Federal areas.

Additionally, visibility standards are secondary standards. To meet these standards, air quality would have to improve beyond primary levels. However, EPA's interpretation of Section 126 "require[s] interstate comity only insofar as is necessary to allow each state to comply with the NAAQS. . . ."¹⁹⁴ Meeting the primary standard has proven a heavy burden for the states. Even today, many states contain non-attainment areas.¹⁹⁵ Without substantive amendment to Section 126, it is unlikely that air quality beyond NAAQS will be achieved.

Requiring states to respect the air quality standards of their neighbors should not create undue burdens on the states. While some states have more stringent air quality standards than their neighbors,¹⁹⁶ there is a limit to how far a state will go. First, overly strict regulation can harm a state economically because industry will locate elsewhere to avoid excessive environmental compliance costs. Second, regulatory action is necessary even for states that adopted the minimum federal levels, so regulations would only have to be modified, not promulgated. Additionally, if industry in a state with stricter air pollution controls can comply with strict local regulations, there is no reason that industry in a neighboring state could not do the same.¹⁹⁷

194. *Connecticut v. EPA*, 656 F.2d at 909.

195. See *EPA Releases Implementation Plan for Cleaner Air in Three Air Basins*, Cal. Env't Daily (BNA) (Feb. 17, 1994). The three air basins, Sacramento, Ventura and Los Angeles, are all non-attainment areas.

196. See, e.g., *Vermont v. Thomas*, 850 F.2d 99 (2d Cir. 1988). One reason EPA did not approve parts of Vermont's SIP was the fact that it would have created standards that EPA would have to enforce on upwind states. *Id.* at 102.

197. A good example is the difference in policies of New Mexico and Arizona. The legislative history of the 1977 Amendments to the Clean Air Act refers to both NGS and the Four Corners Power Plants as sources of impaired visibility at Grand Canyon National Park. See 123 CONG. REC. 27,076 (1977) (statement of Rep. Waxman). However, by 1990, the focus was only on NGS. See 136 CONG. REC. S2890 (1990). The reason was that New Mexico had adopted stringent anti-pollution regulations, and ultimately sued Arizona Public Service Co., the owners of the Four Corners plant. Eventually, New Mexico and Arizona Public Service Co. entered into a consent decree whereby emissions would be reduced by 72%. *Environmental Improvement Div. v. Arizona Pub. Serv. Co.*, No. 79-1003 (N.M. Dist Ct., Santa Fe, stipulation filed Aug. 26, 1980). Since Arizona Public Service Co. was able to reduce emissions significantly starting in 1980, NGS could have done the same fourteen years ago, since both are coal fired power plants. But, since New Mexico could not make Arizona respect its air quality standards, NGS is only beginning to retrofit and take other actions to reduce emissions.

Requiring states to respect each other's air quality standards could follow the procedures of the Clean Water Act ("CWA").¹⁹⁸ EPA interpreted the CWA to mandate that states respect the water quality standards of neighboring states. The Supreme Court recently stated that EPA's interpretation of this requirement of the Clean Water Act was permissible and reasonable.¹⁹⁹ The *Arkansas* court held that in approving an NPDES permit for a Fayetteville, Arkansas sewage treatment plant, Section 402 of the CWA required EPA to consider Oklahoma's water quality standards in determining whether or not the plant was in compliance with the law.²⁰⁰ Unfortunately, the *Arkansas* court found that EPA had met its statutory duties, and thus upheld the permit, even though its effluent did violate Oklahoma water quality standards.²⁰¹ Nevertheless, the decision is important because it affirms that a regulatory program requiring a state to respect its neighbor's standards is workable and, at least under the CWA, within EPA's discretionary powers.

Air transport is different from water flow. However, wind patterns are relatively predictable. Thus, if Congress amended Section 126, a workable plan could be implemented under the Clean Air Act that would require EPA to address interstate pollution abatement. A plan could enforce air quality standards of states with cleaner air, whether or not they exceed federal levels. This would achieve wide scale benefits for visibility at class I Federal areas.

