

The EPA's Regional Haze Proposal: Protecting Visibility in National Parks and Wilderness Areas

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I. OVERVIEW

Since 1977 the Clean Air Act (CAA or the Act) has included a visibility program specially-designed to protect the scenic vistas in the country’s premier national parks and wilderness areas.¹ To date, the EPA’s implementation of the program has focused on a modest subset of the visibility impairment that occurs in these unique areas. The EPA’s initial implementing regulations, adopted in 1980, took aim at visibility impairment in national parks and wilderness areas that is attributable or relatable to one or a few stationary sources.² At the same time, the EPA deferred addressing regional haze caused by an undifferentiated mix of stationary, mobile, and area sources over a broad interstate region,³ which is the predominant cause of the pollution that obscures scenic vistas. The EPA’s July 31, 1997, regional haze proposal, advanced more than a decade and a half after the EPA deferred action on regional haze, proposes a framework for state air quality management plans to combat this challenging and important air pollution problem.⁴

The average visual range in most of the western United States is about 100-150 kilometers (approximately 60-100 miles), about one-half to two-thirds of the visual range that could be perceived in the absence of anthropogenic air pollution.⁵ The average visual range in the eastern

1. See Pub. L. No. 95-95, 91 Stat. 685, 742 (1977).

2. Visibility Protection for Federal Class I Areas, 45 Fed. Reg. 80,084 (1980) (codified at 40 C.F.R. §§ 51.300 - 307).

3. *Id.* at 80,086.

4. Regional Haze Regulations, 62 Fed. Reg. 41,138, 41,139 (1997) (to be codified at 40 C.F.R. pt. 51).

5. COMMITTEE ON HAZE IN NATIONAL PARKS AND WILDERNESS AREAS, NATIONAL RESEARCH COUNCIL, PROTECTING VISIBILITY IN NATIONAL PARKS AND WILDERNESS AREAS, vol. 1

United States is less than 30 kilometers (approximately 20 miles), about one-fifth of the visual range that could be perceived absent manmade air pollution.⁶ Visibility impairment is caused by small particles that scatter and absorb sunlight, diminishing or altogether eliminating the color, clarity, and perception of a scenic vista.⁷

Fine particles are emitted directly into the atmosphere and as gaseous precursors that transform into fine particulates.⁸ The major constituents of fine particles found in rural areas, where most national parks and wilderness areas are located, are sulfates, organic compounds, nitrates, fine soil, and light-absorbing carbon.⁹ Sulfates and nitrates, two of the principal visibility pollutants, are formed from gaseous emissions of sulfur dioxide and nitrogen oxides.¹⁰ Fine particles, those with aerodynamic diameters of between approximately 1.0 and 1.5 microns, are very efficient at scattering light.¹¹ Further, these particles are buoyant, can remain in the atmosphere for several days, and can be transported hundreds of kilometers from their origin by prevailing winds.¹² Regional haze is formed when fine particles from a variety of different sources across several states are transported, mixed together and create a uniform, widespread haze.¹³

The EPA revisited the adoption of a regional haze program in conjunction with its review of the particulate matter national ambient air quality standards (NAAQS), which examined the health and welfare

at 1 (National Academy Press 1993) [hereinafter 1993 NATIONAL ACADEMY OF SCIENCES REPORT].

6. *Id.*

7. See EPA, PROTECTING VISIBILITY: AN EPA REPORT TO CONGRESS (EPA 450/5-79-008 Oct. 1979) [hereinafter 1979 EPA REPORT TO CONGRESS]. When there are very few particles in the air the scattering of light results in the blue daytime sky. With increasing concentrations of fine particulates the scattering and absorption of light results in gray or brown sky conditions depending on the angle of the sun and constituents of the particles. *Id.* at 2-24 to 2-27. Many years of visibility monitoring in rural locations confirms that visibility impairment predominantly results from fine particles scattering light. NATIONAL ACIDIC DEPOSITION ASSESSMENT PROGRAM, ACIDIC DEPOSITION: STATE OF SCIENCE AND TECHNOLOGY, vol. III at 24-114 (1990).

8. See 1993 NATIONAL ACADEMY OF SCIENCES REPORT, *supra* note 5, at 2.

9. See SISLER ET AL., SPATIAL AND SEASONAL PATTERNS AND LONG TERM VARIABILITY OF THE COMPOSITION OF THE HAZE IN THE UNITED STATES: AN ANALYSIS OF THE DATA FROM THE IMPROVE NETWORK 2-4 (Colorado State Univ./Cooperative Institute for Research in the Atmosphere, July 1996).

10. See 1979 EPA REPORT TO CONGRESS, *supra* note 7, at 6.

11. *See id.*

12. See SISLER, *supra* note 9, at 2-4; see also EPA, AIR QUALITY CRITERIA FOR PARTICULATE MATTER, vol. 1 at 3-99 (EPA/600/P-95/001aF April 1996) [hereinafter PM CRITERIA DOCUMENT].

13. See 1993 NATIONAL ACADEMY OF SCIENCES REPORT, *supra* note 5, at 2.

effects of fine as well as coarse particles.¹⁴ The EPA ultimately determined that the impacts of fine particles on visibility—a key welfare effect—would be addressed most effectively by augmenting the health-based fine particle standards with a regional haze program for national parks and wilderness areas under the special visibility protection provisions of the CAA.¹⁵ The EPA found that a regional haze program would, importantly, allow for air quality management that accounted for the regional variation in natural background visibility conditions and other significant regional visibility factors.¹⁶

EPA's regional haze proposal was a critical step in implementing the strategy set out in the particulate matter NAAQS rulemaking. The proposal would improve poor visibility and preserve relatively good visibility in 156 of the most treasured national parks and wilderness areas across the country including the Grand Canyon, Yosemite, Yellowstone, Mount Rainier, Shenandoah, the Great Smokies, and Acadia National Parks. These areas were set aside for their intrinsic value, and the enjoyment of present and future generations.¹⁷ Millions of people visit these areas each year,¹⁸ and these visitors highly value clear vistas. Several studies have been conducted to estimate the economic value of visibility protection in these areas.¹⁹ The studies demonstrate that a significant economic value is given to improving and protecting visibility by the people who visit these areas as well as those who have not visited but value knowing that the scenic vistas exist and are protected.²⁰

14. Regional Haze Regulations, 62 Fed. Reg. 41,138 (1997); *see also* National Ambient Air Quality Standards for Particulate Matter, 62 Fed. Reg. 38,652 (1997) (to be codified at 40 C.F.R. pt. 50).

15. National Ambient Air Quality Standards for Particulate Matter, 62 Fed. Reg. at 38,652.

16. *Id.*

17. The National Park Service Act of 1916 provides that the fundamental purpose of the parks is: "to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." Act of August 25, 1916, 39 Stat. 535 (1916) (codified at 16 U.S.C. §§ 1-2, 4 (1994)).

18. In fiscal year 1995, there were more than 270 million recreational visits to national park system units. *See* 1997 National Park Service Strategic Plan at 24 (visited Feb. 10, 1998) <<http://www.nps.gov/planning/sp/>>. While this total includes some national parks not protected under the visibility program, it excludes wilderness areas that are protected under the program.

19. *See* 1979 EPA REPORT TO CONGRESS, *supra* note 7, at 1-7; *see also* EPA, REGULATORY IMPACT ANALYSES FOR THE PARTICULATE MATTER AND OZONE NATIONAL AMBIENT AIR QUALITY STANDARDS AND THE PROPOSED REGIONAL HAZE RULE, at 12-56 (July 16, 1997). The Regulatory Impact Analyses or "RIA" and the documents that formed the basis of the EPA's proposed regional haze rule are available in Docket A-95-38 at the EPA's Air and Radiation Public Docket and Information Center (Mailcode 6102), South Conference Center, Room 4, 401 M Street, S.W., Washington, D.C. 20460 [hereinafter EPA Air Docket A-95-38].

20. *See* 1979 EPA REPORT TO CONGRESS, *supra* note 7, at 1-7; *see also* EPA, Air Docket A-95-38, *supra* note 19, at 12-56.

This Article examines the EPA's regional haze proposal. Part II reviews the genesis of the proposal including important legislative, technical, and policy developments. Part III explores the key elements of the EPA's proposal. The EPA's regional haze proposal has engendered significant public interest. The EPA received well over 1,000 public comments on its proposal by the close of the comment period on December 5, 1997.²¹ The EPA is currently reviewing those comments and deciding what revisions to make in its final regional haze rule. Once promulgated, the final regional haze rule together with the EPA's existing visibility protection regulations would fulfill the long-standing congressional goal for a comprehensive program to improve and protect the visual air quality in specially-designated national parks and wilderness areas.

II. GENESIS OF THE REGIONAL HAZE PROPOSAL

A. *The Creation of a Visibility Protection Program in the 1977 Clean Air Act Amendments*

As noted, the 1977 Amendments to the CAA included a program designed to protect scenic vistas in special national parks and wilderness areas.²² Congress adopted the visibility program to protect the "intrinsic beauty and historical and archeological treasures" of certain federal lands, observing that "areas such as the Grand Canyon and Yellowstone Park are areas of breathtaking panorama; millions of tourists each year are attracted to enjoy the scenic vistas."²³ To guide the administration of the visibility protection program, Congress declared and codified a national visibility goal: "the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution."²⁴

The national goal delineates several key facets of the visibility protection program. First, the areas protected under the program are mandatory class I federal areas where visibility is an important value.²⁵ The mandatory class I federal areas are national wilderness areas and

21. See EPA Air Docket A-95-38, *supra* note 19; see also 62 Fed. Reg. 55,202 (1997) (announcing extension of public comment period to December 5, 1997).

