



REGIONAL RESOURCE

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Southern States' Clean Air Act Compliance: Ozone and Particulate Matter Standards in Transition

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Introduction

The federal Clean Air Act of 1990 – the 1990 amendments to the Clean Air Act of 1970 – sets limits on the amount of air pollution allowed across the nation so that all Americans can enjoy the same clean air standards. While states have made tremendous strides in meeting the Act's requirements, compliance with certain standards has proven to be considerably challenging to particular states and areas with higher concentrations of certain pollutants. These pollutants may be created from within an area's borders or sometimes in other regions, transported from hundreds of miles away. As the federal government moves to newer, more stringent standards, more states have fallen out of compliance, making the task of clean air attainment even more daunting.

This Southern Legislative Conference *Regional Resource* examines several key components of the Clean Air Act in relation to the National Ambient Air Quality Standards. In particular, it focuses on state control strategies and compliance in the areas of ozone and particulate matter, as these have had the greatest impact on states' ability to meet clean air requirements. Additional focus is on the transition between the 1-hour and 8-hour ozone and particulate matter standards. Recent federal actions significantly affecting ozone and particulate matter emissions also are highlighted.

The Clean Air Act: Criteria Pollutants and Sources

The 1990 Clean Air Act (CAA) sets air quality standards for six outdoor airborne pollutants – carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), respirable particulate matter (PM), lead (Pb), and ozone (O₃) – as well as for some other hazardous pollutants known as air toxics. The Environmental Protection Agency (EPA), created under the 1970 CAA to enforce the Act, has set an allowable limit for each of the pollutants, known as the National Ambient Air Quality Standard (NAAQS), with standards applying to the concentration of a pollutant in outdoor air in a given area over certain time periods. States may require stronger pollution controls but cannot set lower standards than those required by the CAA. Areas meeting the primary standard are said to be in "attainment." Any area/city that exceeds the standard for a number of specified times will cause the entire metropolitan area to be in violation, or "nonattainment." An estimated 159 million people live in nonattainment areas today.

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Southern Legislative Conference

Alabama ■ Arkansas ■ Florida ■ Georgia ■ Kentucky ■ Louisiana ■ Maryland ■ Mississippi ■ Missouri
North Carolina ■ Oklahoma ■ South Carolina ■ Tennessee ■ Texas ■ Virginia ■ West Virginia

By way of background on each of the listed criteria contaminants:

- ▶ Carbon monoxide (CO) is an odorless, colorless gas produced by the incomplete combustion of carbon-based fuels and many natural and synthetic products. Seventy-seven percent of the nation's CO emissions come from transportation sources, with the largest contributor being automobile exhaust. Currently, an area meets the CO air quality standard if its 1-hour average does not exceed 33 parts per million (ppm) more than once per year. Soon, areas will be required to meet an 8-hour average not to exceed 9.5 ppm. In most areas of the country, CO levels fell well below the NAAQS due to improvements in motor vehicle emissions in the past three decades;
- ▶ Nitrogen dioxide (NO₂) is a precursor to both ozone and acid rain. While nitrogen oxides (NO_x) are a generic term for a group of highly reactive gasses, NO₂ is its common pollutant. NO_x forms when fuel is burned at high temperatures, and its two major contributors in the United States are motor vehicles (49 percent) and utilities (27 percent);
- ▶ Sulfur dioxide (SO₂) is a primary contributor to acid rain, which causes acidification of lakes and streams, damages trees and buildings and contributes to visibility impairment. The gas is emitted primarily from stationary sources such as coal-fired power plants, steel mills, refineries, and pulp and paper mills. While electric utilities produce about 70 percent of all SO₂ emissions nationwide, levels in most areas of the country have fallen well below the NAAQS in recent years due, in large part, to the success of the federal Acid Rain Program and the subsequent curbing of power plant pollutants;
- ▶ Particulate matter (PM) includes dust, dirt, soot, and emissions from all types of combustion, including motor vehicles, power plants, agricultural burning and some industrial processes. Under the current NAAQS, the EPA regulates only particulate matter with a diameter of 10 microns (one-millionth of a meter) or less, known as PM₁₀. Particulate matter comes from a wide variety of stationary, mobile, and natural sources such as electric utility

plants, cement manufacturing, combustion sources, fireplaces, diesel trucks, and forest fires. Unlike ozone, which occurs in the warmer months, high levels of particulate matter can occur throughout the year;

- ▶ Atmospheric lead (Pb) emissions primarily come from lead gasoline additives, non-ferrous smelters and battery plants. While transportation sources contributed 81 percent of annual Pb emissions in 1985, they contributed only 33 percent in 1993, with reductions occurring due to requirements that automobiles have catalytic converters and fuel injection, the phase-out of leaded gasoline, and better control of lead emissions from stationary point sources; and
- ▶ Ozone (O₃), commonly known as smog, is a colorless gas which is not emitted directly into the air. While ozone is made up of thousands of components, it is primarily formed through a series of chemical reactions between nitrogen oxides and volatile organic compounds (VOC) in the presence of heat and sunlight during summer months. As discussed, nitrogen oxides are produced by combustion from such sources as cars, boilers, incinerators and power plants. Among primary VOC contributors are automobile exhaust, dry cleaning, paint solvents and the evaporation of gas from refineries. Other VOC sources include natural (biogenic) sources like pine trees. With appropriate wind, ozone is dissipated, but on still days the ozone can build up to levels exceeding clean air limits.

While most of the country now is in attainment of CO, NO₂, SO₂ and Pb standards, meeting the ozone standard (through curbing both NO_x and VOC emissions) and particulate matter standard continues to pose considerable challenges to many areas, with attainment becoming even more difficult as these standards are becoming more stringent. As of April 15, 2004, there were only 10 carbon monoxide, 22 sulfur dioxide, three lead and no nitrogen dioxide nonattainment areas in the United States. On the other hand, there were 59 PM₁₀ and 51 1-hour ozone nonattainment areas nationwide. As the nation switches from the 1-hour to 8-hour ozone standard, the number of nonattainment areas will more than

double. Ozone's adverse health effects include eye and respiratory system irritation, reduced lung function, aggravated asthma, inflamed and damaged cells in the lung linings, and aggravated chronic lung diseases. Particularly at risk are people with heart or lung disease, the elderly and children. Areas experiencing ozone problems are mostly those with dense population and high traffic congestion.

Mobile Sources

Mobile air pollution sources are separated into two major categories: on-road and nonroad sources. On-road sources include cars, trucks and motorcycles that are operated on streets and highways and are further categorized as either gasoline- or diesel-powered vehicles. Nonroad mobile sources include aircraft, trains, ships, barges, and lawn and garden equipment. Motor vehicles release more than 50 percent of hazardous air pollutants and up to 90 percent of CO in urban areas. According to the American Lung Association, in 1996, transportation sources were responsible for 79 percent of carbon monoxide emissions, 3 percent of particulate matter (less than 10 microns) and 15 percent of lead emitted into the air.¹

According to the EPA's National Emissions Trends database, in 1999 (the last year for which data was available) mobile sources accounted for 54 percent of NO_x emissions nationally, and 50 percent of NO_x emissions in the South. Among Southern states, the proportion of mobile source emissions as a part of NO_x emissions was highest in Virginia, 60 percent; followed by Georgia, 59 percent; Maryland, 57 percent; and Florida and Missouri, both at 56 percent. Of mobile sources, nonroad engines represent more than 22 percent of the total NO_x emissions nationwide – more than from all passenger cars and trucks combined. In 1999, mobile sources were responsible for 44 percent of VOC emissions nationally and 43 percent of VOC emissions in Southern states. Region wide, motor vehicles were responsible for about 90 percent of the carbon monoxide found in metropolitan areas.²

Stationary Sources

Point sources of air pollution are those that stay in one place, such as power plants, oil refineries, chemical plants, cement factories and other industries that are considered significant sources of emissions, emitting about one ton or more in a calendar year. Pollutants are emitted through fossil fuel combustion and

other chemical and industrial processes, largely contributing to SO₂, NO_x, CO₂ and particulate matter emissions, among others. Areas in noncompliance with clean air standards must regulate these sources to ensure they enact reasonably achievable control technology to limit harmful emissions. States achieve this through their air pollution permitting process. Among regulations in this area is a process known as New Source Review, which is covered below in detail.

Area sources are smaller stationary sources, such as dry cleaners and gas stations, that are too numerous to be regulated by individual emissions inventories. Rather, area source inventories generally report emissions by categories. Emissions are calculated by various methods and depend on the type of data available for each category, with calculations generally reported on a county-wide basis.

According to the EPA's National Emissions Trends Database, point sources were responsible for 37 percent of NO_x emissions nationally and for 43 percent of NO_x emissions in Southern states. Power plants are the major NO_x point source contributors, responsible for 24 percent of NO_x emissions overall throughout the country and 27 percent of total NO_x emissions in Southern states. In the South, West Virginia's electric generating plants, as a proportion of point source NO_x contributors, made up most of the state's NO_x emissions, 61 percent; followed by Kentucky, 45 percent; Florida, 33 percent; and Missouri, 32 percent. While point sources contribute to VOC emissions, their contribution is much less than that of mobile sources. Overall, point sources are responsible for 10 percent of the nation's, and 13 percent of the South's, VOC emissions. Among point sources, power plants play an even less significant role in emitting VOCs, representing only 0.3 percent of overall VOC emissions both nationally and in the South. Tables 1 and 2 provide an overview of Southern state NO_x and VOC emissions for 1999.