B. EPA

Unlike Congress, which must change existing law to act, EPA has sufficient power under current law to take further actions to protect visibility. First and foremost, EPA must begin implementation of Phase II of its visibility protection program established in 1980.²⁰² Second, EPA must vigilantly enforce the Clean Air Act.

There are several reasons why EPA should begin Phase II. After 14 years EPA has taken only one action under Phase I, that

198. 33 U.S.C. §§ 1251-1387 (1988).

199. *Arkansas v. Oklahoma*, 112 S. Ct. 1046 (1992).

200. *Id.* at 1056.

201. The court upheld EPA's decision to grant the permit because the CWA does not mandate "a complete ban on discharges into a waterway that is in violation of those standards," and the Oklahoma waterway in question, the Illinois River, did not meet state water quality standards. *Id.*

202. 45 Fed. Reg. 80,084 (1980).

being the rule making procedure for NGS. Additionally, by its own regulations, EPA has only recognized seven potential sites, including Grand Canyon National Park, for Phase I rule making.²⁰³ Seven years later no action on the six other sites²⁰⁴ has occurred, due to a lack of research data identifying the sources of "plume blight". Since EPA's inaction implies that regional haze is the main source of visibility impairment in most class I Federal areas, it is appropriate that EPA begin to take action to address regional haze.

A second reason EPA should proceed to Phase II is that attempting to improve visibility under Phase I by identifying individual emission sources that impair visibility "is doomed to failure."²⁰⁵ This method of addressing visibility impairment is time consuming and expensive, and the research is often non-definitive. For example, the study at NGS took several years to complete, and cost in excess of \$5 million. Even with this high cost, the studies still resulted in a variety of differing opinions as to the actual contribution of NGS emissions to impaired visibility at the Grand Canyon.²⁰⁶

Furthermore, "[c]urrent scientific knowledge is adequate and control technologies are available for taking regulatory action to improve and protect visibility."²⁰⁷ The Visibility Task Force echoed a similar view in 1985, stating that in regards to understanding the origins and composition of regional haze, "a substantial body of data and analytical capability exists at present."²⁰⁸ In addition to recommending that more research be done into regional haze, the Task Force suggested that EPA establish criteria for determining and addressing visibility impairment and begin to develop long term strategies for regional haze that could be coordinated with other efforts under the Clean Air Act.²⁰⁹

Reasons to delay Phase II regulation, on the other hand, are not persuasive. As mentioned earlier, at the end of 1995

203. 52 Fed. Reg. 45,134 (1987).

204. The other six areas were Petrified Forest National Park and Saguaro Wilderness Area in Arizona, Moosehorn Wilderness Area in Maine, Roosevelt Campobello International Park in New Brunswick, Canada, Voyageurs National Park in Minnesota and Canyonlands National Park in Utah. *Id.*

205. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 7.

206. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 7.

207. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 11.

208. VISIBILITY TASK FORCE, *supra* note 19, at 2.

209. VISIBILITY TASK FORCE, *supra* note 19, at 19-21.

GCVTC will present its findings and recommendations. These recommendations will address, inter alia, regional haze in the Southwest. Although EPA could claim that it should delay action on regional haze until GCVTC issues its report,²¹⁰ there is no reason that EPA could not begin the rule making process for implementation of Phase II and then modify the rules to incorporate the ideas of GCVTC. GCVTC has already prepared a list of emission management options.²¹¹ Thus, EPA could incorporate these options into the process, and alter them if needed depending on the final recommendations of the GCVTC.

EPA could also claim that it is best to delay action to determine what effect implementation of the new acid rain provisions of the Clean Air Act Amendments of 1990 have on visibility. As mentioned previously, the link between SO₂ emissions and impaired visibility is well established. Thus, as the acid rain provisions and other emissions reductions take effect, the overall reduction in SO₂ and other pollutants could be enough to achieve the desired level of visibility. Although there is some merit to this argument, SO₂ emissions are not the only cause of reduced visibility at Grand Canyon National Park and other class I Federal areas in the Southwest.²¹² Therefore, measures in addition to the acid rain control provisions must be taken to address other visibility impairing pollutants.