22. See Pub. L. No. 95-95, 91 Stat. 685, 742-45 (1977). For a detailed examination of the programs in the 1977 CAA Amendments affecting visibility protection, with a focus on visual air quality in the southwestern United States, see Jerome Ostrov, *Visibility Protection Under the Clean Air Act: Preserving Scenic and Parkland Areas in the Southwest*, 10 *ECOLOGY L.Q.* 397 (1982).

23. H.R. REP. NO. 294, 95th Cong. 1st Sess., at 203-04 (1977).

24. CAA § 169A(a)(1), 42 U.S.C. § 7491(a)(1) (1994).

25. CAA § 169A(a)(2), (b)(2), 42 U.S.C. § 7491(a)(2), (b)(2).

national memorial parks larger than 5,000 acres, national parks larger than 6,000 acres, and international parks.²⁶ Because each mandatory class I federal area is the responsibility of a federal land manager (FLM), these officials have a special role under the visibility program.²⁷ The EPA, in coordination with the FLMs, determined that visibility is an important value for 156 of the eligible 158 mandatory class I federal areas.²⁸

A second important element of the program embodied in the national goal is that the program is both preventive and remedial. The objective of the program is to both prevent future impairment and redress existing visibility impairment.²⁹ Third, anthropogenic sources of visibility impairment are targeted. The purpose of the program is to protect impairment resulting from manmade air pollution.³⁰ Finally, the goal is broadly aimed at preventing and remedying "any" anthropogenic visibility impairment.³¹

The legal centerpiece of the visibility protection program is the mandate for the EPA to issue regulations to assure "reasonable progress" toward meeting the national goal.³² Reasonable progress toward the national visibility goal is the key standard and it resounds in the statutory provisions. The EPA's rules establish the components for state-administered visibility protection programs. The EPA's regulations must require state air quality plans to include emissions limits, schedules of compliance and other measures necessary to make reasonable progress toward meeting the national visibility goal.³³ The regulations must also

26. CAA §§ 169A(g)(5), 162(a), 42 U.S.C. §§ 7491(g)(5), 7472(a). The areas must have been in existence on August 7, 1977. Additionally, the scope of areas designated as class I includes any boundary expansion occurring after August 7, 1977. CAA § 162(a), 42 U.S.C. § 7472(a).

27. The term "Federal land manager" means, with respect to any lands in the United States, the Secretary of the department with authority over such lands. CAA § 302(i), 42 U.S.C. § 7602(i). For example, the Secretary of Agriculture is the FLM for U.S. Forest Service lands and the Secretary of the Interior for National Park Service and U.S. Fish and Wildlife Service lands. However, under internal agency procedures, the departmental Secretaries have delegated FLM authority to surrogate officials.

28. See National Visibility Goal for Federal Class I Areas; Identification of Mandatory Class I Federal Areas Where Visibility is an Important Value, 44 Fed. Reg. 69,122 (1979) (codified at 40 C.F.R. pt. 81). Two wildernesses, Rainbow Lake (Wisconsin) and Bradwell Bay (Florida), were excluded. The list of mandatory class I federal areas where visibility is an important value (hereinafter "class I areas") is currently codified at 40 C.F.R. part 81, subpt. D (1998).

29. The term "visibility impairment" includes reduction in visual range and atmospheric discoloration. CAA § 169A(g)(6), 42 U.S.C. § 7491(g)(6).

30. The term "manmade air pollution" means air pollution which results directly or indirectly from human activities. CAA § 169A(g)(3), 42 U.S.C. § 7491(g)(3).

31. CAA §§ 169A(a)(1), 42 U.S.C. § 7491(a)(1).

32. CAA § 169A(a)(4), 42 U.S.C. § 7491(a)(4).

33. CAA § 169A(b)(2), 42 U.S.C. § 7491(b)(2).

require state plans to include two core elements: (1) best available retrofit technology (BART) for existing major stationary sources emitting pollution that “may reasonably be anticipated to cause or contribute” to visibility impairment in a class I area and (2) a long-term (ten to fifteen years) strategy for making reasonable progress toward meeting the national goal.³⁴

BART potentially applies to “major stationary sources,” a term which is specially defined under the visibility program.³⁵ The statute establishes a liberal standard for determining whether BART is triggered. BART must be analyzed for a source if it emits any pollution that may reasonably be anticipated to cause or contribute to visibility impairment in a class I area.³⁶ BART is generally determined by considering a number of statutory factors such as the costs of compliance, existing pollution control being utilized at the source, and the expected visibility improvement.³⁷ However, the EPA guidelines must govern the BART determination for fossil-fuel fired power plants having a capacity in excess of 750 megawatts.³⁸ The EPA may exempt a source from BART if the EPA finds that the source alone or in combination with other sources is not anticipated to cause or contribute to significant visibility impairment in a class I area.³⁹ More rigorous exemption standards apply

34. CAA § 169A(b)(2)(A)-(B), 42 U.S.C. § 7491(b)(2)(A)-(B).

35. “Major stationary source” includes the 26 source categories in the definition of “major emitting facility” under the Prevention of Significant Deterioration of Air Quality (PSD) program, which is applicable to new sources in clean air areas. However, the visibility definition includes sources with larger capacities, generally covering sources with the potential to emit at least 250 tons per year rather than the 100-ton-per-year threshold under PSD. Compare CAA § 169A(g)(7), 42 U.S.C. § 7491(g)(7) with CAA § 169(1), 42 U.S.C. § 7479(1). BART applies to major stationary sources operating after August 7, 1962, but in existence on August 7, 1977, thereby reaching large sources whose visibility affects were not reviewed under the PSD program before their construction. See CAA § 169A(b)(2)(A), 42 U.S.C. § 7491(b)(2)(A).

36. CAA § 169A(b)(2)(A), 42 U.S.C. § 7491(b)(2)(A). See *Central Arizona Water Conservation Dist. v. EPA*, 990 F.2d 1531, 1541 (9th Cir.), *cert. denied*, 114 S. Ct. 94 (1993) (“Congress mandated an extremely low triggering threshold, requiring the installment of stringent emission controls when an individual source ‘emits any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility.’”) (citation omitted).

37. The statute states in full that in determining BART the state (or the EPA in the case of a federal plan) shall take into consideration the following:

the costs of compliance, the energy and nonair quality environmental impacts of compliance, any existing pollution control technology in use at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology[.]

CAA § 169A(g)(2), 42 U.S.C. § 7491(g)(2).

38. CAA § 169A(b), 42 U.S.C. § 7491(b).

39. CAA § 169A(c), 42 U.S.C. § 7491(c).

for large fossil-fuel fired power plants.⁴⁰ In any case, a BART exemption may be granted only with the concurrence of the appropriate FLM.⁴¹

Congress took specific aim at interstate air pollution in fashioning the visibility protection program. Two categories of states are to be covered by the EPA's regulations: (1) those states containing class I areas where visibility is an important value and (2) those states with emissions that may reasonably be anticipated to cause or contribute to transboundary visibility impairment in a class I area located in another state.⁴²

The federalism model employed in administering the visibility protection program is like that for the NAAQS. In designing the visibility program, Congress built on the state implementation plan (SIP) program that was already in place for the NAAQS. The EPA establishes overarching federal requirements. The states in turn have the primary role in implementing the visibility protection requirements through state plans.⁴³ Additionally, like the NAAQS, the EPA has federal oversight tools. For example, the EPA has the responsibility to protect visibility through a federal plan when a state fails to submit an adequate visibility plan.⁴⁴

The FLMs have a unique role in the development of state visibility plans because federal lands are the focus of the visibility protection program. The statute gives the FLMs special input into the state planning process. States are required to consult with the FLMs in developing visibility plans and include the FLMs' recommendations in the public notice announcing the proposed plan.⁴⁵

40. CAA § 169A(c)(2), 42 U.S.C. § 7491(c)(2).

41. CAA § 169A(c)(3), 42 U.S.C. § 7491(c)(3).

42. CAA § 169A(b)(2), 42 U.S.C. § 7491(b)(2).

43. The general SIP requirements under the CAA direct that SIPs meet the visibility protection provisions in Section 169A of the Act. See CAA § 110(a)(2)(J), 42 U.S.C. § 7410(a)(2)(J).

44. CAA Section 110(c)(1), 42 U.S.C. § 7410(c)(1), calls for the EPA to issue a federal plan within two years of finding that a state has failed to submit an approvable visibility plan. See CAA § 169A(b)(2)(A), 42 U.S.C. § 7491(b)(2)(A) (BART is determined by the state "or the Administrator in the case of a plan promulgated under section 110(c)"). The legislative history suggests Congress deliberately conferred the EPA with authority to issue superintending federal plans for visibility: "The conferees . . . rejected a motion to delete the EPA's supervisory role under section 110 to assure that the required progress toward [the national visibility goal] will be achieved by the revised State plan. If a State visibility protection plan is not adequate to assure such progress, then the Administrator must disapprove that portion of the SIP and promulgate a visibility protection plan under section 110(c)." See SENATE COMM. ON ENVIRONMENT AND PUBLIC WORKS, 95TH CONG., 2D SESS., A LEGISLATIVE HISTORY OF THE CLEAN AIR ACT AMENDMENTS OF 1977, vol. 3 at 320-21 (Comm. Print 1978) (statement of Congressman Rogers during House consideration of Conference Committee Report, Aug. 4, 1977).