Southern States' NO_x Emissions by Source 1999

| State | Mobile | | Total Area | | Electric Utility | | Total Point | | Total NO _x |
|----------------|---------------|-----|---------------|-----|------------------|-----|---------------|-----|-----------------------|
| | Tons per year | % | Tons per year | % | Tons per year | % | Tons per year | % | Tons per year |
| Alabama | 344,179 | 50% | 394,869 | 58% | 186,387 | 27% | 288,833 | 42% | 683,702 |
| Arkansas | 166,123 | 54% | 203,616 | 66% | 51,915 | 17% | 105,696 | 34% | 309,312 |
| Florida | 567,565 | 56% | 623,448 | 61% | 336,362 | 33% | 391,589 | 39% | 1,015,037 |
| Georgia | 404,167 | 59% | 445,671 | 65% | 175,996 | 25% | 244,630 | 35% | 690,301 |
| Kentucky | 253,389 | 37% | 327,991 | 48% | 307,077 | 45% | 359,894 | 52% | 687,885 |
| Louisiana | 375,654 | 46% | 470,344 | 57% | 120,914 | 15% | 347,838 | 43% | 818,182 |
| Maryland | 194,821 | 57% | 211,667 | 61% | 108,286 | 31% | 133,044 | 39% | 344,711 |
| Mississippi | 199,088 | 51% | 207,123 | 53% | 81,395 | 21% | 184,415 | 47% | 391,538 |
| Missouri | 337,014 | 56% | 376,011 | 63% | 189,313 | 32% | 221,611 | 37% | 597,622 |
| North Carolina | 361,880 | 55% | 395,324 | 60% | 139,162 | 21% | 267,692 | 40% | 663,016 |
| Oklahoma | 193,134 | 46% | 224,416 | 53% | 82,235 | 19% | 197,681 | 47% | 422,097 |
| South Carolina | 197,630 | 55% | 220,165 | 61% | 93,227 | 26% | 138,235 | 39% | 358,400 |
| Tennessee | 302,014 | 48% | 348,857 | 55% | 189,137 | 30% | 286,102 | 45% | 634,959 |
| Texas | 951,487 | 51% | 995,054 | 53% | 429,828 | 23% | 866,016 | 47% | 1,861,070 |
| Virginia | 331,122 | 60% | 375,901 | 68% | 103,784 | 19% | 174,566 | 32% | 550,467 |
| West Virginia | 109,154 | 23% | 131,877 | 28% | 287,444 | 61% | 339,373 | 72% | 471,250 |
| SLC Total | 5,288,421 | 50% | 5,952,334 | 57% | 2,882,462 | 27% | 4,547,216 | 43% | 10,499,550 |
| National Total | 12,768,606 | 54% | 14,912,014 | 63% | 5,664,758 | 24% | 8,731,571 | 37% | 23,643,585 |

Source: U.S. Environmental Protection Agency, 1999 National Emissions Trends Database

Southern States' VOC Emissions by Source 1999

| State | Mobile | | Total Area | | Electric Utility | | Total Point | | Total VOC |
|----------------|---------------|-----|---------------|-----|------------------|------|---------------|-----|---------------|
| | Tons per year | % | Tons per year | % | Tons per year | % | Tons per year | % | Tons per year |
| Alabama | 172,348 | 30% | 499,748 | 88% | 2,235 | 0.4% | 70,361 | 12% | 570,109 |
| Arkansas | 94,411 | 40% | 202,774 | 87% | 641 | 0.3% | 31,336 | 13% | 234,110 |
| Florida | 524,884 | 55% | 901,056 | 95% | 2,520 | 0.3% | 49,003 | 5% | 950,059 |
| Georgia | 274,416 | 52% | 487,621 | 93% | 1,009 | 0.2% | 36,069 | 7% | 523,690 |
| Kentucky | 131,718 | 38% | 276,481 | 81% | 1,401 | 0.4% | 66,893 | 19% | 343,374 |
| Louisiana | 148,581 | 41% | 274,800 | 75% | 3,653 | 1.0% | 91,678 | 25% | 366,478 |
| Maryland | 137,875 | 49% | 274,392 | 97% | 572 | 0.2% | 7,614 | 3% | 282,006 |
| Mississippi | 105,446 | 36% | 234,140 | 79% | 2,134 | 0.7% | 60,733 | 21% | 294,873 |
| Missouri | 194,172 | 40% | 449,063 | 93% | 1,459 | 0.3% | 33,491 | 7% | 482,554 |
| North Carolina | 259,222 | 39% | 570,937 | 87% | 808 | 0.1% | 87,675 | 13% | 658,612 |
| Oklahoma | 126,863 | 48% | 227,867 | 86% | 1,020 | 0.4% | 38,298 | 14% | 266,165 |
| South Carolina | 140,407 | 38% | 334,359 | 90% | 418 | 0.1% | 35,385 | 10% | 369,744 |
| Tennessee | 188,557 | 36% | 404,230 | 77% | 1,068 | 0.2% | 120,993 | 23% | 525,223 |
| Texas | 622,607 | 45% | 1,199,307 | 86% | 6,155 | 0.4% | 187,983 | 14% | 1,387,290 |
| Virginia | 209,365 | 45% | 413,610 | 89% | 736 | 0.2% | 49,724 | 11% | 463,334 |
| West Virginia | 54,742 | 32% | 148,387 | 87% | 1,163 | 0.7% | 22,440 | 13% | 170,827 |
| SLC Total | 3,385,614 | 43% | 6,898,772 | 87% | 26,992 | 0.3% | 989,676 | 13% | 7,888,448 |
| National Total | 8,441,885 | 44% | 17,505,500 | 90% | 55,435 | 0.3% | 1,857,699 | 10% | 19,363,199 |

Source: U.S. Environmental Protection Agency, 1999 National Emissions Trends Database

The 1-hour Ozone Standard and Designations

The Clean Air Act defines a nonattainment area as any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the primary or secondary NAAQS for one or more of the six criteria pollutants. The EPA classifies nonattainment areas according to the amount of pollution present and how difficult attainment efforts will be. Nonattainment areas violating ozone, carbon monoxide and particulate matter standards are classified according to the severity of those pollutants. There are five main classes of nonattainment areas for ozone, based on the area's air emissions: marginal, moderate, serious, severe and extreme.

Air Quality Monitoring and State Implementation Plans

Though the Clean Air Act is federal law, states carry out most of the air monitoring (the measuring of air pollution) and are given leeway in setting their own goals, and carrying those goals out, in meeting federal requirements. The 1-hour ozone standard limits ozone concentrations in any 1-hour period to 0.12 parts per million (ppm), or 125 parts per billion. An ozone nonattainment area is one in which a monitoring station reports emissions exceeding NAAQS standards at least once per year or as much as four times over a three-year period. Exceedances at multiple monitoring sites in the same area are not averaged together.

Once a nonattainment designation occurs, states are required to develop a state implementation plan (SIP): an analysis of their air quality and a detailed listing of proposed state control strategies for reducing harmful air emissions in nonattainment areas. Nonattainment areas' controls are influenced by the mix of sources within that community, with different areas affected by differing emission sources. For example, in 1996, the primary sources of ozone emissions in the Dallas/Fort Worth area were mobile sources, which contributed 64 percent of VOC emissions and 84 percent of NO_x emissions. On the other hand, in the same year, Houston's most significant ozone contributors were area and point sources, together accounting for 54 percent of VOC emissions and 55 percent of NO_x emissions. Due to these differing ozone contributing sources, each community required and implemented a different mix of controls to move toward compliance.

States also must recommend the boundaries of the areas that are not in compliance in their SIPs, and involve the public throughout the planning process. All SIPs must be approved by the EPA, and sanctions may be imposed if the EPA disapproves of a plan or finds that a state has failed to fully submit or implement all the plan's requirements. Automatic sanctions are applied according to a set of mandatory deadlines called the "sanctions clock." Typically, a state has up to 18 months to remedy the problem, or the sanctions apply. A

VOC and NO_x Emissions by Source: Dallas/Fort Worth and Houston/Galveston, Texas 1996

VOC Emissions, excluding biogenic sources

| | Area | Point | Total Stationary | Onroad | Nonroad | Total Mobile |
|-------------------|------|-------|------------------|--------|---------|--------------|
| Dallas/Fort Worth | 31% | 5% | 36% | 36% | 28% | 64% |
| Houston/Galveston | 25% | 29% | 54% | 25% | 21% | 46% |

NO_x Emissions

| | Area | Point | Total Stationary | Onroad | Nonroad | Total Mobile |
|-------------------|------|-------|------------------|--------|---------|--------------|
| Dallas/Fort Worth | 4% | 12% | 16% | 51% | 33% | 84% |
| Houston/Galveston | 1% | 54% | 55% | 24% | 21% | 45% |

Source: Texas Natural Resource Conservation Commission, Sources of Air Pollution, from the Internet site: <http://www.tnrcc.state.tx.us/air/aqp/pollsource.html#Point>, accessed March 12, 2004

state's deadline may be extended by the EPA, or more stringent requirements may be imposed to meet clean air standards. If a state fails to develop a proper SIP, the EPA may develop a federal implementation plan for the area and take over enforcement efforts.