EPA must also vigorously enforce the Clean Air Act. Unfortunately, in the past EPA would act only under court order.²¹³ The administrative change in January, 1993 may have eliminated some of EPA's aversion towards more active enforcement of the Clean Air Act. Through the use of its power to disaffirm an SIP²¹⁴ and its powers under Section 111,²¹⁵ including its ability to

210. The Western Governors Association, sponsor of GCVTV, recently asked EPA to wait until GCVTC makes its recommendations. *Air Pollution: Western Governors Ask EPA to Delay Haze Regulations Until GCVTC Makes Recommendations*, 25 *Env't Rep. (BNA)* 313 (June 17, 1994).

211. EMISSION MANAGEMENT OPTIONS *supra* note 150.

212. See PROTECTING VISIBILITY IN THE NATIONAL PARKS, *supra* note 33, at 10; HAZE IN THE GRAND CANYON, *supra* note 103, at 3, 37.

213. See, e.g., *Coalition for Clean Air v. EPA*, 762 F. Supp. 1359 (C.D. Cal. 1993), *modified*, 971 F.2d 219 (9th Cir. 1992), *cert. denied*, 113 S. Ct. 1361 (1993) (requiring EPA to issue FIPs for non-attainment areas in California); *Environmental Defense Fund v. Reilly*, No. C82-6850-RPA (N.D. Cal. Apr. 20, 1984) (consent decree required EPA to 1) review existing SIPs for deficiencies, 2) mandate that the relevant states cure the deficiencies and 3) where necessary, carry out its nondiscretionary duty and implement an FIP for non-complying states).

214. 42 U.S.C. § 7410(c) (Supp. V 1993).

215. *Id.* § 7413 (Supp. V 1993).

seek civil penalties for non-compliance,²¹⁶ EPA could positively affect the visibility problem. The combination of new rules addressing regional haze and vigorous enforcement of existing rules should result in improved visibility at Grand Canyon National Park and other class I Federal areas in the Southwest.

C. Grand Canyon Visibility Transport Commission

The report GCVTC issues towards the end of 1995 should have a major impact on how EPA and the states address visibility impairment at Grand Canyon National Park. In its outline of different options,²¹⁷ GCVTC identified a number of potential ways that visibility at the Grand Canyon and other Colorado plateau class I Federal areas could be protected and improved. In addition to ideas such as educating policy and decision makers and encouraging voluntary programs aimed at reducing emissions, GCVTC's primary options include:

- 1) developing incentives or penalties to reduce emissions;²¹⁸
- 2) establishing regional caps on emissions that would ensure the desired level of visibility;²¹⁹
- 3) establishing an ambient standard for light extinction;²²⁰
- 4) technology forcing;²²¹ and
- 5) expanding the PSD program, especially in identified "clean air corridors".²²²

Incentives and disincentives include tax credits for attaining certain emissions reductions or penalties for not achieving reductions. Other variations include taxing gasoline, parking or wood or establishing tolls for highway use. These taxes would raise the price of using a pollutant to a level where individuals would search for alternatives. Furthermore, monies collected under these programs would be marked specifically for programs aimed at reducing air pollution, thus enhancing visibility.

216. *Id.* § 7413(a)(2)(C) (Supp. V 1993).

217. EMISSIONS MANAGEMENT OPTIONS, *supra* note 150.

218. EMISSIONS MANAGEMENT OPTIONS, *supra* note 150, at 10.

219. EMISSIONS MANAGEMENT OPTIONS, *supra* note 150, at 13.

220. EMISSIONS MANAGEMENT OPTIONS, *supra* note 150, at 15.

221. EMISSIONS MANAGEMENT OPTIONS, *supra* note 150, at 17.

222. EMISSIONS MANAGEMENT OPTIONS, *supra* note 150, at 21-22. Clean air corridors are areas which under specific meteorological conditions result in maximum visual range for class I Federal areas. The clean air corridor for the Grand Canyon is from central Nevada and Utah to the north. AIR QUALITY IN THE NATIONAL PARKS, *supra* note 115, at 2-28.