45. CAA § 169A(d), 42 U.S.C. § 7491(d).

Neither the national goal nor the regulatory authority delegated to the EPA distinguish different types of visibility impairment. The national goal comprehensively calls for the protection of “any” visibility impairment.⁴⁶ The regulatory authority delegated to the EPA is in turn designed to assure reasonable progress toward this comprehensive goal.⁴⁷ However, as discussed below, the EPA elected to bifurcate visibility protection, initially issuing regulations designed to remedy visibility impairment relating to one or a few existing stationary sources, and deferring action on regionwide visibility degradation due to a multitude of different sources over a broad area.

B. The EPA's 1980 Visibility Regulations: Deferring Action on Regional Haze

The visibility protection provisions of the CAA adopted in 1977 called for the EPA to report to Congress on technical and policy issues related to visibility protection.⁴⁸ The EPA's resulting 1979 report established much of the foundation and framework for the EPA's ensuing regulatory program. The report identified the following broad classifications of visibility impairment caused by air pollution: (1) widespread, regionally homogeneous haze that reduces visibility in every direction from an observer; (2) visible smoke, dust or colored gas plumes that obscure the sky or horizon; and (3) bands or layers of discoloration or veiled haze appearing well above the surrounding terrain.⁴⁹ The report found that the available models for evaluating pollution on a regional scale had too much uncertainty for regulatory use.⁵⁰ The report therefore recommended that the visibility program be implemented in phases, directed initially at single source impairment.⁵¹

Due to limited modeling tools and other technical obstacles addressing regional visibility impairment, the EPA decided to attack the problem in stages. In 1980, the EPA issued implementing regulations that adopted a phased approach to visibility protection. The EPA combined the three categories of visibility impairment identified in the 1979 report to Congress into two: (1) haze, smoke, dust, colored gas plumes, or layered haze emitted from stacks which obscure the sky or horizon and are relating to a single source or a small group of sources and (2) widespread, regionally homogeneous haze from a multitude of

46. CAA § 169A(a)(1), 42 U.S.C. § 7491(a)(1).

47. CAA § 169A(a)(4), (b)(2), 42 U.S.C. § 7491(a)(4), (b)(2).

48. CAA § 169A(a)(3), 42 U.S.C. § 7491(a)(3).

49. 1979 EPA REPORT TO CONGRESS, *supra* note 7, at 2.

50. *Id.* at 11.

51. *Id.*

sources which impairs visibility in every direction over a large area.⁵² The EPA incorporated layered hazes and forms of impairment attributable to only one or a few sources into a single, broad category that was segregated from regional haze.⁵³

The EPA's 1980 regulations addressed the first type of impairment. The EPA indicated that future regulatory initiatives would address regional haze, the second type of impairment, when regional scale models were refined and scientific knowledge about the relationships between emitted air pollutants and visibility impairment improved.⁵⁴

Because the EPA deferred action on visibility impairment from multiple emissions sources across broad interstate regions, the EPA did not require visibility protection plans for states based on their contribution to interstate visibility impairment.⁵⁵ The regulation required only the thirty-six states containing protected national parks and wilderness areas to submit visibility SIPs.⁵⁶

C. In Pursuit of a Regional Haze Program: Efforts by States and Environmentalists to Engender EPA Action

The EPA's extant, limited focus regulations have realized only modest progress in protecting visual air quality in class I areas.⁵⁷ This is due to implementation shortcomings, and because multiple source interstate regional pollution is the predominant cause of visibility impairment at national parks and wilderness areas.⁵⁸ The United States

52. See Visibility Protection for Federal Class I Areas, 45 Fed. Reg. 80,084 (1980).

53. *Id.*

54. See *id.* at 80,085.

55. *Id.* at 80,086.

56. Affected states are listed at 40 C.F.R. § 51.300(b) (1998).

57. See Approval and Promulgation of Implementation Plans: Revision of the Visibility FIP for Arizona, 56 Fed. Reg. 50,172 (1991) (codified at 40 C.F.R. pt. 52) (federal plan for Arizona requiring a 90% reduction in sulfur dioxide emissions at the Navajo Generating Station to remedy visibility impairment at the Grand Canyon National Park); Clean Air Act Approval and Promulgation of Air Quality Implementation Plan Revision for Colorado; Long Term Strategy of Implementation Plan for Class I Visibility Protection, Part I: Hayden Station Requirements, 62 Fed. Reg. 2305 (1997) (approval of Colorado SIP revision requiring an 82% reduction in sulfur dioxide emissions and installation of a baghouse to control particulate emissions at the Hayden Power Plant to remedy visibility impairment at the Mount Zirkel Wilderness Area). See also *Central Arizona Water Conservation Dist. v. EPA*, 990 F.2d 1531, 1540-41 (9th Cir.), *cert. denied*, 114 S. Ct. 94 (1993) (upholding the EPA's rule for the Navajo Generating station).

58. In its 1993 report, the National Academy of Science's Committee on Haze in National Parks and Wilderness Areas determined that little progress had been made in protecting visibility:

[T]he federal government and the states have been extremely slow in developing an effective visibility program. The present program lacks sufficient resources, and it targets few of the major types of sources of visibility impairment in Class I areas. As a

Department of the Interior has certified the existence of uniform regional haze in all of the areas managed by the National Park Service in the lower forty-eight states.⁵⁹

After waiting several years for the EPA to fulfill its 1980 promise for regulations to combat regional haze, northeastern states and environmental groups pursued several avenues to engender federal action. In one case, Vermont submitted an amendment to its state plan to address regional haze in the Lye Brook Wilderness Area and requested the EPA to take remedial action against upwind states. In the federal rulemaking action on the Vermont plan revision, the EPA declined to approve the plan elements addressing regional haze from interstate air pollution,⁶⁰ reasoning that they could not be federally approved until the EPA issued regional haze regulations. Several petitioners, including the State of Vermont, brought an unsuccessful legal challenge to the EPA's decision.⁶¹

result, little progress has been made toward the national visibility goal established by Congress 15 years ago.

1993 NATIONAL ACADEMY OF SCIENCES REPORT, *supra* note 5, at 2. The Committee also found that visibility impairment in national parks and wilderness areas is generally due to broad regional haze:

Visibility degradation in parklands is a consequence of broader regional-scale visibility impairment. The causes of this impairment are well understood. Most impairment is caused by fine particles that absorb or scatter light. Some of these particles (primary particles) are emitted directly to the atmosphere; others (secondary particles) are formed in the atmosphere from gaseous precursors. Visibility-reducing particles and their precursors can remain in the atmosphere for several days and can be carried tens, hundreds, or thousands of kilometers downwind from their sources to remote locations, such as national parks and wilderness areas. During transport, the emissions from many sources mix together to form a uniform, widespread haze known as regional haze.

Id. at 1-2.

59. See State Implementation Plans for Visibility Long-Term Strategies, Integral Vistas, and Control Strategies, 52 Fed. Reg. 45,132, 45,133-34 (1987) (codified at 40 C.F.R. pts. 52 and 81). The certification was based on visibility monitoring, the observations of field staff and photographic information. See State Implementation Plans for Visibility Long-Term Strategies, Integral Vista, and Implementation Control Strategies, 52 Fed. Reg. 7802, 7804 (1987) (codified at 40 C.F.R. pts. 52 and 81).

60. See Approval and Promulgation Plans, Vermont Visibility Protection in Federal Class I Areas; Lye Brook Wilderness Area, 51 Fed. Reg. 43,389, 43,389 (1986) (proposed Dec. 2, 1986) (EPA's proposed action on Vermont's visibility SIP); see also Approval and Promulgation of Implementation Plans; Vermont; Visibility in Federal Class I Areas; Lye Brook Wilderness, 52 Fed. Reg. 26,973 (1987) (codified at 40 C.F.R. pt. 52) (EPA's final action on Vermont's visibility SIP).

61. State of Vermont, the Conservation Law Foundation of New England, and the Vermont Natural Resources Council requested judicial review of the EPA's decision. The U.S. Court of Appeals for the Second Circuit upheld the EPA's position, while also admonishing the EPA for failing to address regional haze more than ten years after the 1977 enactment of the visibility protection program. *Vermont v. Thomas*, 850 F.2d 99, 102-04 (2d Cir. 1988).

The EPA likewise denied Maine's petition under Section 126 of the CAA to abate interstate sulfur dioxide emissions from seven midwestern states alleged to be interfering with visibility at Acadia National Park.⁶² The EPA rejected the request, explaining that the pollution was not remedial because the federal visibility regulations did not address regional haze.⁶³

Seven northeastern states and several environmental groups initiated a citizen suit in district court under Section 304 of the CAA to compel the EPA regulatory action on regional haze.⁶⁴ The plaintiffs alleged the EPA had an overdue mandatory duty to issue regional haze rules and sought a court order to enforce the obligation.⁶⁵ The United States Court of Appeals for the First Circuit affirmed a district court decision dismissing the lawsuit for lack of subject matter jurisdiction.⁶⁶

The appellate court concluded that the EPA's mandatory statutory duty to issue visibility regulations was fulfilled by its final 1980 rules and a final agency decision deferring action to address regional haze.⁶⁷ The court held that the EPA's decision to defer action on regional haze at the time the EPA issued its 1980 rules constituted final action judicially reviewable under Section 307(b) of the CAA.⁶⁸ Section 307(b) in turn vests exclusive jurisdiction for review of final agency actions in the court of appeals and, further, requires a petition for review to be filed within sixty days of the agency action.⁶⁹ Thus, the EPA's deferral was not thereafter judicially reviewable in district court through a citizen suit to enforce regulatory action.⁷⁰

During the 1980s, efforts to protect vistas in national parks and wilderness areas from regional visibility impairment were unavailing. The EPA repeatedly declined to address the technically and politically challenging problem of regional haze.