When the Clean Air Act was amended in 1990, a total of 135 areas were designated nonattainment under the 1-hour ozone standard. Through vigorous state and community clean air efforts, aided by federal requirements and private initiatives, as of March 2004, there were only 51 nonattainment areas in the United States covering 221 counties. While the number of nonattainment areas had decreased by more than 60 percent, more than 110 million people lived within their boundaries. In March 2004, Southern states had 11 one-hour ozone nonattainment areas, covering

54 counties and parishes, and a population of more than 22 million. Nationwide, at that time, only one 1-hour nonattainment metropolitan area, Los Angeles, was classified as extreme. Thirteen areas are classified as severe, including five areas that are located, in whole or in part, in Southern states; nine areas are classified serious, two of which are in the South; seven nonattainment areas are classified moderate, one in the South; and 20 areas are classified marginal, with three of those being in Southern states. Table 4 lists 1-hour ozone nonattainment areas for the South.

Nonattainment areas must meet several clean air requirements, which include transportation conformity (demonstrating that regional long-range transportation plans will not negatively impact air quality – with a potential sanction of a cut in federal highway

Southern States' 1-hour Ozone NAAQS Nonattainment Areas February 2004

| State | Area | Area Population (2000) | Classification (degree of severity) | Pollutant(s) | Cities/Counties/Parishes |
|-----------|--------------------------------|------------------------|-------------------------------------|---|---|
| Alabama | Birmingham | 805,000 | Marginal | Ozone | Jefferson and Shelby counties |
| Georgia | Atlanta | 3,699,000 | Severe-15* | Ozone | Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Paulding and Rockdale counties |
| Louisiana | Baton Rouge | 636,000 | Severe-15 | Ozone | Ascension, East Baton Rouge, Iberville, Livingston and West Baton Rouge parishes |
| Maryland | Baltimore | 2,512,000 | Severe-15 | Ozone | Baltimore City; Anne Arundel, Baltimore, Carroll, Harford and Howard counties |
| Maryland | Kent and Queen Anne's counties | 60,000 | Marginal | Ozone | Kent and Queen Anne's counties |
| Maryland | Washington, D.C. | 4,545,000 | Severe-15 | Ozone | Calvert, Charles, Frederick, Montgomery and Prince George's counties |
| Texas | Beaumont/Port Arthur | 385,000 | Moderate | Ozone | Hardin, Jefferson and Orange counties |
| Texas | Dallas/Fort Worth | 4,590,000 | Serious | Ozone | Collin, Dallas, Denton and Tarrant counties |
| Texas | El Paso | 680,000 | Serious | Carbon monoxide, ozone and PM ₁₀ | El Paso County |
| Texas | Houston/Galveston/Brazoria | 4,670,000 | Severe-17** | Ozone | Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery and Waller counties |
| Virginia | Washington, D.C. | 4,545,000 | Severe-15 | Ozone | Alexandria, Fairfax, Falls Church, and Manassas cities; Arlington, Fairfax, Loudoun, Prince William and Stafford counties |
| Virginia | White Top Mountain | N/A | Marginal | Ozone | Smyth County |

Notes: *The Severe-15 classification means that an area has a design value of 0.180 ppm up to 0.190 ppm and has 15 years to reach attainment; **severe-17 areas have a design value of 0.190 ppm up to 0.280 ppm and have 17 years to reach attainment .

Source: United States Environmental Protection Agency

funds); reviewing new or modified industrial operations that are major sources of emissions (New Source Review); reducing pollution by certain percentages each year and employing stricter pollution control measures; and possibly facing cuts in federal Air Pollution Control Program grant funds. Among the steps taken, both voluntary and mandated, by areas to reach attainment have been the implementation of vehicle emission inspection and maintenance programs; lowering speed limits; switching to reformulated gasoline (adding chemicals such as ethanol and methyl tertiary-butyl ether (MTBE) to increase the gasoline's oxygen content so that it burns cleaner); making transit improvements, including rideshare programs such as van pools, increased high-occupancy vehicle lanes and bike paths; limiting vehicle idling times; increasing gas taxes to pay for clean air programs; and tightening industrial source regulations.

Nonattainment carries with it several negative quality of life and health factors. Perhaps one of the biggest drawbacks of noncompliance is the effect the designation has on an area's economic development potential. These areas possibly face challenges in attracting new businesses which tend to shy away from the stricter clean air scrutiny they would face. Commenting on Tennessee's deteriorating air quality in 2003, U.S. Senator Lamar Alexander, Chairman of the Senate Energy Committee, pointed out that "if we're in violation of federal clean air rules, it's going to be more difficult for industries to get the quality permits they need to move here. Air pollution is a real disincentive for job growth as well as a danger to our health."³

Ozone Maintenance Areas

Areas that were once determined to be in nonattainment of the 1-hour ozone standard, but have since met NAAQS standards to reach attainment, are referred to as Ozone Maintenance Areas. Once this designation occurs, an area's maintenance plan becomes part of the SIP, and areas must maintain 1-hour ozone air quality standards for at least 10 years following their attainment redesignation. Maintenance areas also must conduct attainment tracking and list contingency measures (which often require a tightening of the steps states took to attain NAAQS compliance), including mechanisms to trigger those contingencies should the areas' air quality deteriorate. As of January 2004, there were a total of 28 1-hour Ozone Maintenance Areas in

nine Southern states, incorporating 63 counties and parishes and 12 cities. Among Southern states, Kentucky covers, in whole or in part, the most maintenance areas, seven; followed by Louisiana and West Virginia, four; and North Carolina and Tennessee, each with three. Table 5 provides a list of Ozone Maintenance Areas in the region.

| 1-hour Ozone Maintenance Areas in Southern States | | | |
|--|-------------------------------------|--|-------------------------------------|
| State | Area | Cities/Counties/Parishes | Nonattainment Classification |
| Florida | Jacksonville | Duval County | Section 185-A |
| | Miami/Fort Lauderdale/W. Palm Beach | Broward, Miami-Dade and Palm Beach counties | Moderate |
| | Tampa/St. Petersburg/Clearwater | Hillsborough and Pinellas counties | Marginal |
| Kentucky | Cincinnati (OH) | Boone, Campbell and Kenton counties | Moderate |
| | Edmonson County | Edmonson County | Marginal |
| | Huntington (WV)/Ashland (KY) | Boyd and Greenup counties | Moderate |
| | Lexington/Fayette | Fayette and Scott counties | Marginal |
| | Louisville | Bullitt, Jefferson and Oldham counties | Moderate |
| | Owensboro | Daviess and Hancock counties | Marginal |
| | Paducah | Livingston and Marshall counties | Marginal |
| Louisiana | Lafayette | Lafayette Parish | Section 185-A |
| | Lake Charles | Calcasieu Parish | Marginal |
| | New Orleans | Jefferson, Orleans, St. Bernard and St. Charles parishes | Section 185-A |
| | Point Coupee Parish | Point Coupee Parish | Marginal |
| Missouri | Kansas City | Clay, Jackson and Platte counties | Other |
| | St. Louis | Franklin, Jefferson, St. Charles and St. Louis counties | Serious |
| North Carolina | Charlotte/Gastonia | Gaston and Mecklenburg counties | Moderate |
| | Greensboro/Winston-Salem/High Point | Davidson, Davie, Forsyth and Guilford counties | Moderate |
| | Raleigh/Durham | Durham, Granville and Wake counties | Moderate |
| South Carolina | Cherokee County | Cherokee County | Marginal |
| Tennessee | Knoxville | Knox County | Marginal |
| | Memphis | Shelby County | Marginal |
| | Nashville | Davidson, Rutherford, Sumner, Williamson and Wilson counties | Moderate |
| Virginia | Hampton Roads | Chesapeake, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach and Williamsburg cities; James City County | Marginal |
| | Richmond | Colonial Heights, Hopewell and Richmond Cities; Charles City, Chesterfield, Hanover and Henrico counties | Moderate |
| West Virginia | Charleston | Kanawha and Putnam counties | Moderate |
| | Greenbrier County | Greenbrier County | Marginal |
| | Huntington (WV)/Ashland (KY) | Cabell and Wayne counties | Moderate |
| | Parkersburg | Wood County | Moderate |

Source: Ozone Maintenance State/Area/County Report as of August 27, 2003, U.S. Environmental Protection Agency, from the Internet site: <http://www.epa.gov/oar/oaqps/greenbk/omcs.html>, accessed December 12/18/2003

Flexible Attainment Region

Areas that are close to violating the 1-hour ozone standard may elect to sign onto a Flexible Attainment Plan with the EPA. Under the plan, areas may avoid nonattainment classification provided they sign a memorandum of agreement describing the local emissions control measures to be voluntarily implemented and agree to prepare emission inventories and conduct air quality modeling and monitoring if necessary. In

exchange, these areas are given an amount of time to implement and test the measures, allowing them to work prior to EPA imposing nonattainment sanctions.

Tulsa, Oklahoma, was the first metropolitan area in the United States to become a Flexible Attainment Region. Though in attainment in 1991, the area experienced two instances of exceeding the ozone standard and faced being redesignated nonattainment

with one more instance during the next two ozone seasons. In addition to instituting the Ozone Alert! Program, the nation's first voluntary episodic emissions control program, municipal authorities hoped to implement a more permanent solution to their near-nonattainment emissions. The community proposed the Flexible Attainment Region that recognized the need for more certainty in planning, both for the business community and the public sector, and were greatly assisted in their clean air efforts by the mayor's office and the regional council of governments, as well as the state air quality agency. Because the Tulsa area's air quality met the ozone standard for the most part, with only occasional lapses, it was proposed that a more appropriate response to a third exceedance be a flexible one, with additional emission reductions being made from appropriate sources until the ozone standard was once again attained. Tulsa's proposal was accepted by the EPA and the area was given three years to implement additional reductions and to bring the region into attainment, which it succeeded in doing.⁴

Today, about 70 metropolitan areas nationwide are Flexible Attainment Regions. In the South, the following areas have signed letters of intent to participate in the Ozone Flex Program: Little Rock/North Little Rock, Arkansas; Shreveport/Bossier City, and New Orleans, Louisiana; Oklahoma City and Tulsa, Oklahoma; and Austin, Corpus Christi, San Antonio, and Tyler/Longview/Marshall, Texas. Importantly, in addition to allowing these areas to keep attainment status under the 1-hour ozone standard, these areas' flex plans likely will be of great aid in their efforts to meet compliance with the new 8-hour ozone standard.