For consumer goods taxation is an excellent way of altering behavior. The drawback is that these taxes tend to be regressive, thus having a greater impact on people with low incomes. Incentives or disincentives are not as attractive for industrial emissions. First, "it is hard to predict in advance the level of fee necessary for reducing emissions to the desired level."²²³ This could result in slow implementation and potentially incur significant administrative and research costs as rules are challenged by affected industries. Additionally, given that state budgets are already strained, any program that reduces tax revenues will meet substantial opposition in state legislatures. Thus, controlling industrial emissions should not rely on incentives or disincentives alone.

Establishing regional caps on emissions is potentially a better way of achieving reductions in emissions from industrial sources. A regional cap could be established, with annual reductions in the cap until the desired level of visibility in class I Federal areas was obtained. Under this plan, each emission source would be required to reduce its emissions by an appropriate amount. In conjunction with the reductions, individual sources that achieve greater than required reductions can sell their "surplus" to sources that are not meeting their emissions target, similar to programs such as RECLAIM²²⁴ and the acid rain provisions of the Clean Air Act.²²⁵ The biggest advantage of the regional cap would be the creation of a market for pollution credits, creating profit incentives for companies to reduce emissions. One drawback is GCVTC's concession that "much work remains to be done to recommend how the stationary, mobile, and area sources are to be treated under the cap."²²⁶ Market based approaches also require that emissions be monitored accurately,²²⁷ something that has not been feasible in the past.

The third option is establishing an ambient standard for light extinction, i.e. the maximum amount of visibility impairing parti-

223. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 78.

224. CAL. HEALTH & SAFETY CODE § 39616 & § 40440.1 (West Supp. 1994). For two different discussions on RECLAIM, see Nancy J. Cohen, Comment, *Emissions Trading and Air Toxics Emissions: RECLAIM and Toxics Regulation in the South Coast Air Basin*, 11 U.C.L.A. J. ENVTL. L. & POL. 255 (1993) and Evan Goldenberg, Comment, *The Design of an Emissions Permit Market for RECLAIM: A Holistic Approach*, 11 U.C.L.A. J. ENVTL. L. & POL. 297 (1993).

225. 42 U.S.C. § 7651 et seq. (Supp. V 1993).

226. EMISSION MANAGEMENT OPTIONS, *supra* note 150, at 13.

227. 42 U.S.C. § 7651k (Supp. V 1993).

cles allowed in a given area. This option is appealing because it sets goals similar to NAAQS goals under the Clean Air Act and then leaves implementation to the states. Its advantage is that the program would operate within the existing regulatory framework of the Clean Air Act. The drawback is that implementation of visibility protection under the Clean Air Act has not been successful, partially due to the failure of states to develop even minimal visibility protection programs.²²⁸

However, an ambient standard option should not be dismissed. California has long had a light extinction standard,²²⁹ and Colorado recently enacted a standard with specific control mechanisms triggered if light extinction exceeds a certain level.²³⁰ NRC has discussed this approach, and has found advantages in that an ambient standard can be more cost-efficient. Reductions in emissions are made only as needed, and technology forcing occurs if the current standard is beyond what current technology can achieve.²³¹ However, NRC also cited disadvantages, such as the need for "detailed information on emission levels and accurate air-quality models" which have been difficult to develop.²³² Additionally, use of uniform ambient standards ignores the benefit of cleaner air in a place such as the Grand Canyon as opposed to Los Angeles.²³³

Each of the above options includes an element of technology forcing, GCVTC's fourth management option. This is indicative of the need for greater control technology. This need also highlights an advantage of options which include penalties or taxes, since the states can use these revenue sources to fund research and development of more advanced technology. However, standing alone, technology based standards are inherently flawed. These standards generally result in emission levels that are either well above what is necessary to achieve the desired visibility goal or too low to achieve the desired goal.²³⁴ The problem is that emitters are required to use the best available

228. See, e.g., 52 Fed. Reg. 45,132 (1987). EPA disapproved SIPs for twenty nine states for failing to comply with visibility regulations.