62. Interstate Pollution Abatement, 49 Fed. Reg. 48,152 (1984) (codified at 40 C.F.R. pt. 52).

63. *Id.* at 48,153 (citing CAA § 304, 42 U.S.C. § 7604 (1994)).

64. *Maine v. Thomas*, 690 F. Supp. 1106 (D. Me. 1988).

65. *See id.* The statute commands the EPA to issue visibility regulations within 24 months of the 1977 Amendments. *See* CAA § 169A(a)(4), 42 U.S.C. § 7491(a)(4).

66. *Maine v. Thomas*, 874 F.2d 883 (1st Cir. 1989).

67. *Id.* at 888 (citing CAA § 307(b), 42 U.S.C. § 7607(b)).

68. *Id.* at 887-88, 891.

69. CAA § 307(b), 42 U.S.C. § 7607(b).

70. *Maine*, 874 F.2d at 886-88, 891 (citing CAA § 169B, 42 U.S.C. § 7492). The court observed that the appellants were not without administrative and judicial recourse. The court explained that the appellants could petition the EPA for rulemaking action to address regional haze and, if the EPA denied the request, the appellants could seek judicial review in the court of appeals. *Id.* at 889-91.

D. *Congressional Initiative to Address Regional Haze in the 1990 Clean Air Act Amendments*

1. *Putting the EPA on the Pathway to Address Regional Haze*

The 1990 CAA Amendments contained several provisions designed to advance the EPA's efforts to address regional haze. Congress added visibility protection provisions, Section 169B of the CAA that provided for research on regional air quality modeling and other technical issues that had encumbered the EPA's ability to issue regional haze rules in 1980.⁷¹ The new visibility provisions also called for the establishment of an interstate commission to recommend strategies for abating the regional haze impairing Grand Canyon National Park.⁷²

The EPA established the Grand Canyon Visibility Transport Commission in 1991, and expanded its focus to include sixteen national parks and wilderness areas within the "Golden Circle" of parks and wildernesses on the Colorado Plateau.⁷³ The transport region encompassed a substantial part of the western United States, and the commission was ultimately comprised of representatives of eight western states, four Native-American Tribes, federal and tribal land management agencies, and the EPA. Only the states and the Tribes were voting members.⁷⁴

Congress made the Commission responsible for recommending control strategies to the EPA including regulations to address regional haze.⁷⁵ The Commission reported its recommendations to the EPA on

71. See CAA Amendments, Pub. L. No. 101-549, 104 Stat. 2399, 2695-97 (1990).

72. CAA § 169B(f), (d)(2)(C), 42 U.S.C. § 7492(f), (d)(2)(C).

73. Grand Canyon Visibility Transport Commission, 56 Fed. Reg. 57,522, 57,522-23 (1991).

74. The voting states and Tribes were Arizona, California, Colorado, New Mexico, Nevada, Oregon, Utah, Wyoming, the Pueblo of Acoma, the Hopi Tribe, the Hualapai Tribe, and the Navajo Nation. The non-voting participants included representatives of the Columbia River Inter-Tribal Fish Commission, Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service, National Park Service, and the EPA. While the EPA was represented on the Commission, the statute specifies that the federal representatives must be *ex officio* members. CAA § 169B(c)(3), 42 U.S.C. § 7492(c)(3). *Ex officio* literally means "by virtue of the office" and does not necessarily preclude the federal representatives from voting on Commission recommendations. However, in establishing the Grand Canyon Commission, the EPA itself participated as a nonvoting member and invited representatives of federal land management agencies to participate "as nonvoting members of the Commission." See Letters from William K. Reilly, EPA Administrator, to John F. Turner, Director, Fish and Wildlife Service, to Cy Jamison, Director, Bureau of Land Management, to James M. Ridenour, Director, National Park Service, and to F. Dale Robertson, Chief, U.S. Forest Service (Oct. 30, 1991) (on file with authors).

75. The Grand Canyon Commission was directed to assess technical data and information and recommend measures to protect visual air quality in the region including promulgation of regional haze regulations. CAA § 169B(d), 42 U.S.C. § 7492(d).

June 10, 1996.⁷⁶ Congress in turn charged the EPA with taking the recommendations into account in adopting federal regulations to protect visibility.⁷⁷

Through the Commission, Congress fashioned a ground-breaking regional planning approach to combat interstate visibility impairment. The Commission process also gave states and Tribes direct input to the federal policymaking process, enabling the participating states and Tribes to influence federal regional haze strategy. In addition to making policy recommendations to the EPA, the Commission process helped propel the EPA to address regional haze by establishing an eighteen month statutory deadline by which the EPA is to act on the Commission's recommendations.⁷⁸

At the same time Congress created the Commission process, Congress amended the citizen suit provision of the Act to authorize lawsuits compelling agency action that has been unreasonably delayed.⁷⁹ This legislative change was in response to the First Circuit's decision in which the court held that a citizen suit could not be maintained for the EPA's failure to issue the regional haze regulations deferred in the 1980 visibility rulemaking.⁸⁰ The statutory deadline for responding to the Grand Canyon Commission's recommendations in addition to the revisions to the citizen suit provisions represented reinforcing procedures to get the EPA back on track in addressing regional haze, establishing an enforceable statutory deadline to act on the Commission's recommendations, and independently empowering citizens to sue when agency action has been unreasonably delayed.

The 1990 legislative additions built upon the EPA's existing regulatory authority to issue regional haze regulations. Section 169A was not revised in the 1990 Amendments and the EPA has long had broad rulemaking authority to issue regional haze regulations.⁸¹ Section

76. See generally GRAND CANYON VISIBILITY TRANSPORT COMMISSION, RECOMMENDATIONS FOR IMPROVING WESTERN VISTAS (Report to the EPA) (1996) [hereinafter 1996 COMMISSION REPORT].

77. CAA § 169B(e)(1), 42 U.S.C. § 7492(e)(1).

78. *Id.*

79. CAA § 304(a), 42 U.S.C. § 7604(a).

80. See 136 CONG. REG. S2877 (daily ed. Mar. 21, 1990) (statement of Sen. Adams) ("The amendments to section[] 304 . . . address the specific circumstances raised by [the *Maine*] case. These amendments should clarify the jurisdiction of the district court to provide relief when the EPA defers final action, and then fails to complete the action deferred."). For a discussion of the *Maine* decision, see *supra* note 66 and accompanying text.

81. CAA § 169A(2)(4), 42 U.S.C. § 7491(2)(4). Section 169B expressly treats Section 169A as the source of authority for regulating regional haze. See CAA § 169B(d)(2)(C), (e)(1), (e)(2), 42 U.S.C. § 7492(d)(2)(C), (e)(1) & (e)(2). In adopting Section 169B, Congress indicated that the advent of Section 169B did not affect the EPA's pre-existing authority, or responsibility, under Section 169A to address regional haze. See 136 CONG. REC. S2878 (daily ed. March 21,

169A(a)(4) of the Act authorizes the EPA to promulgate regulations to assure reasonable progress toward meeting the national visibility goal.⁸² The national goal in turn calls for preventing and remedying “any” visibility impairment, including regional haze. In adopting Section 169A, Congress evinced its intent to address impairment caused by “hazes” and the corresponding need to control a “variety of sources” and “regionally distributed sources.”⁸³

The 1990 Amendments also directed the EPA to report periodically to Congress on the EPA’s assessment of visibility improvement resulting from implementation of the Amendments, other than Section 169B itself.⁸⁴ Generally, in the first report, issued in October 1993, the EPA predicted that by the years 2005-2010, when most of the 1990 Amendments should be implemented, regional visibility would improve or remain the same across the continental United States.⁸⁵ More specifically, the report projected that major visibility improvements would occur in class I areas along the central and southern portion of the Appalachian Mountains, due to the sulfur dioxide emissions reductions expected under the CAA’s acid deposition control program.⁸⁶ The EPA predicted little, if any, visibility improvement by the year 2005 in the southwestern United States because emission reductions expected from implementation of the 1990 Amendments will likely be offset by growth.⁸⁷ Further, the report predicted that despite improvement in some areas, there will still be perceptible anthropogenic visibility impairment in class I areas across the United States after the CAA Amendments of 1990 are fully implemented.⁸⁸ Since the fundamental purpose of the visibility regulatory program is to assure “reasonable progress” toward the national visibility goal of no anthropogenic impairment, the report’s findings created additional impetus for regional haze regulations.

1990) (statement of Sen. Adams) (“[t]he authority to establish visibility transport regions and commissions is a supplement to the administrators [sic] obligation under current law”); *id.* at S2887 (statement of Sen. Wirth); *see also* 136 CONG. REC. H12883 (daily ed. Oct. 26, 1990) (statement of Rep. Wyden) (“[n]either the original House language nor the Senate language adopted in conference repealed or lessened the EPA’s obligations under the 1977 law”).