The 8-hour Ozone Standard and Designations

In 1997, the EPA adopted a new, stricter NAAQS for ground-level ozone, noting that the 1-hour standard "was inadequate for protecting public health." The new standard is referred to as the 8-hour ozone standard, as it changes the averaging period of the ozone standard from one to eight hours – but lowers the amount of ozone that can be detected in an area. The 8-hour rule change was challenged by various industries and three states, with the U.S. Court of Appeals in the District of Columbia ruling in 1999 that it was unconstitutional because the EPA did not specifically define the criteria used for revising the ozone standard. That decision

was appealed to the U.S. Supreme Court which, in February 2001, upheld EPA's ability to adopt a new standard, provided the EPA revise its implementation plan. As revisions were being made to meet court requirements, EPA reinstated the 1-hour standard in July 2000. Following years of air monitoring and preparation, EPA designated 8-hour nonattainment areas in April 2004.

The 8-hour ozone standard is violated if an area's fourth highest eight-hour daily maximum average in a year, averaged over a three-year period, is 0.08 parts per million (85 parts per billion) or higher. In other words, the three-year average of the fourth highest values, or design values, must be less than 0.08 ppm. The EPA proposed rules for the 8-hour plan in the spring of 2003, and states were required to submit their recommendations on which of the following 8-hour ozone designations apply to each county within their state by July 15, 2003:

- ▶ **unclassifiable** – any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary NAAQS for the pollutant;
- ▶ **attainment** – any area that meets the primary or secondary standard; and
- ▶ **nonattainment** – any area that does not meet, or that contributes to ambient air quality in a nearby area that does not meet, the national primary or secondary standard.

It is important to note that in meeting the July 15, 2003 deadline for submitting their recommendations to the EPA, states based their 8-hour ozone nonattainment recommendations on 2000, 2001 and 2002 monitored ozone data. Monitoring data for 2003 was not yet available to them. However, because the 2003 data was available prior to EPA's final designation [April 15, 2004], the agency modified state plans accordingly. Once submitted, the EPA reviewed state recommendations and commented back to each state by December 3, 2003, informing them of any modifications the agency recommended and what areas and counties it intended to designate as nonattainment. Most often, modifications negatively affecting states involved discrepancies over nonattainment boundaries, particularly counties, or partial counties, that EPA insisted should be included in nonattainment areas. Positive modifications

usually were based on the new 2003 data indicating that previously state-recommended nonattainment areas had since come into attainment. Respective state sections cover state and EPA 8-hour ozone correspondence in detail.

Following EPA's comments and modifications, states and the EPA had a 120-day period (until February 6, 2004, for most states) during which they worked out any unresolved issues regarding nonattainment boundaries. As mentioned, the EPA allowed states to respond to the newly available [2003] air monitoring data during this time. Accordingly, following states' initial July 15 "preliminary" recommendations, states were able to revise their requests based on that data. The EPA published its final nonattainment designations April 15, 2004, classifying areas based on the severity of their ozone conditions. States also were given deadlines before which time they must come into 8-hour ozone NAAQS compliance, with deadlines ranging from 2007 to 2021, depending on the severity of an area's air pollution. Areas with the most significant ozone problems are given longer to come into attainment as they must meet additional clean air requirements. More specifically, nonattainment areas classified as "basic" are those whose 1-hour ozone design value is less than 0.121 ppm. These areas need comply only with the more general nonattainment requirements of the Clean Air Act, and their attainment deadlines range from five to 10 years after their nonattainment designation. Areas whose 1-hour design values are equal to or greater than .121 ppm are further classified as either "marginal," "moderate," "serious," "severe" or "extreme," with attainment deadlines ranging from 2007 to 2021.

On June 15, 2004, nonattainment designations officially will take effect, subjecting areas to nonattainment New Source Review requirements. Within a year of this date, areas still not in compliance also will have to begin transportation conformity analysis, which ensures that federally-funded transportation projects do not have an adverse impact on that area's air quality. States with nonattainment areas also may have to implement other control strategies to improve an area's air quality, and all must submit a revised SIP to the EPA by April 2007, outlining how nonattainment areas will meet clean air standards.

Areas in nonattainment of the 1-hour ozone standard still must maintain the former standard and also will be designated in nonattainment of the 8-hour ozone standard as well. Once an ozone nonattainment area complies with the 1-hour ozone standard, then that standard may be revoked by the EPA, and the area would be required only to meet the 8-hour standard. In any case, EPA will revoke the 1-hour standard one year after the effective date of an area's attainment or nonattainment designation under the 8-hour standard. In order to prevent "backsliding" (or the state elimination of 1-hour clean air measures due to a longer period allowed for 8-hour ozone standard compliance) the EPA requires states to include in their 8-hour SIPs specific control measures which were part of their 1-hour SIPs.

Nationwide, 31 states comprise a total of 471 localities (cities and counties) in nonattainment of the 8-hour ground-level ozone standard. This is more than double the number of localities in nonattainment of the 1-hour ozone standard, and is much higher than EPA's 2001 estimate (based on 1999-2001 air quality data from counties with monitors) of 290 counties in 34 states in 8-hour ozone nonattainment. The latter discrepancy largely is due to the fact that, in 2001, EPA preliminarily designated only the counties that violated the standard and had monitors located within them. However, the EPA has expanded nonattainment boundaries to counties that may not have monitors but are believed to significantly contribute to a nonattainment area's air quality.

In the South, a total of 13 states encompass 45 areas that have been designated in nonattainment of the 8-hour ozone standard. These nonattainment areas incorporate, in whole or in part, 171 counties and 24 cities. North Carolina touches on the most 8-hour ozone nonattainment areas in Southern states with eight areas; followed by Virginia, seven; and Tennessee and West Virginia, each covering or touching on six areas. Only the Southern states of Florida, Mississippi and Oklahoma are in total attainment (together with 16 other states nationwide), though designations may change based on future monitoring data. Table 6 provides a list of 8-hour ozone nonattainment areas in Southern states.

Southern States' 8-hour Ozone Standard Nonattainment Areas April 2004

| State | Area | Cities/Counties/Parishes | Classification | Maximum Attainment Date |
|-----------------------|--|--|-----------------------|--------------------------------|
| Alabama | Birmingham | Jefferson and Shelby counties | Basic | June 2007 |
| Arkansas | Memphis (TN) | Crittenden County | Moderate | June 2010 |
| Florida | Entire state is in attainment | | | |
| Georgia | Atlanta | Barrow, Bartow, Carroll, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Henry, Newton, Paulding, Rockdale, Spalding and Walton counties | Marginal | June 2007 |
| | Chattanooga (TN) | Catoosa County | Basic | June 2009 |
| | Macon | Bibb and Monroe (partial) counties | Basic | June 2009 |
| | Murray County | Mountain peaks within the Chattahoochee National Forest area of Murray County that have an elevation of 2,400 feet or higher and that are enclosed by closing contour lines | Basic | June 2009 |
| Kentucky | Cincinnati (OH) | Boon, Campbell and Kenton counties | Basic | June 2009 |
| | Clarkesville (TN)/Hopkinsville | Christian County | Basic | June 2009 |
| | Huntington (WV)/Ashland | Boyd County | Basic | June 2009 |
| | Louisville | Bullitt, Jefferson and Oldham counties | Basic | June 2009 |
| Louisiana | Baton Rouge | Ascension, East Baton Rouge, Iberville, Livingston and West Baton Rouge parishes | Marginal | June 2007 |
| Maryland | Baltimore | Baltimore city; Anne Arundel, Baltimore, Carroll, Harford, and Howard counties | Moderate | June 2010 |
| | Kent and Queen Anne's | Kent and Queen Anne's counties | Moderate | June 2010 |
| | Hagerstown | Washington County | Basic | December 2007 |
| | Philadelphia (PA)/Wilmington (DE)/Trenton (NJ) | Cecil County | Moderate | June 2010 |
| | Washington, D.C. | Calvert, Charles, Frederick, Montgomery and Prince George's counties | Moderate | June 2010 |
| Mississippi | Entire state is in attainment | | | |
| Missouri | St. Louis | City of St. Louis; Franklin, Jefferson, St. Charles and St. Louis counties | Moderate | June 2010 |
| North Carolina | Plott Balsam Mountains | Area above 4,000 feet in Haywood County, Swain County (partial) | Basic | June 2009 |
| | Great Smoky Mountains National Park | Park area in Haywood and Swain counties | Basic | June 2009 |
| | Charlotte/Gastonia/Rock Hill (SC) | Cabarrus, Gaston, Iredell (partial), Lincoln, Mecklenburg, Rowan and Union counties | Moderate | June 2010 |
| | Fayetteville | Cumberland County | Basic | December 2007 |
| | Greensboro/Winston-Salem/High Point | Alamance, Caswell, Davidson, Forsyth, Guilford, Davie, Randolph and Rockingham counties | Moderate | December 2007 |
| | Hickory/Morganton/Lenoir | Alexander, Burke (partial), Caldwell (partial), and Catawba counties | Basic | December 2007 |
| | Raleigh/Durham/Chapel Hill | Chatham, Durham, Franklin, Granville, Johnston, Orange, Person and Wake counties | Basic | June 2009 |
| | Rocky Mount | Edgecomb and Nash counties | Basic | June 2009 |
| Oklahoma | Entire State is in Attainment | | | |