229. CAL. CODE REGS. tit. 17, § 70200 (1994).

230. COLO. REV. STAT. § 25-7-106.1 (1993). Specific measures that Colorado takes when visibility is low or air pollution is high include restrictions on the use of wood-burning stoves and fireplaces. COLO. REV. STAT. § 25-7-106.3 (1993).

231. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 75.

232. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 75.

233. PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 75-76.

234. PROTECTING VISIBILITY IN THE NATIONAL PARKS, *supra* note 33, at 76. See also William F. Pedersen, Jr., *Turning the Tide on Water Quality*, 15 *ECOLOGY L. Q.*

technology, whether needed or not. Either way, the end result is that valuable economic and environmental resources are wasted. Thus, a technology forcing option should only be considered as part of another management option, not as an option unto itself.

The fifth emission management option is an expansion of the PSD program of the Clean Air Act because the present program has not been as successful as envisioned.²³⁵ One reason for the lack of success is that a majority of new sources are either outside the PSD control area or are not considered "major emitting facilities" under the Clean Air Act.²³⁶ Beneficial changes include increasing the areas subject to new source review to create significant buffers around class I Federal areas and decreasing the size of facilities exempt from the regulations. Given the long range transport of pollutants in the Southwest, buffer zones may be so large that the entire Southwestern United States would be included.

Changing the definition of a "major emitting facility" is critical and far more practical. The Clean Air Act currently only regulates facilities that emit one hundred tons or more per year of any pollutant. Thus, a facility that emits ninety tons is not regulated, and, if enough of these sources are constructed, the benefits of regulating larger sources will be completely obscured. One solution is to periodically reduce the number of tons of emissions that makes a facility a major emitter. If done with sufficient notice, industry will not be significantly burdened, and the effectiveness of the PSD program would improve.

Regarding the creation of a stricter PSD program for clean air corridors, GCVTC members must first define a clean air corridor.²³⁷ The commission also must recognize that meteorological patterns can not be controlled, so the benefit of stricter requirements in clean air corridors would only be realized under certain conditions. Thus, while a good idea in theory, the creation of clean air corridors is only a partial solution that may not be as practical as the previously discussed options.

69 (1988) (discussing the drawbacks of technological based standards for implementing the Clean Water Act).

235. See Craig N. Oren, *Prevention of Significant Deterioration: Control-Compelling Versus Site-Shifting*, 74 IOWA L. REV. 1 (1988); and Craig N. Oren, *The Protection of Parklands from Air Pollution: A Look at Current Policy*, 13 HARV. ENVTL. L. REV. 313 (1989).

236. 42 U.S.C. § 7479(i) (Supp. V 1993).

237. EMISSIONS MANAGEMENT OPTIONS, *supra* note 150, at 23.

GCVTC should adopt a combination of the above options. To alter individual behavior, GCVTC should propose taxes on gasoline, parking, driving and wood burning. To reduce industrial emissions, a regional cap seems to be a better alternative, especially if combined with market based incentives. In conjunction with the regional cap, GCVTC should recommend the establishment of ambient standards for light extinction throughout the commission's states, with controls being triggered if visibility falls below the desired level. Such controls could include restricting forestry or agricultural burning at certain times of the year,²³⁸ employing programs aimed at reducing total vehicle miles or even requiring temporary shut downs of severe emitting sources.