82. *See Maine*, 874 F.2d at 885 (“EPA’s mandate to control the vexing problem of regional haze emanates directly from the Clean Air Act, which ‘declares as a national goal the prevention of any future, and the remedying of any existing, [anthropogenic] impairment of visibility in mandatory class I Federal areas.’”) (citation omitted).

83. *See* H.R. Rep. No. 294, *supra* note 23, at 204.

84. CAA § 169B(b), 42 U.S.C. § 7492(b).

85. *See* EPA, EFFECTS OF THE 1990 CLEAN AIR ACT AMENDMENTS ON VISIBILITY IN CLASS I AREAS: AN EPA REPORT TO CONGRESS, at p. x (EPA 452/R-93-014, Oct. 1993).

86. *Id.* at xiii.

87. *Id.* at 61.

88. *Id.* at xiii.

The EPA issued a proposed regional haze program on July 31, 1997.⁸⁹ The proposal addressed regional haze visibility impairment not only in the Golden Circle areas that were the subject of the Commission's recommendations but in all of the 156 national parks and wilderness areas nationwide protected under the visibility program.⁹⁰ The EPA's national program was proposed in response to the Commission's recommendations and the EPA's decision, in issuing the fine particle NAAQS, to augment visibility protection with the establishment of a national regional haze program.⁹¹ The Commission's recommendations, which informed the EPA's regional haze proposal, are discussed in more detail below.

2. The Grand Canyon Visibility Transport Commission

To determine strategies to remedy regional visibility impairment in the Golden Circle of national parks and wilderness areas on the Colorado Plateau, the Commission established a process to examine underlying technical and policy issues and to provide for public input. The Commission created a number of technical and policy committees, and set up a special public advisory body to provide feedback on control options.⁹² Representatives of industry, environmental organizations, and state, tribal, local, and federal governments as well as academics, community leaders, and scientists participated in and influenced the process.⁹³ The Commission also sponsored numerous public meetings throughout the multistate western transport region to foster public discourse about the visibility problems and solutions.⁹⁴

Ultimately, the Commission identified a set of strategies that were supported by all of the participating states and Tribes except one.⁹⁵ The Commission's recommendations to the EPA covered a range of control strategy approaches, planning and tracking activities, and technical findings.⁹⁶ The recommendations also contemplate implementation through various combinations of actions by the EPA, other federal

89. Regional Haze Regulations, 62 Fed. Reg. 41,138 (1997) (to be codified at 40 C.F.R. pt. 51).

90. *Id.* at 41,144.

91. National Ambient Air Quality Standards for Particulate Matter, 62 Fed. Reg. at 38,679 (1997) (to be codified at 40 C.F.R. pt. 50).

92. See 1996 COMMISSION REPORT, *supra* note 76, at 3-4.

93. *Id.*

94. *Id.*

95. Eleven of the 12 voting States and Tribes supported the Commission's recommendations to the EPA. However, the State of Nevada dissented.

96. See generally 1996 COMMISSION REPORT, *supra* note 76.

agencies, states and Tribes, and voluntary measures carried out by public and private entities in the region.⁹⁷

The primary recommendations set out in the Commission's June 1996 report to the EPA are as follows:

Stationary Sources. The Commission's recommendations target a 13 percent decrease in sulfur dioxide emissions from stationary sources by year 2000 and a 50-70 percent reduction by year 2040 (over 1990 levels). The Commission indicated that interim targets may be necessary to ensure steady and continuing emission reductions. The Commission also recommended that states and Tribes continue to implement the existing visibility program to remedy impairment attributable to uncontrolled stationary sources.⁹⁸

Mobile Sources. The Commission found that mobile source emissions may begin to increase after the year 2005, when the benefits of improved control technologies are offset by growth. The Commission recommended capping mobile source emissions at their lowest projected levels and conveyed support for national mobile source control initiatives that would benefit air quality in the region.⁹⁹

Air Pollution Prevention. The Commission supported increased reliance on pollution prevention initiatives, including energy conservation, energy efficiency and renewable energy technologies. The Commission recommended that the states in the transport region should endeavor to achieve the goal of having renewable energy comprise 10 percent of the regional power needs by year 2005 and 20 percent by year 2015.¹⁰⁰

Prescribed Fire. The Commission recommended strategies to minimize the visibility impacts of prescribed fire used privately in agricultural and silvicultural practices and by federal land management agencies for ecosystem balance. The report suggested that EPA require federal, state, tribal and private prescribed fire programs to account for smoke effects in visibility planning activities.¹⁰¹

Further Research. The Commission recommended further assessment of the impact from emissions near the Golden Circle class I areas as well as the impact of road dust and emissions from Mexico on visibility conditions.¹⁰²

The Commission also determined that a successor organization should be established to oversee, promote, and support the

97. *Id.*

98. 1996 COMMISSION REPORT, *supra* note 76, at ii and 32-37 (June 10, 1996).

99. *Id.* at ii and 38-45.

100. *Id.* at i and 28-31.

101. *Id.* at ii-iii and 47-50.

102. *Id.* at ii, 46, 56-58.

implementation of its recommendations.¹⁰³ Recognizing that interstate coordination is critical to implement regional visibility protection strategies, many of the states and Tribes that participated in the Commission have formed a follow-up cooperative group called the Western Regional Air Partnership.¹⁰⁴ The EPA and other federal agencies are participating in that group at the request of organizing states and Tribes.¹⁰⁵

E. The 1993 Report of the National Academy of Science's Committee on Haze in National Parks and Wilderness Areas

As examined in Part II.B above, technical obstacles precluded the EPA from issuing regional haze regulations in 1980. A number of years later, the National Academy of Science's Committee on Haze in National Parks and Wilderness Areas evaluated the status of visibility science. The Committee issued a report in 1993 that reached the following important conclusions and recommendations about the availability of modeling tools and other measures to support a regional haze rulemaking:

- Progress toward the national visibility goal will require regional programs that operate over large geographic areas and limit pollutants that cause regional haze.
- Generally, strategies should be adopted that consider many sources simultaneously on a regional basis.
- Models that can evaluate emission sources on a regional scale are available and could be used to design regional visibility programs.
- Visibility policy and control strategies might need to be different in the West and the East due to a substantial disparity in natural background conditions, and different sources of visibility-impairing pollution. Additionally, most of the protected national parks and wilderness areas are in the West and because of the better visibility conditions are especially vulnerable to small increases in pollution which can be perceptible.
- Efforts to improve visibility in class I areas also would benefit visibility outside these areas.

103. *Id.* at iii, 74-77.

104. *See generally* Western Regional Air Partnership Information <<http://www.westgov.org/wrap/>> (visited May 27, 1998).

105. *Id.*

- Reducing emissions to improve visibility could help alleviate other air-quality problems. Conversely, other types of air-quality improvements could help visibility. In determining control strategies, policymakers should examine these linkages.
- Achieving the national visibility goal will require a substantial, long-term program. Policymakers should consider developing a comprehensive national visibility improvement strategy as the basis for further regulatory action, and establish milestones against which progress toward the national visibility goal could be measured.
- Current scientific knowledge is adequate and control technologies are available for taking regulatory action to improve and protect visibility. However, continued national progress toward this goal will require a greater commitment toward atmospheric research, monitoring, and emissions control research and development.¹⁰⁶

These central findings helped shape the EPA's ensuing visibility policy. The determination that the technical obstacles to a regional haze program had been surmounted and the examination of the tools available laid the technical foundation for a regulatory program to combat regional haze. The findings also underscored the importance and sensibility of the EPA's initiatives to integrate regional haze, fine particle, and other air quality protection strategies because of potential linkages and co-benefits. Further, the assessment of fundamental differences between eastern and western visibility informed the EPA's decision to take a regional approach to visibility protection in addition to adopting nationwide fine particle standards to address visibility effects, examined in more detail below.

F. The New Air Quality Standards for Fine Particles and Visibility Protection Issues

As discussed in Part I, the fine particles that cause serious respiratory and cardiopulmonary health effects, also impair visual air quality by absorbing and scattering light. The CAA provides for the EPA to issue NAAQS that protect both the public health and welfare.¹⁰⁷ Primary standards are intended to protect the public health.¹⁰⁸ Secondary standards are intended to protect against effects on the public welfare.¹⁰⁹

106. 1993 NATIONAL ACADEMY OF SCIENCES REPORT, *supra* note 5, at 6-11.

107. CAA § 109(b), 42 U.S.C. § 7409(b) (1994).

108. *Id.* § 109(b)(1), § 7409(b)(1).

109. *Id.* § 109(b)(2), § 7409(b)(2).

Welfare effects are in turn defined broadly to encompass a panoply of ecological, agricultural, and socioeconomic values including visibility.¹¹⁰ The EPA therefore considered the effects on visual air quality in reviewing and, ultimately, revising the secondary standards for particulate matter.¹¹¹

The EPA's resulting revisions to the particulate matter NAAQS were consistent with the NAS Committee's recommendation to consider cross-programmatic benefits in designing air quality policies and to employ regional strategies that recognize the differences between eastern and western visibility. First, the EPA adopted secondary fine particle standards equal to the suite of primary standards.¹¹² The EPA determined that nationwide visibility improvement would result from this strengthening of the particulate matter NAAQS. Second, to address residual adverse visibility effects from fine particles, the EPA proposed to augment the national standards with a regional haze program.¹¹³ The regional haze program allows for regionally-tailored strategies to attack visibility impairment. The dual strategy outlined a regulatory program to improve visibility nationwide, and in specially-protected national parks and wilderness areas.