table 6

Southern States' 8-hour Ozone Standard Nonattainment Areas April 2004

| State | Area | Cities/Counties | Classification | Maximum Attainment Date |
|-----------------------|--|---|-----------------------|--------------------------------|
| South Carolina | Charlotte (NC)/ Gastonia (NC)/ Rock Hill | York County (partial) | Moderate | June 2010 |
| | Columbia | Richland (partial) and Lexington (partial) counties | Basic | December 2007 |
| | Greenville/ Spartanburg/ Anderson | Anderson, Greenville and Spartanburg counties | Basic | December 2007 |
| Tennessee | Chattanooga | Hamilton, Marion and Meigs counties | Basic | June 2009 |
| | Clarkesville/ Hopkinsville (KY) | Montgomery County | Basic | June 2009 |
| | Johnson City/ Kingsport/Bristol | Hawkins and Sullivan counties | Basic | December 2007 |
| | Knoxville | Anderson, Blount, Cocke (partial), Knox, Loudon, Jefferson and Sevier counties | Basic | June 2009 |
| | Memphis | Shelby County | Moderate | June 2010 |
| | Nashville | Davidson, Rutherford, Sumner, Williamson and Wilson counties | Basic | December 2007 |
| Texas | Beaumont/Port Arthur | Hardin, Jefferson and Orange counties | Marginal | June 2007 |
| | Dallas/Fort Worth | Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall and Tarrant counties | Moderate | June 2010 |
| | Houston/ Galveston/Brazoria | Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery and Waller counties | Moderate | June 2010 |
| | San Antonio | Bexar, Comal and Guadalupe counties | Basic | December 2007 |
| Virginia | Frederick County | City of Winchester; Frederick County | Basic | December 2007 |
| | Norfolk/Virginia Beach/ Newport News | Cities of Chesapeake, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach and Williamsburg; James City, Gloucester, Isle of Wight and York counties | Marginal | June 2007 |
| | Richmond | Cities of Colonial Heights, Hopewell, Richmond and Petersburg; Charles City, Chesterfield, Hanover, Henrico and Prince George's counties | Moderate | June 2010 |
| | Roanoke | Cities of Roanoke and Salem; Botetourt and Roanoke counties | Basic | December 2007 |
| | Shenandoah National Park | Page County (partial) and Madison County (partial) | | |
| | Washington D.C. | Cities of Alexandria, Fairfax, Falls Church, Manassas and Manassas Park; Arlington, Fairfax, Loudoun and Prince William counties | Moderate | June 2010 |
| | Fredericksburg | City of Fredericksburg; Spotsylvania and Stafford counties | Moderate | June 2010 |
| West Virginia | Charleston | Kanawha and Putnam counties | Basic | June 2009 |
| | Huntington/ Ashland (KY)/ Ironton (OH) | Cabell and Wayne counties | Basic | June 2009 |
| | Parkersburg/ Marietta (OH) | Wood County | Basic | June 2009 |
| | Steubenville (OH)/ Weirton | Brooke and Hancock counties | Basic | June 2009 |
| | Wheeling | Marshall and Ohio counties | Basic | June 2009 |
| | Berkeley and Jefferson | Berkeley and Jefferson counties | Basic | December 2007 |

table 6 cont.

Source: United States Environmental Protection Agency 2004

Nonattainment Area Boundaries

In a March 2000 memorandum defining nonattainment areas, EPA urged states to utilize federally-recognized metropolitan area boundaries, either a metropolitan statistical area (MSA) or a consolidated metropolitan statistical area (CMSA), in designating urban nonattainment areas.⁵ It is EPA's position that any monitored violation of the 8-hour ozone standard within an MSA or CMSA should, as an initial presumption, cause the entire area to be considered for designation as nonattainment. This is referred to as a nonattainment area's "presumptive boundary." If a state recommends a nonattainment area that is larger or smaller than its presumptive boundary (that is, to list as "in attainment" counties within that boundary), then the state must justify its reasoning. The EPA allows some presumptive MSA nonattainment counties to be excluded from the nonattainment area based on 11 factors:

- ▶ emissions and air quality in adjacent areas;
- ▶ population density and degree of urbanization, including commercial development;
- ▶ monitoring data representing ozone concentrations in local and larger areas;
- ▶ location of emission sources;
- ▶ traffic and commuting patterns;
- ▶ expected growth;
- ▶ meteorology;
- ▶ geography/topography;
- ▶ jurisdictional boundaries;
- ▶ level of control of emissions sources; and
- ▶ regional emission reductions.

Of interest, rural nonattainment areas, often designated as such due to interstate transport, were urged to designate the entire county in nonattainment. At the recommendation of affected jurisdictions, the broad and expansive Washington-Baltimore metropolitan area has been divided into six separate nonattainment areas. EPA acknowledged the appropriateness of this separation due to the different pollution sources throughout the area and the difficulties in planning that would occur if such a large number of separate government entities were required to plan as one large nonattainment area. However, each area must agree to the same nonattainment classification as all other areas.

Early Action Compacts

Reacting to data indicating possible noncompliance with the forthcoming 8-hour standard, 30 states have entered into Early Action Compacts (EACs) in order to begin reducing ground level ozone prior to EPA's 2007 SIP deadline. In short, an EAC, otherwise known as a local plan, is a memorandum of agreement among the EPA, a state, and local governments in communities close to or exceeding the 8-hour standard to reach attainment by December 31, 2007, which defers the effective date of the 8-hour ozone nonattainment designation. While EAC proponents champion EAC benefits, particularly avoiding nonattainment penalties, environmental groups have not endorsed them with zeal. Among their major complaints are that compacts are short-sighted clean air strategies that lie outside of the Clean Air Act and do not have the teeth of federal law and requirements. The EAC concept was initiated in 2002 with EPA's approval of an early action protocol for parts of Texas, an agreement referred to as the Texas Protocol.⁶

In order to enter into and maintain an EAC, areas must first be in attainment of the 1-hour ozone standard; have submitted a complete compact agreement by December 31, 2002; and have achieved a program of emissions reductions/milestones over a given time period, including a demonstration that the area can attain the 8-hour standard early and maintain it. Participating areas must have completed and submitted local plans, including control measures, by March 31, 2004, for inclusion in their state's SIP. All counties that are part of an EAC area that contains a violating ozone monitor shall be included as part of one area that would be designated as nonattainment. While EPA designated these areas "nonattainment" in April 2004, so long as the above conditions are met, the effective date of nonattainment designations is deferred, as is that designation's impact. If the conditions of an EAC are not met, or an area fails to attain the 8-hour standard by December 31, 2007, nonattainment designation will become effective for the area on April 15, 2008. States must then submit a revised attainment demonstration SIP for nonattainment areas by December 31, 2008.

In the South, EACs cover 27 areas in 10 states, with a total of 117 Southern counties and three cities signing on to these agreements. Interestingly, only two states outside the South

(Colorado and New Mexico) have entered into EACs, making the compact a predominantly Southern phenomenon. South Carolina leads both nationally and in the South with EACs covering nine metropolitan areas and 45 of the state's 46 counties. This statewide EAC, while heralded by many, stirs apprehension among some groups who believe its goals are nearly impossible to obtain. According to David Farren, senior attorney with the Southern

Environmental Law Center, "South Carolina's action is certainly novel and of concern. It is an experiment and a gamble to get clean air through voluntary measures. It has been difficult enough to deal with ozone pollution through mandatory measures."⁷ North Carolina and Tennessee follow South Carolina with EACs covering four areas and 17 and 16 counties, respectively. Table 7 lists EAC areas for the South.