These options should not be GCVTC's only recommendations. To ensure more effective implementation and enforcement throughout the commission's member's states, GCVTC should recommend that the individual states agree to adopt similar pollution control regulations. This could be accomplished through an interstate compact,²³⁹ with each state agreeing to adopt the most stringent or effective anti-pollution laws or regulations of the commission's states.²⁴⁰ An interstate compact would be beneficial in two ways. First, once each state adopts the provisions of the compact, the commission states would have uniform air qual-

238. Oregon adopted a program like this, prohibiting such burning during the peak summer travel season. The result was an 80% improvement in visibility at Oregon's class I Federal areas. See PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 73.

239. The Clean Air Act encourages the use of interstate compacts. 42 U.S.C. § 7402(a) (Supp. V 1993). To become effective a compact must include every state in the affected geographic region and Congress must approve every interstate compact. *Id.* § 7402(c). If approved, the compact operates like a state or local law. *Id.* § 7661a. Despite this apparent statutory encouragement, interstate compacts are difficult to establish under the Clean Air Act. To date, the only one is a minor compact involving New York, New Jersey and Connecticut. See FRANK P. GRAD, 1 TREATISE ON ENVIRONMENTAL LAW § 2.05[3] (1994).

Interstate compacts are beneficial where cooperation among the states is necessary to accomplish an objective. For example, California and Nevada signed an interstate compact to manage and protect Lake Tahoe. CAL. GOVT. CODE §§ 66800-01 (West 1954) (Tahoe Regional Planning Compact); CAL. GOVT. CODE §§ 66900-01 (West 1954) (Tahoe Conservancy Agency Compact). Similarly, Congress encouraged states to enter into compacts to address the growing problem of radioactive waste in the Low-Level Radioactive Waste Policy Amendments Act of 1985. 42 U.S.C. §§ 2021b-2021j (1988).

240. This is similar to one of NRC's conclusions that improving and protecting visibility "will require regional programs that operate over large geographic areas" PROTECTING VISIBILITY IN NATIONAL PARKS, *supra* note 33, at 6.

ity standards exceeding the minimum federal level.²⁴¹ The resulting reduction in overall pollution would enhance visibility. Second, the alterations in air pollution laws would be incorporated into each state's SIP, making the more stringent ambient standards federally enforceable. This would eliminate the problem seen in *APCD* and *Connecticut v. EPA*. Since each state participating in the compact would have the same air quality standards, EPA could not refrain from acting on the basis that a state cannot impose its higher standards on an upwind state.²⁴²

Although some of the different state laws may make only minor incremental improvements in reducing the pollutants that create regional haze, every reduction counts. Several studies have asserted that because the air in the Southwest is so clear even small increases in pollution can substantially reduce visibility.²⁴³ Conversely, even small decreases in pollution should have a significant impact on improving visibility at Grand Canyon National Park and other class I Federal areas in the Southwest.

Another potential benefit of this proposed interstate compact is that it should improve enforcement in each of the states. For example, California is the only state in GCVTC with more stringent emission standards for new vehicles and consumer products.²⁴⁴ To enforce these standards, California employs a comprehensive inspection and maintenance program.²⁴⁵ Since California is the only state in GCVTC with the stricter standards, there is no way of knowing if more effective and efficient enforcement is possible. However, if all of the states in GCVTC adopted California's emissions standards,²⁴⁶ each state could experiment with different enforcement procedures. This could lead

241. See EMISSION MANAGEMENT OPTIONS, *supra* note 150, att. A at 5 ("A Partial List of State Programs in Excess of Federal Requirements").

242. *Air Pollution Control Dist. v. EPA*, 739 F.2d 1071, 1088 (6th Cir. 1984) (citing *State of Connecticut v. EPA*, 656 F.2d 902, 909 (2d Cir. 1981)).

243. S. REP. NO. 1015, 92d Cong., 2d Sess. 123 (1972); PROTECTING VISIBILITY IN THE NATIONAL PARKS, *supra* note 33, at 9.