III. EPA'S REGIONAL HAZE PROPOSAL

As explained, like the NAAQS, the EPA's visibility protection program is implemented through the SIP system and, therefore, states have primary responsibility for carrying out the program.¹¹⁴ The EPA's regional haze proposal does not directly regulate sources of visibility impairment but contains the framework for state air quality planning requirements to improve and protect visibility in national parks and wilderness areas.¹¹⁵

110. CAA § 302(h), 42 U.S.C. § 7602(h).

111. Previously, in conjunction with prior revisions to the particulate matter NAAQS, the EPA issued an Advance Notice of Proposed Rulemaking soliciting public comment on the possibility of setting a more stringent fine particle secondary standard to protect visibility. Air Programs; Review of the National Secondary Ambient Air Quality Standards for Particulate Matter, 52 Fed. Reg. 24,670, 24,670 (1987) (proposed July 1, 1987).

112. Regional Haze Regulations, 62 Fed. Reg. 41,138 (1997) (to be codified at 40 C.F.R. pt. 51).

113. National Ambient Air Quality Standards for Particulate Matter, 62 Fed. Reg. 38,652, 38,679 (1997) (to be codified at 40 C.F.R. pt. 50).

114. See *supra* notes 43-44 and accompanying text.

115. The EPA has also issued a rule that would allow federally-recognized Indian Tribes to implement visibility protection programs in the same manner as states. See Indian Tribes: Air Quality Planning and Management, 59 Fed. Reg. 43,956, 43,966, 43,980 (1994) (proposed Aug. 25, 1994); 63 Fed. Reg. 7254 (1998) (final rule).

There are several key features of the proposed state plan requirements under the EPA's regional haze proposal. The EPA proposed to require all states to implement regional haze plans,¹¹⁶ not only the thirty-six states containing class I areas. This is because every state either has a class I area or is projected to contribute to regional visibility impairment in a class I area.¹¹⁷

A central aspect of the proposed rule is a proposed visibility protection target for class I areas nationwide.¹¹⁸ The proposed target establishes a measure of visibility improvement and preservation, and is thereby intended to assure progress toward the national visibility goal.¹¹⁹ At the same time, the proposed target is presumptive and may be rebutted by affected states.¹²⁰ The EPA proposed to give states discretion to suggest alternative targets for class I areas based on consideration of the statutory factors for determining reasonable progress.¹²¹

The EPA also proposed to give states flexibility in designing emission control strategies for achieving the target.¹²² Further, the EPA proposed a regulatory framework that fosters integrated implementation of regional haze measures with controls for achieving the fine particle NAAQS.¹²³ The EPA also explained that states would receive credit for any visibility improvements in class I areas resulting from emission reductions to meet the fine particle NAAQS and other air pollution control programs.¹²⁴

These and other important aspects of the regional haze proposal are examined in the discussion below. While the discussion highlights certain aspects of the EPA's proposal, the reader should refer to the Federal Register notice for a complete discussion of the EPA's proposed policies in the EPA's own words.¹²⁵

116. Regional Haze Regulations, 62 Fed. Reg. at 41,144-45, 41,157 (proposed 40 C.F.R. § 51.300(b)(3) noting exceptions for Guam, Puerto Rico and the Northern Marianas Islands).

117. *Id.* at 41,144-45.

118. *Id.* at 41,144-48, 41,157.

119. *Id.* at 41,145-48.

120. *Id.* at 41,145-48.

121. *Id.* at 41,149.

122. *Id.* at 41,145-49.

123. *Id.* at 41,151.

124. *Id.* at 41,153.

125. *See generally id.* at 41,138. For an analysis of the EPA's regional haze proposal, see CONGRESSIONAL RESEARCH SERVICE REPORT FOR CONGRESS, REGIONAL HAZE: EPA'S PROPOSAL TO IMPROVE VISIBILITY IN NATIONAL PARKS AND WILDERNESS AREAS (Library of Congress 97-1010 ENR, Nov. 17, 1997) [hereinafter CRS REPORT ON EPA'S REGIONAL HAZE PROPOSAL].

A. “Reasonable Progress” Targets: Pursuing the National Visibility Protection Goal

The cornerstone of the EPA’s proposal is the establishment of a visibility target for each class I area nationwide, designed to remedy the worst visibility conditions and protect the best.¹²⁶ The EPA’s proposed target presumptively calls for states to perceptibly improve visibility conditions on the most impaired days over a ten to fifteen year period, and would at a minimum require states to prevent degradation of the least impaired days.¹²⁷ The EPA proposed to define the most and least impaired days as the average twenty percent worst and best days over the course of a year.¹²⁸ The focus on both the haziest and clearest days was designed to help ensure that emissions strategies improve and protect overall visibility conditions rather than simply shifting visibility effects from one day to another.

The EPA’s proposed dual objectives of improving existing visibility impairment and preventing further degradation were directly drawn from the national visibility goal which calls for the remedying of existing impairment and the prevention of future impairment.¹²⁹ The EPA’s approach also was guided by the recommendations of the Grand Canyon Visibility Transport Commission. For example, the Commission defined reasonable progress based on the twin aims of improving impaired days and protecting clean days.¹³⁰ The Commission’s technical assessment also bifurcated visibility conditions into the most and least impaired days, and defined them as the annual average twenty percent worst and best days.¹³¹

The EPA considered several factors in arriving at the presumed level of protection reflected in the proposed reasonable progress target.¹³² The ten- to fifteen-year planning period was derived from the statute, which expressly calls for state visibility programs to contain a long-term strategy, defined as ten to fifteen years, for making reasonable progress toward the national visibility goal.¹³³ Further, visibility trends can be

126. See generally Regional Haze Regulations, 62 Fed. Reg. at 41,145-48, 41,157.

127. The EPA proposed a one deciview improvement in the most impaired days over ten or fifteen years. A one deciview change in visibility conditions in any class I area should generally be perceptible. See *id.* at 41,148. The deciview measure is discussed in more detail below. The EPA requested public comment on whether the presumptive rate of progress should be measured over every 10 years or every 15 years. *Id.* at 41,146-47.

128. *Id.* at 41,146-47.

129. See CAA § 169A(a)(1), 42 U.S.C. § 7491(a)(1).

130. Regional Haze Regulations, 62 Fed. Reg. at 41,146.

131. *Id.*

132. See generally *id.*

133. CAA § 169A(b)(2)(B), 42 U.S.C. § 7491(b)(2)(B).

accurately discerned over a ten- to fifteen-year period, notwithstanding variations in meteorology and natural emissions of fine particles.¹³⁴ The EPA proposed a generally perceptible (one deciview) visibility improvement over the ten- to fifteen-year planning program because a core purpose of the program is to remedy existing impairment.¹³⁵ It seems eminently sensible to presume that remedial improvement be visually appreciable.¹³⁶ The second half of the national visibility goal is preventive.¹³⁷ The EPA's proposal to protect the best visibility days is consistent with this aim.¹³⁸

The EPA also built state flexibility into the proposed target. The EPA proposed to allow states to establish an alternative to the presumptive rate of visibility improvement,¹³⁹ recognizing that the air quality planning considerations associated with protecting visibility in class I areas could reasonably vary. The statute lists several factors to be considered in determining whether air quality control efforts are realizing reasonable progress toward the national visibility goal in a class I area. The factors considered include the costs of compliance.¹⁴⁰ Thus, a material difference between the regional haze proposal and the NAAQS is that under the visibility program the statute provides for costs to be considered in fashioning the overarching planning objectives.

The proposal contains a number of elements to implement the alternative reasonable progress target. The proposal provides that a state may demonstrate, based on consideration of the statutory factors, that an alternative rate of visibility improvement represents reasonable progress for a class I area. It provides for the state to consult with the appropriate federal land manager, affected states, and the EPA to seek input in developing the alternative target. Those states that contribute to visibility

134. Regional Haze Regulations, 62 Fed. Reg. at 41,146.

135. CAA § 169A(a)(1), 42 U.S.C. § 7491(a)(1) ("Congress hereby declares as a national goal...the remedying of any existing impairment of visibility. . .").

136. See Regional Haze Regulations, 62 Fed. Reg. at 41,146.

137. CAA § 169A(a)(1), 42 U.S.C. § 7491(a)(1).

138. The EPA's proposed reasonable progress target is consistent with the legislative history. The visibility provisions adopted in 1990 called for the EPA to expound on the meaning of "reasonable progress." CAA § 169B(e)(1), 42 U.S.C. § 7492(e)(1). The sponsor of the 1990 additions, explained that "[a]t a minimum, progress and improvement must require that visibility be perceptibly improved compared to periods of impairment, and that it not be degraded or impaired during conditions that historically contribute to relatively unimpaired visibility." See 136 CONG. REC. S2878 (daily ed. Mar. 21, 1990) (statement of Sen. Adams).