| Southern States' 8-hour Ozone Standard Early Action Compacts April 2004 | | |
|--|--|--|
| State | Area | City/County/Parish Signatories |
| Georgia | Lower Savannah/Augusta | Columbia and Richmond counties |
| Louisiana | Shreveport/Bossier City | Bossier, Caddo and Webster parishes |
| Maryland | Hagerstown | Washington County |
| North Carolina | Ashville | Buncombe County |
| | Fayetteville | Cumberland County |
| | Greensboro/Winston-Salem/ Highpoint | Alamance, Caswell, Davidson, Davie, Forsyth, Guilford, Randolph, Rockingham, Stokes, Surry and Yadkin counties |
| | Unifour | Alexander, Burke (partial), Caldwell (partial) and Catawba counties |
| Oklahoma | Oklahoma City | Canadian, Cleveland, Logan, McClain, Oklahoma and Pottawatomie counties |
| | Tulsa | Creek, Osage, Rogers, Tulsa and Wagoner counties |
| South Carolina | Greenville/Spartanburg/ Anderson | Anderson, Cherokee, Greenville, Oconee, Pickens and Spartanburg counties |
| | Berkeley/Charleston/Dorchester | Berkeley, Charleston and Dorchester counties |
| | Charlotte/Gastonia/Rock Hill | Chester, Lancaster, Union and York counties |
| | Columbia | Fairfield, Lexington, Newberry and Richland counties |
| | Beaufort | Beaufort, Colleton, Hampton and Jasper counties |
| | Lower Savannah/Augusta (GA) | Aiken, Allendale, Bamberg, Barnwell, Calhoun and Orangeburg counties |
| | Florence | Chesterfield, Darlington, Dillon, Florence, Marion and Marlboro counties |
| | Sumter | Clarendon, Kershaw, Lee and Sumter counties |
| Tennessee | Abbeville/Greenwood | Abbeville, Edgefield, Laurens, Saluda and Greenwood counties |
| | Haywood County | Haywood County |
| | Nashville | Cheatham, Davidson, Dickson, Robertson, Rutherford, Sumner, Williamson and Wilson counties |
| | Putnam County | Putnam County |
| Texas | Johnson City/Kingsport/Bristol | Carter, Hawkins, Johnson, Sullivan, Unicoi and Washington counties |
| | Austin/San Marcos | Bastrop, Caldwell, Hays, Travis and Williamson counties |
| | Longview/Marshall | Gregg, Harrison, Rusk and Smith counties |
| Virginia | San Antonio | Bexar, Comal, Guadalupe and Wilson counties |
| | Frederick County | City of Winchester; Carolina, Frederick, Spotsylvania and Stafford counties |
| West Virginia | Roanoke | Cities of Roanoke and Salem; Botetourt and Roanoke counties |
| | Martinsburg | Berkeley and Jefferson counties |

Source: Ozone Early Action Compacts – An Alternative Route to Clean Air, U.S. Environmental Protection Agency, Web site: <http://www.epa.gov/ttn/naaqus/ozone/eac/index.htm>, accessed December 15, 2003

The Fine Particulate Matter Standard

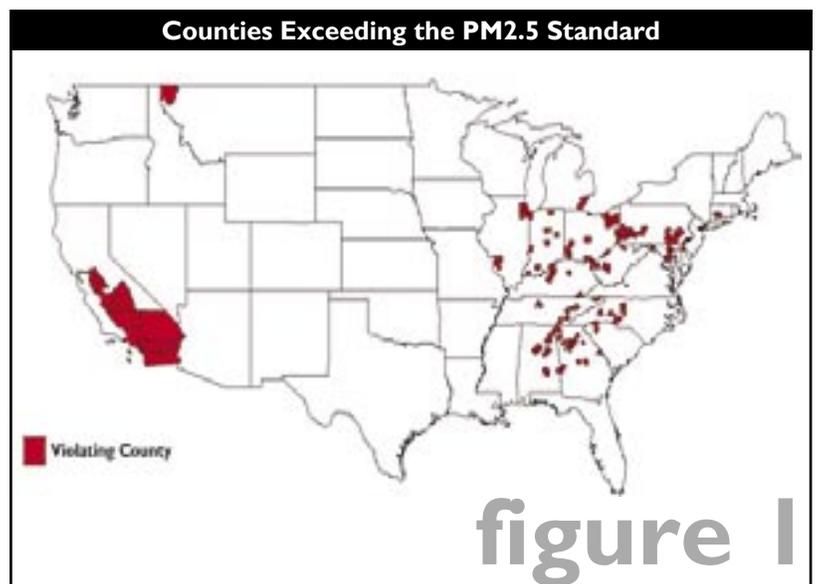
The 8-hour ozone standard is being implemented concurrently with EPA's first regulation of fine particulate matter, or particles with a diameter or 2.5 microns (one-millionth of a meter) or less, otherwise known as PM_{2.5}. For comparison, a human hair is about 75 microns in diameter.⁸ Fine particulate matter is commonly referred to as soot, forming when microscopic solids and liquid droplets mix in air. Its primary sources include wind-blown dust, diesel-powered vehicles and off-road equipment, coal-fired power plants and other combustion sources. According to the EPA, particulate matter can lodge deeply in a person's lungs and interfere with breathing, and it has been linked to a variety of health problems. Particulates can travel for hundreds to thousands of miles, settling in locations long distances from their source. Prior to the Fine Particulate Matter Standard, which was promulgated on July 18, 1997, the EPA regulated only particulate matter with a diameter of 10 microns or less (PM₁₀). El Paso County, Texas, was the only Southern area in nonattainment of the PM₁₀ standard as of January 2004.

In a designation schedule similar to that for 8-hour ozone nonattainment recommendations, states were required to submit their recommended PM_{2.5} designations by February 15, 2004. The EPA plans to announce its intended designations by July 2004, allow 120 days of comment, then publish its final designations by December 15, 2004. States with PM_{2.5} nonattainment areas are required to submit SIPs to bring those areas into compliance by December 2007. Five years following the designation's effective date, states will be required to attain PM_{2.5} standards, with an extension of up to five years possible if a state provides an adequate demonstration of compliance efforts.⁹

EPA hopes that having a designation process for PM_{2.5} similar that for the 8-hour ozone standard will encourage states to "harmonize [the 8-hour ozone and PM_{2.5} nonattainment] boundaries and future control strategies to the extent possible." As is also the case with the 8-hour ozone designation process, the EPA intends to apply a presumption that the boundaries for urban PM_{2.5} nonattainment areas be based on MSA or CMSA boundaries. Based on 2000-2002 air quality data, 120 counties

nationwide failed to meet the annual form of the PM_{2.5} standard. Over this three-year period, 58 localities in 10 Southern states failed to meet the PM_{2.5} standard.

By February 15, 2004, based on 2001-2003 monitoring data, eight Southern states recommended to the EPA that a total of 51 localities (cities and counties) be designated nonattainment with the upcoming standard. Though Maryland only had four localities in nonattainment, the state recommended the most localities to be designated in noncompliance (14), noting that this approach was taken in order to "make PM_{2.5} nonattainment areas as consistent with the 8-hour ozone nonattainment areas as possible."¹⁰ Maryland was followed by West Virginia, which recommended 11 nonattainment counties, and Georgia, which recommended 10 counties. Officials from Arkansas, Florida, Louisiana, Mississippi, Oklahoma, South Carolina, Texas and Virginia recommended that their entire states be designated in attainment with the PM_{2.5} standard



Note: Counties exceeding the PM_{2.5} standards based on 2000-2002 data
Source: A.S.L & Associates, Helena, Montana, September 2003

| Southern Counties Failing to Meet the PM_{2.5} Standard: 2000-2002 Monitoring Data | |
|---|---|
| State | Cities and Counties |
| Alabama | DeKalb, Etowah, Jefferson, Montgomery, Russell and Talladega counties |
| Georgia | Bibb, Clarke, Clayton, Cobb, DeKalb, Floyd, Fulton, Gwinnett, Hall, Muscogee, Paulding, Richmond, Walker and Wilkinson counties |
| Kentucky | Bell, Boyd, Bullitt, Campbell, Fayette, Hardin, Jefferson and Kenton counties |
| Maryland | City of Baltimore; Anne Arundel, Baltimore and Prince George's counties |
| Missouri | City of St. Louis |
| North Carolina | Cabarrus, Catawba, Davidson, Forsyth, McDowell and Mecklenburg counties |
| South Carolina | Greenville County |
| Tennessee | Davidson, Hamilton, Knox, McMinn, Roane and Sullivan counties |
| Virginia | City of Roanoke; Bristol and Salem counties |
| West Virginia | Berkeley, Brooke, Cabell, Hancock, Kanawha, Marion, Marshall, Ohio and Wood counties |

Source: U.S. Environmental Protection Agency, Office of Planning and Standards

| Southern States' Recommended PM_{2.5} Nonattainment Designations February 2004: 2001-2003 Monitoring Data | |
|--|---|
| State | Recommended Cities and Counties |
| Alabama | Jefferson and Russell counties |
| Georgia | Bibb, Clarke, Clayton, Cobb, DeKalb, Floyd, Fulton, Gwinnett, Richmond and Walker counties |
| Kentucky | Jefferson and Fayette counties |
| Maryland | City of Baltimore; Anne Arundel, Baltimore, Calvert, Carroll, Cecil, Charles, Frederick, Harford, Howard, Montgomery, Prince George's, Queen Anne's and Washington counties |
| Missouri | City of St. Louis; Franklin, Jefferson, St. Charles and St. Louis counties |
| North Carolina | Catawba and Davidson counties |
| Tennessee | Hamilton, Knox, McMinn, Roane and Sullivan counties |
| West Virginia | Berkeley, Brooke, Cabell, Hancock, Jefferson, Kanawha, Marshall, Ohio, Putnam, Wayne and Wood counties |

Source: U.S. Environmental Protection Agency, State Recommendations and EPA Responses, from the Internet site: <http://www.epa.gov/pmdesignations/state.htm>, accessed April 20, 2004

Targeting Mobile Sources

Vehicle Emission Inspection

In order to reduce pollution from motor vehicles, the 1990 CAA amendments required automobile manufacturers to build cleaner cars, the use of cleaner fuels, and set regulations to ensure proper vehicle maintenance and emissions. Toward this effort, the EPA subjected regions in nonattainment of CO, NO_x, and VOC standards to vehicle inspection and maintenance programs, requiring all light-duty vehicles to undergo the testing. The inspections, required either annually or biennially, determine whether a vehicle is being maintained and if its emissions control system is working properly. Inspections measure emissions of carbon monoxide, hydrocarbons and sometimes nitrogen oxides. Persons with failing vehicles are responsible for repairing them and having them retested. A waiver is available in certain cases, with policies varying among states. In most cases, heavy trucks, buses, motorcycles, and cars built before certain years are exempted from testing. Under the 1990 Clean Air Act, 179

cities in 38 states were required to implement emission inspection programs. Currently, nine Southern states require vehicle emission inspections, with state sections of this report covering respective programs in detail. It should be noted that many more states and localities are expected to implement emission inspections in the near future in order to come into compliance with the new 8-hour ozone standard.