244. EMISSION MANAGEMENT OPTIONS, *supra* note 150, att. A at 5-6.

245. CAL. HEALTH & SAFETY CODE §§ 44000-86 (West Supp. 1994). Other GCVTC states do have inspection and maintenance programs to ensure compliance with the Federal standards. See, e.g., ARIZ. REV. STAT. § 49-452 et seq. (1994); COLO. REV. STAT. § 42-4-308 et seq. (1994); NEV. REV. STAT. ANN. § 445.630 (Michie 1994); N.M. STAT. ANN. § 74-2-4 (Michie 1994); OR. REV. STAT. § 468A.390 (1994); UTAH CODE ANN. § 41-6-163.7 (1994).

246. While states are prohibited from establishing their own automobile emissions standards, they are free to choose between the federal standard or the more strict California standard. See *Motor Vehicle Mfrs. v. New York State Dept. of Envtl. Conservation*, 810 F. Supp. 1331 (N.D.N.Y. 1993).

to more effective enforcement programs for the higher standards. Thus, when GCVTC makes its ultimate recommendations it should supplement its management options with a recommendation for the creation of an interstate compact among the commission's states establishing stricter ambient air quality standards.

D. *Private Citizens and Industry*

Private citizens and public interest groups interested in protecting and improving visibility at the Grand Canyon can impact the process in two ways. The first is to remain involved, whether through attending hearings, lobbying elected and appointed officials or trying to better educate the public. The second is to exercise the statutory right under the Clean Air Act to file citizen suits²⁴⁷ when a company repeatedly violates EPA regulations or when EPA itself fails to carry out its nondiscretionary duties.

Industrial concerns also have a large impact on the success of visibility protection of the Grand Canyon. If regulated industries choose to challenge new EPA rules to address regional haze, the challenges will slow progress towards the national goal. On the other hand, if regulated industries choose to actively participate in protecting visibility, benefits to all are possible, as the negotiated rule for NGS shows.²⁴⁸

V.

CONCLUSION

This article has appraised the effect of the Clean Air Act's visibility protection provisions on the Grand Canyon and has demonstrated what progress has been made since visibility protection first became a goal in 1977.

Using public and private resources to protect visibility requires justification. While visibility protection is an expensive and difficult undertaking, the overall benefits appear to outweigh the

247. 42 U.S.C. § 7604 (Supp. V 1993). While the Supreme Court limited the reach of citizen suit provisions in *Lujan v. Defenders of Wildlife*, 112 S. Ct. 2130 (1992), the citizen suit provision of the Clean Air Act should fall within that limit. Additionally, in a citizen action, it would be fairly easy to find a plaintiff who will soon visit the Grand Canyon and feels that impaired visibility will harm their enjoyment of the visit. Thus, the particularized injury requirement of *Lujan v. Defenders of Wildlife* would be met.

248. Rappoport & Cooney, *supra* note 112, at 642. One has to wonder how much less the overall cost to NGS would have been had NGS taken measures to reduce emissions 14 years ago when the Four Corners Plant entered into a consent decree with New Mexico to reduce emissions.

costs. Improved visibility at Grand Canyon National Park generates economic benefits, psychological benefits, and helps fulfill this country's obligation to protect and preserve its national treasures.

Once the decision to protect visibility at the Grand Canyon is made, the question is how to do so. While the sources of impaired visibility are fairly well known, they are still not certain. This has proven to be a major obstacle, as EPA and the states require more definitive results to act. However, the Clean Air Act Amendments of 1990 appear to encourage greater action based on current knowledge. The creation of the Grand Canyon Visibility Transport Commission to address regional haze creates optimism that the positive developments of the last few years will continue. Progress should result in improved visibility at the Grand Canyon, as well as other class I Federal areas in the Southwest.

Despite these positive steps, additional efforts will be necessary to achieve reasonable progress towards improved visibility. First, Congress must make a strong financial and legislative commitment towards protecting visibility. Second, EPA must promote the process by proposing new rules to address regional haze and through active enforcement of the present regulations. These two actions, combined with the proposed recommendations of GCVTC would be a strong step towards ensuring that the Grand Canyon remains a sight to see for future generations.

