

program, States can take credit for improvements in air quality achieved as a result of other Clean Air Act programs, including national mobile source programs.<sup>85</sup>

In the PM air quality modeling described above, we also modeled visibility conditions in the mandatory Federal Class I areas, and we summarize the results by region in Table I.C-2. The

information shows that these areas also are predicted to have high annual average deciview levels in the future. Emissions from nonroad land-based diesel engines and locomotive and marine engines contributed significantly to these levels, because these diesel engines represent a sizeable portion of the total inventory of anthropogenic emissions related to PM<sub>2.5</sub> (as shown in

the tables above.). Furthermore, numerous types of nonroad engines may operate in or near mandatory Federal Class I areas (e.g., mining, construction, and agricultural equipment). As summarized in the table, we expect visibility improvements in mandatory Federal Class I areas from the reductions of emissions from nonroad diesel engines subject to this proposed rule.

TABLE I.C-2—SUMMARY OF MODELED 2030 VISIBILITY CONDITIONS IN MANDATORY FEDERAL CLASS I AREAS

[Annual average deciview]

Region <sup>a</sup>	Predicted 2030 visibility baseline <sup>b</sup>	Predicted 2030 visibility with rule control <sup>c</sup>	Change in annual average deciviews
Eastern:			
Southeast .....	21.62	21.38	0.24
Northeast/Midwest .....	18.56	18.32	0.24
Western:			
Southwest .....	7.03	6.82	0.21
California .....	9.56	9.26	0.3
Rocky Mountain .....	8.55	8.34	0.21
Northwest .....	12.18	11.94	0.24
National Class I Area Average .....	11.8	11.56	0.24

**Notes:**

<sup>a</sup>Regions are depicted in Figure VI-5 in the Regulatory Support Document. Background visibility conditions differ by region: Eastern natural background is 9.5 deciviews (or visual range of 150 kilometers) and in the West natural background is 5.3 deciviews (or visual range of 230 kilometers).

<sup>b</sup>The results average visibility conditions for mandatory Federal Class I areas in the regions.

<sup>c</sup>The results illustrate the type of visibility improvements for the preliminary control option, as discussed in the draft RIA. The proposal differs based on updated information; however, we believe that the net results would approximate future PM emissions, although we anticipate the improvements would be slightly smaller.

## 2. Acid Deposition

Acid deposition, or acid rain as it is commonly known, occurs when SO<sub>2</sub> and NO<sub>x</sub> react in the atmosphere with water, oxygen, and oxidants to form various acidic compounds that later fall to earth in the form of precipitation or dry deposition of acidic particles.<sup>86</sup> It contributes to damage of trees at high elevations and in extreme cases may cause lakes and streams to become so acidic that they cannot support aquatic life. In addition, acid deposition accelerates the decay of building materials and paints, including irreplaceable buildings, statues, and sculptures that are part of our nation's cultural heritage. To reduce damage to automotive paint caused by acid rain and acidic dry deposition, some manufacturers use acid-resistant paints, at an average cost of \$5 per vehicle—a total of \$80–85 million per year when

applied to all new cars and trucks sold in the U.S.

Acid deposition primarily affects bodies of water that rest atop soil with a limited ability to neutralize acidic compounds. The National Surface Water Survey (NSWS) investigated the effects of acidic deposition in over 1,000 lakes larger than 10 acres and in thousands of miles of streams. It found that acid deposition was the primary cause of acidity in 75 percent of the acidic lakes and about 50 percent of the acidic streams, and that the areas most sensitive to acid rain were the Adirondacks, the mid-Appalachian highlands, the upper Midwest and the high elevation West. The NSWS found that approximately 580 streams in the Mid-Atlantic Coastal Plain are acidic primarily due to acidic deposition. Hundreds of the lakes in the Adirondacks surveyed in the NSWS have acidity levels incompatible with the survival of sensitive fish species.

Many of the over 1,350 acidic streams in the Mid-Atlantic Highlands (mid-Appalachia) region have already experienced trout losses due to increased stream acidity. Emissions from U.S. sources contribute to acidic deposition in eastern Canada, where the Canadian government has estimated that 14,000 lakes are acidic. Acid deposition also has been implicated in contributing to degradation of high-elevation spruce forests that populate the ridges of the Appalachian Mountains from Maine to Georgia. This area includes national parks such as the Shenandoah and Great Smoky Mountain National Parks.

A study of emissions trends and acidity of water bodies in the Eastern U.S. by the General Accounting Office (GAO) found that from 1992 to 1999 sulfates declined in 92 percent of a representative sample of lakes, and nitrate levels increased in 48 percent of the lakes sampled.<sup>87</sup> The decrease in sulfates is consistent with emissions

<sup>85</sup> In a recent case, *American Corn Growers Association v. EPA*, 291 F. 3d 1 (D.C. Cir 2002), the court vacated the Best Available Retrofit Technology (BART) provisions of the Regional Haze rule, but the court denied industry's challenge to EPA's requirement that states' SIPs provide for reasonable progress towards achieving natural visibility conditions in national parks and wilderness areas and the "no degradation"

requirement. Industry did not challenge requirements to improve visibility on the haziest 20 percent of days. A copy of this decision can be found in Docket A-2000-01, Document IV-A-113.

<sup>86</sup> Much of the information in this subsection was excerpted from the EPA document, *Human Health Benefits from Sulfate Reduction*, written under title IV of the 1990 Clean Air Act Amendments, U.S.

EPA, Office of Air and Radiation, Acid Rain Division, Washington, DC 20460, November 1995. Available in Docket A-2000-01, Document No. II-A-32.

<sup>87</sup> Acid Rain: Emissions Trends and Effects in the Eastern United States, U.S. General Accounting Office, March, 2000 (GOA/RCED-00-47). Available in Docket A-99-06, Document No. IV-G-159.