Motorcycle Emissions

Interestingly, motorcycles typically emit from about 18 to 24 times the ozone-forming pollution as do passenger automobiles, but have long evaded emissions regulations at the federal and most state levels. That soon will change. On December 23, 2003, EPA Administrator Michael Leavitt signed the Agency's final motorcycle rule, under which motorcycle manufacturers will be required to cut emissions of hydrocarbons (HC) and nitrogen oxides, both precursors to ground-level ozone, by 60 percent, starting with model year 2006 motorcycles. A second tier of standards will become effective in

Southern States' Vehicle Emission Inspection Programs March 2004

| State | Area(s) | Vehicles Registered in the Following Cities/Counties/Parishes are Tested | How Often | Maximum Cost |
|----------------|--|--|-----------|--------------|
| Georgia | Atlanta | Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Paulding and Rockdale counties | Annual | \$25 |
| Kentucky | Northern Kentucky | Boone, Campbell and Kenton counties | Biennial | \$20 |
| Louisiana | Baton Rouge | Ascension, East Baton Rouge, Iberville, Livingston and West Baton Rouge parishes | Annual | \$13 |
| Maryland | Throughout State | City of Baltimore; Anne Arundel, Baltimore, Calvert, Carroll, Cecil, Charles, Frederick, Harford, Howard, Montgomery, Prince George's, Queen Anne's and Washington counties | Biennial | \$14 |
| Missouri | St. Louis | City of St. Louis; St. Louis, St. Charles, Jefferson and Franklin counties | Biennial | \$24 |
| North Carolina | Charlotte/Gastonia, Raleigh/Durham, and Piedmont Triad | Alamance, Cabarrus, Catawba, Chatham, Cumberland, Davidson, Durham, Forsyth, Franklin, Gaston, Guilford, Iredell, Johnston, Lee, Lincoln, Mecklenburg, Moore, Orange, Randolph, Rowan, Stanly, Union and Wake counties | Biennial | \$30 |
| Tennessee | Memphis and Middle Tennessee | Davidson, Rutherford, Sumner, Williamson and Wilson counties | Annual | \$10 |
| Texas | Dallas, El Paso and Houston | Brazoria, Collin, Dallas, Denton, El Paso, Ellis, Fort Bend, Galveston, Harris, Johnson, Kaufman, Montgomery, Parker, Rockwall and Tarrant counties | Annual | \$39 |
| Virginia | Northern Virginia | Cities of Alexandria, Fairfax, Falls Church, Manassas and Manassas Park; Arlington, Fairfax, Loudoun, Prince William and Stafford counties | Biennial | \$28 |

Source: Respective state vehicle emission inspection programs

2010. Manufacturers who build fewer than 3,000 motorcycles a year will not be required to meet the 2006 standards until 2008, and will not be required to meet the second-tier standards. Previously unregulated small scooters and mopeds also are addressed by the rules. Beginning in 2008, EPA also will require the control of fuel loss through fuel hoses and fuel tanks. It is estimated that the new emission controls will cost an average of \$75 per motorcycle when the final phase of the rule takes effect in 2010.¹¹

Nonroad Diesel Fuel and Equipment

While more stringent regulations for cars and light trucks have greatly reduced vehicle emissions, less progress has been made in reducing emissions from older heavy-duty diesel trucks and "nonroad" vehicles such as bulldozers, other construction equipment, locomotives and marine vessels. Although these vehicles use fuel with high sulfur levels, accounting for about 30 percent of total NO_x emissions and 60 percent of total diesel particulate matter emissions, they have long been covered by what EPA had labeled "modest" emission requirements. By way of background, the 1990 Clean Air Act allows EPA to regulate nonroad vehicles, provided the agency shows that controls would help curb air pollution.¹²

On May 12, 2004, after years of consultations with environmental, health and industrial stakeholders, the EPA issued its final nonroad diesel rule, aimed at significantly reducing harmful emissions from nonroad diesel engines and the fuel they use. This rule requires oil refineries to cut the sulfur content of diesel fuel for a variety of new nonroad equipment (e.g., construction, farming, and other industrial equipment) by 99 percent over the next six years. Currently, nonroad diesel fuel may have a sulfur content of up to 3,400 parts per million (ppm). By 2007, no more than a 500 ppm sulfur content will be allowed and, by 2010, the maximum sulfur content will be 15 ppm. Affected nonroad equipment will also be required to install lower-polluting engines that will reduce diesel emissions by more than 90 percent over the next eight years. Long debated in composing the final aspects of the rule were issues related to compliance deadlines and regulations governing locomotive and marine fuels. In the end, the new rule also will require a 15 ppm sulfur content cap on locomotive and marine fuels, but allows until 2012 for compliance.

The EPA estimates that, within 30 years, the new regulations will reduce NO_x emissions by 738,000 tons annually; particulate matter by 129,000 tons annually; and prevent more than 12,000 premature deaths and 15,000 heart attacks each year, saving billions of dollars in hospital and medical costs. The agency's research indicates that the overall benefits (\$80 billion annually) of the rule outweigh the costs by a ratio of 40 to 1.¹³ Boasts EPA administrator Mike Leavitt, "the result of this is that people will live longer, live better and live healthier lives."¹⁴ It also is certain to provide relief to state and local governments in bringing nonattainment areas into compliance with the new 8-hour ozone and PM_{2.5} standards.

Targeting Interstate Transport and Point Sources

One of the most contentious issues affecting compliance with federal clean air standards is that of regional or "interstate" transport, or the long-range transport of polluted air from one area to another. Computer modeling has shown that ozone-forming pollutants, primarily NO_x and particulates, can be transported across state boundaries, significantly contributing to smog in downwind states. Many current and wavering nonattainment areas maintain that they have few significant emission sources within their borders and would be in compliance if not for the pollution from upwind states crossing into their borders. Accordingly, their air quality largely is dependent on clean air measures implemented by upwind sources, oftentimes in other states, to reach attainment. The issue is of such great importance, and contention, that its effects have delayed the implementation of many SIPs as courts have tried to decide if interstate transport can be taken into consideration in writing nonattainment rules. Based on EPA research, 29 states, primarily Midwestern and Southeastern, and the District of Columbia, contribute significantly to the nonattainment of ozone and PM_{2.5} standards in downwind areas.¹⁵

While the recipients of the transport are widespread, it most adversely affects Northeastern states due to the nation's weather and wind patterns. Nonetheless, several Southern states and metropolitan areas have asserted that interstate transport has a significant impact on their clean air. Included among Southern interstate transport issues:

- ▶ Maryland officials contend that, on the days when the state's ozone air pollution is at its worst, over half of the pollution originates in upwind states, overwhelming Maryland's own contribution and making it impossible for the state to meet clean air standards. Accordingly, officials believe that "significantly reducing transport is the single most important action needed to bring clean air to Maryland."¹⁶ The state has suggested to EPA that upwind areas, though they themselves may have reached attainment, be required to continue implementing emission-reducing programs until downwind areas that they affect reach attainment as well. According to the state's director of the Department of the Environment, "transported pollution must be reduced if Maryland is to have cleaner air."¹⁷
- ▶ The Metropolitan Washington Council of Governments claims that "transport pollution accounts for 70 percent of the pollution we experience during the worst days of summer;"¹⁸
- ▶ Dallas/Fort Worth, which is facing a 2005 compliance deadline, has long claimed that pollution from Houston, 250 miles to the southeast, is partly responsible for the region's ozone problems; and
- ▶ In December 2003, North Carolina Attorney General Roy Cooper sent letters to seven surrounding states (Georgia, Kentucky, Ohio, South Carolina, Tennessee, Virginia and West Virginia) informing them that he will petition the EPA to reduce their air pollution, particularly from coal-fired power plants. Cooper claims that winds from these states blow pollutants into North Carolina, severely hampering Charlotte's efforts to maintain clean air.¹⁹ In March 2004, Cooper notified six additional states (Alabama, Illinois, Indiana, Maryland, Michigan and Pennsylvania) that "numerous studies show that North Carolina received transported pollution from several other states, including your state."²⁰ Then, on March 18, Cooper followed through on his warning, formally petitioning the EPA to determine whether power plants in all of the above states are significantly contributing to North Carolina's difficulty in meeting or maintaining particulate matter and ozone clean air standards.²¹

The attorney general's actions come one year after North Carolina enacted the Clean Smokestacks Act, requiring the state's power plants to reduce emissions contributing to ozone and fine particulate matter pollution. As part of the Act, lawmakers empowered their attorney general to pursue lawsuits to force neighboring states to cut their emissions as well, an authority he is now exercising. EPA spokesman John Millett said that the agency would consider North Carolina's request, but noted that federal officials were already working on a plan to control interstate transport (see Interstate Air Quality Rule below).²²

While critics claim that the Environmental Protection Agency has not been aggressive enough in sanctioning states that significantly contribute to interstate transport, the EPA has addressed the issue and offered assistance to upwind states. As an example among Southern states, in 1999 the EPA extended deadlines for meeting clean air requirements and postponed harsher classifications for seven nonattainment areas (including the metropolitan areas of Atlanta, Georgia; Baton Rouge, Louisiana; Beaumont-Port Arthur, Texas; and Washington, D.C.) because ozone-forming particles were blown in from sources in other regions. However, U.S. federal courts later ruled that the EPA had no authority to issue such extensions and these areas' classifications were subsequently downgraded. On a similar note, in 2001, EPA extended the St. Louis area's attainment deadline due to the transport of pollutants from outside the area. In November 2002, the 7th Circuit Court reiterated that EPA had no such authority, thus downgrading the St. Louis area's nonattainment status from moderate to serious.²³ Other federal actions addressing interstate transport have been incorporated into law.