139. Regional Haze Regulations, 62 Fed. Reg. at 41,146, 41,154, 41,159 (proposed 40 C.F.R. § 51.306(d)(5)).

140. The relevant statutory factors in determining reasonable progress are "the costs of compliance, the time necessary for compliance, and the energy and nonair quality environmental impacts of compliance, and the remaining useful life of any existing source subject to such requirements." CAA § 169A(g)(1), 42 U.S.C. § 7491(g)(1).

impairment at a class I area in a downwind state will have air quality planning responsibilities that are affected by an alternative target. These states therefore have a stake in the level of progress reflected in an alternative target. The proposal also specifies that the alternative rate of improvement and corresponding demonstration be submitted for the EPA's review as part of the state's visibility plan. Finally, the EPA's proposes a target floor and would require that at a minimum a state's alternative target ensure maintenance of current visibility conditions.

The EPA's proposed presumptive and alternative reasonable progress targets endeavor to balance visibility protection and state flexibility. The presumptive target was designed to assure nationwide progress toward the national visibility goal. It is well-documented that the scenic vistas in the nation's most treasured national parks and wilderness areas are impaired by air pollution.¹⁴¹ The EPA's target would realize actual improvement in the most polluted days and protect the most clear visibility conditions. At the same time, the EPA proposed to give states the flexibility to show that a different target is reasonable based on costs and other relevant factors. In short, the EPA sought to balance the importance of promoting national progress in protecting visibility in these special federal lands with state flexibility and discretion.

To evaluate whether the presumptive or alternative reasonable progress targets would be achieved, the EPA proposed to measure visibility conditions based on the "deciview" metric.¹⁴² Deciview is an index for atmospheric light extinction that expresses uniform changes in haziness as a common metric across the entire range of conditions from pristine to highly impaired.¹⁴³ Generally, a one deciview change in visibility conditions is perceptible by the average person.¹⁴⁴ Zero deciview would represent pristine conditions. In the West visibility impairment on the worst days is estimated to average between 13 to 25 deciviews and in the East between 27 to 34 deciviews.¹⁴⁵ At the Grand

141. See *supra* note 106 and accompanying text.

142. Deciview levels can be calculated employing a technique known as reconstructed light extinction. Regional Haze Regulations, 62 Fed. Reg. at 41,148. Visibility conditions can be determined if the components or species of fine particles are monitored and evaluated using assumptions about their various light extinction efficiencies which account for seasonal and regional variations in relative humidity. See *generally id.* at 41,145. Deciview levels can also be determined from optical measurements of light extinction, such as nephelometers and transmissometers.

143. See *generally* Regional Haze Regulations, 62 Fed. Reg. at 41,145, 41,157.

144. See *id.* at 41,147-48.

145. See *Hearing Before the Subcommittee on Forests and Public Land Management of the Senate Comm. On Energy and Natural Resources*, 105th Cong. 6 (1997) (testimony of John S. Seitz, Director, EPA Office of Air Quality Planning and Standards); see also SISLER, *supra* note 9, at 5-4.

Canyon National Park, the concentration of fine particles on the worst days is about five micrograms per cubic meter and the concentration would need to be decreased by about one-half a microgram to produce a one deciview improvement. At Shenandoah National Park, the concentration of fine particles on the worst visibility days is approximately twenty micrograms per cubic meter and fine particles would need to be reduced by about two micrograms to achieve a one deciview improvement.¹⁴⁶

The EPA proposed to rely on visibility conditions, rather than changes in emissions, as a measure of reasonable progress.¹⁴⁷ The proposal sets forth several explanations for this choice. The fundamental objective of the program is visibility protection and the EPA's regulatory responsibility is to assure reasonable progress toward that end.¹⁴⁸ Further, since different components of fine particles have different effects on visibility conditions, relying on emissions reductions alone does not directly relate to visibility. Also, fine particle levels alone cannot predict visibility because the atmospheric processes that influence how the loadings of fine particles affect visibility vary geographically.¹⁴⁹ Thus, a planning system based on visibility allows states to account for the different effects fine particles and meteorology have on visual conditions.

The EPA's proposal also addressed baseline conditions, which must be established to assess whether a proposed or alternative target is ultimately achieved. The EPA proposed that states rely on monitoring data that is representative of current visibility conditions in class I areas to determine baseline conditions.¹⁵⁰ Since the visibility progress target to be achieved above the baseline conditions would span ten or fifteen years, the EPA also proposed that states periodically evaluate the status of their progress.¹⁵¹ This provides an opportunity for planning adjustments when states are off course. The EPA requested comment on whether the periodic planning corrections should occur every three or five years. This proposed requirement builds on the existing visibility program which currently calls for periodic review of state plans. The proposal sought

146. See Testimony of John S. Seitz, *supra* note 145, at 6. These estimates were derived by calculating the amount of reduction needed in the current mix of fine particles monitored at each location. For information on monitored mass concentrations at these locations. See SISLER, *supra* note 9, at 3-2 to 3-15.

147. See *id.*

148. See Regional Haze Regulations, 62 Fed. Reg. at 41,145.

149. See *id.* at 41,145.

150. See *id.* at 41,147.

151. See *id.* at 41,151.

public input on coordinating and streamlining the periodic plan reviews under both programs in a single planning process.¹⁵²

While the EPA proposed to establish visibility as a measure for reasonable progress, the EPA also proposed to rely on emissions tracking as a check on progress.¹⁵³ The periodic planning reviews would evaluate relatively short intervals. These short timeframes, and confounding factors such as meteorological variability, make it difficult to reliably assess changes in visibility conditions. The EPA therefore proposed to allow states to consider emissions reductions as well as estimated changes in visibility conditions in the periodic planning evaluations.¹⁵⁴

B. Regional Coordination and State Planning: The Challenge of Attacking Interstate Air Pollution Problems

As discussed earlier, regional haze is caused when emissions from many sources over a broad interstate region mix together to form a uniform, widespread haze.¹⁵⁵ Because emissions from several states may contribute to a regional haze problem in a class I area, air quality planning for regional haze presents unique challenges. For example, the states with emissions that contribute to the haze must be identified, and their relative contribution to the haze problem characterized. This process requires regional assessments of emission inventories and modeling analyses. However, the visibility program is implemented through individual state plans.¹⁵⁶ Thus, the challenge is regionally coordinating individual state planning efforts so that net result of the separate plans is adequate visibility protection of the affected class I areas. Regional organizations such as the Western Regional Air Partnership, the successor to the Grand Canyon Commission, are forums for individual states and tribes to coordinate this type of regional planning.¹⁵⁷

The EPA's regional haze proposal created incentives for states to regionally coordinate their planning activities. The EPA proposed to require states that are part of an interstate regional haze problem to design their control strategies with other affected states through regional planning processes and to clearly identify what portion of the visibility problem is being addressed by the state's plan.¹⁵⁸ Thus, in evaluating a

152. *See id.*

153. *See id.* at 41,145, 41,147.

154. *See id.* at 41,148.

155. 1993 NATIONAL ACADEMY OF SCIENCES REPORT, *supra* note 5, at 2.

156. CAA §§ 110(a)(2)(J), 169A(b)(2), 169B(e)(2), 41 U.S.C. §§ 7410(a)(2)(J), 7941(b)(2), 7492(e)(2).

157. *See discussion infra* Part II.D.2.

158. Regional Haze Regulations, 62 Fed. Reg. at 41,159.

state plan the EPA proposed to consider whether it is based on and consistent with an interstate strategy to achieve a presumptive or alternative target for a class I area, whichever applies in the circumstances. The EPA's proposal also recognized that each state is ultimately responsible for its own plan.¹⁵⁹ Thus, the EPA's proposal clearly provides that it will consider any analysis the state produces about its contribution to regional air quality problems.

The EPA's proposal contains little discussion of the federal role in reviewing state visibility plans. Under the CAA's SIP system, the EPA reviews state plans through a public rulemaking process.¹⁶⁰ This federal review is intended to promote accountability in the state planning process, and is especially important where interstate air pollution effects are being addressed. In this context, a state's failure to submit an adequate plan has transboundary consequences. For example, an inadequate plan may adversely affect the visual air quality in a national park located elsewhere. Additionally, it creates economic inequity for the sources in the other contributing states that abate their contribution to regional impairment and bear their fair share of control costs. In short, federal review is important to address the unfairness that may result in interstate pollution situations where some states do their part to protect the scenic vistas in national parks and wilderness areas and others do not.

C. *Framework for Air Quality Planning*

The EPA's proposal would establish the framework for state planning activities. It would provide for states to submit plans within one year of the final rule that contain specific elements and that establish a blueprint for future air quality management activities. The specific SIP elements that would be due within one year of the final rule include a regional haze monitoring plan, revisions necessary to address the general planning requirements under Section 110(a)(2) of the CAA for purposes of regional haze, procedures for state coordination with the federal land managers in developing and implementing regional haze plans, and identification of the existing major stationary sources in the state potentially contributing to regional haze and meeting the age, type, and size criteria provided in the statute for BART review.¹⁶¹

159. *Id.* at 41,153.

160. See CAA § 110(k)(2), 42 U.S.C. § 7410(k)(2); see also *Buckeye Power Co. v. EPA*, 481 F.2d 162, 170-71 (6th Cir. 1973) (holding that the EPA's action approving or disapproving a SIP is subject to the informal notice-and-comment rulemaking procedures under the Administrative Procedure Act).

161. See *Regional Haze Regulations*, 62 Fed. Reg. at 41,144 (see table of planning activities), 41,148-49 (citing CAA § 110(a)(2), 42 U.S.C. § 7410(a)(2)). The proposal would

Additionally, there are a number of air quality planning activities that would be carried out in the years after the rule is finalized.¹⁶² The proposal provides that the plan submitted within a year of the final rule will include provisions for these future planning activities.¹⁶³ For example, the one-year plan submittal would provide for an evaluation of BART sources within three years of the final rule and would provide for the long-term strategy.¹⁶⁴ The long-term strategy submittal in turn would include procedures to characterize baseline conditions for the most and least impaired days within five years of the final rule, provisions for submittal of an initial emissions control strategy within five years of the final rule (or later for states developing plans for areas that do not meet the fine particle NAAQS) to achieve either the presumptive or alternative target, whichever applies, and provisions for periodic planning revisions every three (or five) years thereafter to assure continued progress toward the target.¹⁶⁵

The proposal sets out the broad contours of state planning activities. States, the EPA, and federal land managers will fill in these outlines as specific issues and challenges are encountered during the implementation process. As needed, the EPA will issue supplemental policy to guide states over implementation obstacles. States will make key implementation decisions and will seek appropriate input from the federal land managers in charting an implementation course. In essence, much like the process under other SIP programs, the EPA's proposed rules are not intended to answer all of the implementation questions but to provide an adequate outline for state action while giving states flexibility in confronting unforeseeable and uniquely local implementation challenges.

D. *Building a Technical Foundation*

Under the EPA's proposed rules, states would need to undertake several critical tasks to establish a technical foundation for regional haze planning. Those states that currently have approved visibility plans can

establish a one-year deadline for submittal of regional haze planning requirements, monitoring requirements, requirement for submittal of Section 110(a)(2) plan elements, state and federal land manager coordination requirements, and requirement for submitting list of existing stationary facilities that may contribute to regional haze visibility impairment in a class I area. *Id.* at 41,157-58.

162. *See id.* at 41,150.

163. *See id.*

164. *See id.* at 41,144 (table of planning activities), 41,148-49.

165. *See id.* at 41,152-54, 41,158-59 (proposed 40 C.F.R. § 51.306(d)(2), requirements for establishing baseline visibility conditions), (proposed 40 C.F.R. § 51.306(a)(2)(ii) control strategy requirements), (proposed 40 C.F.R. § 51.306(d)(6) deadline extension for states preparing plans for fine particle nonattainment areas, and requirements for periodic plan revisions).

build from their existing programs. Other states will have to work from more fundamental building blocks. In either case, a sound technical foundation is imperative and especially so for a program aimed at regional air quality effects from a variety of emissions sources.

The EPA proposes for states to construct a technical foundation for regional haze control by enhancing emission inventories, establishing emissions tracking systems, shoring up visibility monitoring, and improving regional modeling capabilities.¹⁶⁶ States need sufficient data and analytical tools to characterize and predict the visibility effects from fine particles. This involves the technical challenge not only of characterizing the impact of primary particles that are directly emitted into the atmosphere, but of secondary particles that are originally emitted as gases and subsequently undergo atmospheric transformation to light-scattering fine particles.¹⁶⁷

The EPA's proposed monitoring requirements illustrate the unique technical and policy challenges associated with remedying an interstate air pollution problem through individual state plans.¹⁶⁸ The EPA delineated monitoring responsibilities according to those states that contain class I areas and those that do not but nevertheless contribute to regional haze in a class I area elsewhere. States containing class I areas would be required to submit a monitoring strategy, including establishing any necessary new monitoring sites, to characterize the baseline best and worst visibility conditions and to assess whether progress is made in protecting and improving those conditions.¹⁶⁹ The proposal also calls for interstate coordination in the design of the monitoring strategy because the other states that contribute to transboundary regional haze conditions have an obvious stake in the representativeness of downwind monitoring sites. In contrast, those states that contribute to interstate regional haze conditions are not responsible for determining whether additional monitoring sites are needed but must establish procedures for using monitoring data to determine their transborder contribution to regional haze in a class I area elsewhere.¹⁷⁰

The EPA's proposal examines opportunities to efficiently implement the monitoring requirements and reduce any resource burdens. Since 1986, visibility monitoring under the existing program has been

166. *Id.* at 41,150, 41,158. The EPA proposes that these programmatic enhancements be made as part of the state's update to its general planning requirements under Section 110. *See id.* (citing CAA § 110, 42 U.S.C. § 7410 (1994)).

167. *Id.* at 41,150.

168. *Id.* at 41,151-52, 41,158.

169. *See id.* at 41,158 (proposed 40 C.F.R. § 51.305(b)(1)).

170. *See id.* at 41,158 (proposed 40 C.F.R. § 51.305(b)(3)).

administered by a cooperative, multi-agency venture involving the EPA, FLMs, and states.¹⁷¹ Under this program, 58 visibility monitoring sites are currently in place nationwide.¹⁷² The EPA encourages states to build upon this core monitoring network, and recommends that states confer with the EPA and federal land managers about the need for any adjustments to the existing monitoring sites.¹⁷³ The EPA also promotes coordination in the design of the monitoring networks for the fine particle NAAQS program and visibility to look for co-programmatic benefits.¹⁷⁴

E. Achieving the "Reasonable Progress" Target: Emissions Control Strategies and Coordination with the New Fine Particle Air Quality Standards

Regional haze is caused by a multitude of sources over a large area.¹⁷⁵ To make reasonable progress in addressing regional haze, states will need to consider emissions from a variety of sources such as power plants, industrial sources, motor vehicles, and area sources. Further, as discussed in Part III.B, designing effective regional haze measures entails the unique challenges associated with coordinating state and regional controls.¹⁷⁶

The EPA's proposal contains a number of provisions designed to give states flexibility in developing control strategies to achieve the proposed reasonable progress target. The EPA proposes that states examine any measures necessary to achieve the reasonable progress target.¹⁷⁷ Further, the EPA makes clear that, consistent with the existing visibility program, states may continue to take credit for visibility benefits under other air quality management programs.¹⁷⁸ The EPA notes, for example, the possibility that some areas of the East may be able to meet initial reasonable progress targets due to the emission reductions realized under the CAA acid deposition control program.¹⁷⁹ State air quality planning to achieve the fine particle NAAQS is another program likely to produce collateral visibility benefits.

The EPA's proposal contains several elements to facilitate implementation with the fine particle NAAQS. In addition to allowing

171. *See id.* at 41,151.

172. *See* SISLER, *supra* note 9, at 5-1.

173. Regional Haze Regulations, 62 Fed. Reg. at 41,152.

174. *See id.*

175. *See* Visibility Protection for Federal Class I Areas, 45 Fed. Reg. 80,084, 80,085 (1980) (codified at 40 C.F.R. §§ 51.300-307).

176. *See* Regional Haze Regulations, 62 Fed. Reg. at 41,153.

177. *Id.* at 41,159.

178. *Id.* at 41,153.

179. *Id.*

credit for emissions reductions that benefit visibility, the EPA proposed to gear the timing of the proposed emissions control strategy requirements to smooth integration of the two programs. Indeed, the EPA has had a special initiative in place for some time to identify opportunities for efficiencies and co-benefits in administration of the NAAQS and regional haze programs.¹⁸⁰

The EPA's proposal examines a variety of options for meeting the BART requirement, which is described in Part II.A above.¹⁸¹ The EPA also proposes several preliminary steps for assessing BART. The EPA would require the SIP due within one year of the final rule to contain a list of existing stationary facilities and a plan for subsequently evaluating potential emission reductions from sources that may contribute to regional haze and meet the BART source type, size, and age criteria.¹⁸² These procedures would not involve a binding BART determination but would be a planning tool. The preliminary information would be produced relatively early in the planning process to help inform regional strategy design and to identify opportunities for collateral benefits and integration with NAAQS planning.¹⁸³

The flexibility reflected in the EPA's proposed control strategy requirements in conjunction with the EPA's proposed alternative reasonable progress target would give states considerable flexibility in both shaping the overarching level of visibility protection and designing measures to achieve that end.¹⁸⁴ The EPA's proposed planning framework would give states and corresponding regional planning organizations, faced with the unique challenge of abating regional haze, significant flexibility in tailoring programs to protect the scenic vistas in national parks and wilderness areas.

F. *The Existing Visibility Protection Program*

The EPA's regional haze proposal builds on, without upsetting, the long-standing existing visibility program.¹⁸⁵ Thus, the federal regulatory requirements for reviewing the visibility impacts of new and modified stationary sources, and redressing visibility impacts relatable to one or a few existing sources will continue in force. Affected states in turn will

180. *Id.* at 41,140-41.

181. *Id.* at 41,149-50, 51,159 (proposed 40 C.F.R. § 51.306(d)(3)(iii)(A)).

182. *Id.* at 41,158 (proposed 40 C.F.R. § 51.302(c)(5)).

183. *Id.* at 41,149.

184. Indeed, the Congressional Research Service found that the EPA's Regional Haze Proposal reflected an unusual degree of flexibility. See CRS REPORT ON EPA'S REGIONAL HAZE PROPOSAL, *supra* note 125, at 22.

185. *Id.* at 41,152.

continue to be responsible for administering the existing program. The existing program together with a regional haze program will form a complementary, comprehensive strategy for protecting the threatened vistas in the nation's premier natural areas.

IV. NEXT STEPS

The EPA's proposed regional haze rule is just that—a proposal. During a four-month public comment period, the EPA received feedback on its proposal from over 1,000 commenters representing a variety of different viewpoints. The EPA will review all of the public comments in determining the contents of the final rule.