The NO_x SIP Call

The 1990 Clean Air Act amendments set requirements on select states believed to be responsible for the transport of ozone across Midwest and Eastern states. Under this authority, on October 27, 1998, the EPA finalized the Oxides of Nitrogen (NO_x) State Implementation Plan (SIP), forcing several upwind states to revise their SIPs in order to achieve significant reductions in NO_x emissions that are contributing to nonattainment conditions in downwind areas. While originally targeting 22 states, the "NO_x SIP"

Call currently requires 19 states and the District of Columbia to revise their respective SIPs to demonstrate large emission reductions from power plants and large industrial boilers, and to contain provisions for affected sources to participate in the federal NO_x Budget Trading Program – a cap-and-trade program similar to the SO₂ Acid Rain trading program. Those targeted are: Alabama, Connecticut, District of Columbia, Delaware, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Michigan, North Carolina, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia and West Virginia.

States failing to include and implement the required SIP revisions are subject to several sanctions. In addition to the NO_x SIP Call, federal implementation plans (FIPs) may be required to reduce interstate transport if a state fails to adequately revise its state plan to address the issue. Also, if emissions from an upwind air quality control region significantly affect air quality in another state, the upwind source state may redesignate the boundaries of the contributing air quality control region only with the consent of the affected downwind state(s).

The EPA currently is developing a PM_{2.5} transport rule that is likely to address power plants and other industrial emissions sources. The agency plans to propose the rule in April 2004 and finalize it by June 2005.²⁴ Despite these and other EPA measures, many states contend the federal government has not taken the appropriate actions to reduce interstate transport and have continued to take actions themselves, including filing lawsuits in federal court. As a more recent example, in October 2003, 12 states sued the federal government claiming that the Bush administration relaxed environmental regulations of coal-fired power plants, which they attribute to acid rain in the Northeast. At about that same time a similar group of states sued the EPA for failing to regulate carbon dioxide emissions.

Proposed Interstate Air Quality and Mercury Rules

In December 2003, the EPA approved a regulatory proposal that, according to Administrator Mike Leavitt, would better control acid rain and smog in the Midwest and East by “generating the most significant emission cuts from electric utilities in more than a decade.”²⁵ The “Interstate Air Quality Rule” would expand the current pollution trading systems for sulfur dioxide and nitrogen

oxide (which contribute both to ozone and particulate pollution) to a broader geographical region, requiring 29 eastern states and the District of Columbia to revise their SIPs to reduce SO₂ and NO_x emissions. The EPA expects the two-phased proposal to reduce SO₂ emissions by 40 percent from their current levels in 2010, then by another two tons per year when the Rule is fully implemented. It is estimated that NO_x emissions would be cut by 65 percent by 2015.²⁶

The agency believes the proposal, along with other recently proposed and finalized measures, would leave substantially fewer cities and counties out of compliance with the new 8-hour ozone and fine particulate matter standards by substantially curbing interstate transport. Industry groups tend to favor trading systems, believing they are more efficient than across-the-board mandatory controls. Environmentalists do not necessarily object to the proposed cap-and-trade programs for ozone and particulate matter, but some have voiced concern that the pollution caps being proposed by the EPA are too high.²⁷ Following public comment, a final rule is planned for 2005.

The Interstate Air Quality Rule came on the heels of another proposal, the Utility Mercury Reductions Rule, that would place mercury under a less stringent category of the Clean Air Act whereby it too could be regulated under a cap-and-trade program. Mercury is a toxic, persistent metal that accumulates in the food chain. It enters the water supply through a variety of sources and accumulates in fish in the form of methylmercury. Exposure to methylmercury may, among other things, severely damage the brain and kidneys and cause developmental problems in children who are exposed to low concentrations prenatally. The Clinton administration had proposed classifying mercury as a hazardous pollutant, which would have meant stricter controls at each source to reduce pollutants everywhere. The Utility Mercury Reductions Rule was one of three mercury reduction alternatives proposed by the EPA. One of the others also was a cap-and-trade program, and the third would require coal-fired power plants to install pollution controls, known as “maximum achievable control technology,” which would have reduced mercury emissions by an estimated 29 percent annually by the end of 1997.

Both the Utility Mercury Reductions and Interstate Air Quality Rules are modeled after the 1990 Clean Air Act's mostly successful efforts at reducing acid rain by allowing companies to buy and sell limited pollution (sulfur dioxide) credits, which many believe provided the incentive and flexibility to accelerate and realize technological change. The "market-based" approach sets overall industry pollution targets for reducing emissions, with the mercury rule set at reducing emissions by 70 percent by 2018. Power plants would buy and sell the rights to emit mercury, with the largest emitting plants being able to buy credits from cleaner-operating facilities in order to help meet the industry-wide goal.²⁸ Currently, there are no regulations on mercury emissions from the nation's roughly 1,200 coal-fired power plants, which are the country's largest industrial source of mercury emissions, emitting about 33 percent of the nation's total.

Critics' major concerns with the proposed mercury market system are that it may leave "hot spots" with extremely high levels of mercury emissions around the country; EPA adopted some industry recommendations verbatim; the 70 percent reduction target will not be met by 2018 under the program; and utilities should be forced to comply with sharply lower emissions standards by 2007, as had been assumed under the Clean Air Act. Regarding the latter, many environmentalists and others have expressed a preference for requiring all plants to install the most modern pollution controls, such as carbon injection systems.²⁹ At the time of this report, the EPA was accepting comments on the mercury proposal and is expected to issue a final ruling in March 2005. The Rule's comment period and finality date both were extended following intense debate, with the U.S. Public Interest Research Group reporting that the EPA had received more comments on the mercury rule than on any regulation it has ever proposed.³⁰

If the Rule passes, states may elect not to participate, in which case their proposed unit level allocations will become fixed unit level emission limitations, or they may require more stringent mercury emission reductions than those mandated by EPA. Unsure of the EPA's approach, several states already have taken or proposed measures of their own to control mercury emissions, including Connecticut, Massachusetts, New Jersey and Wisconsin. In addition, as of February 2004, the states of Florida, Illinois, Maryland, Michigan, Minnesota, New Hampshire, New

York, North Carolina, Ohio and Wisconsin were either studying, measuring, or regulating mercury emissions from electric generating units.³¹ Upon adoption of the mercury rule, delays can be expected as the Rule will most likely be challenged in court, with attorneys general from New Jersey, New York and other Northeastern states already having indicated they will sue the EPA.³²

Proponents of the mercury market system, including many in the electric industry, maintain that it is impossible to reduce mercury emissions by 90 percent by 2007, as had originally been targeted by the Clean Air Act, and the 70 percent reduction by 2018 is achievable. Arguing that the control technologies necessary for the former reduction are not available, industry representatives assert that market forces make cap-and-trade a superior method of achieving greater mercury reductions faster.³³

New Source Review and Clear Skies

The Clean Air Act exempted older power plants from various new pollution rules on the condition that electric generators be brought up to current standards when they upgrade facilities – a process formalized by the Clean Air Act amendments of 1997 and known as New Source Review. In short, New Source Review's aim is to bring older power plants, refineries and industrial factories into Clean Air Act compliance when they upgrade their facilities or enhance their generating capacity. Under these New Source Review requirements, plants are not subject to increased pollution controls, or installing modern scrubbers (a process of using wet limestone to remove some sulfur after combustion) if they are performing "routine maintenance" and that cost does not exceed 20 percent of the total cost of replacing the entire part or operating unit. What constitutes routine maintenance often is a point of contention, however, with various critics maintaining that power plants have been making substantial upgrades for decades under the guise of routine maintenance – an issue being investigated by the EPA and the U.S. Justice Department and at the center of dozens of state and federal lawsuits against power plants across the nation. Of note, 65 percent of today's electric utility plants, or about 540 plants, were built before enactment of the Clean Air Act Amendments of 1977 and are grandfathered in. Nationwide, about 17,000 industrial plants are affected.

On August 27, 2003, a new EPA rule was announced allowing aging power plants and factories to upgrade their facilities and spend up to one-fifth of their replacement value without being subjected to the more stringent New Source Review requirements. Under the new rule, modifications could not affect the basic design of the plant or allow it to exceed any of its emissions limits. When "major modifications" are made that would result in an increase in total emissions, plants must install state-of-the-art pollution control technology.³⁴

According to Thomas R. Kuhn, president of Edison Electric Institute, the new regulations "will lift a major cloud of uncertainty, boosting our efforts to provide affordable reliable electric service and cleaner air." On the other hand, environmentalists and several officials in northeastern states see the rule change as a major victory for the electric utility industry. According to Angela Ledford, director of the environmental alliance Clear the Air, "the administration is once again doing the bidding of the coal and energy industries, at the expense of public health and the environment."³⁵

It remains somewhat uncertain what affect the new rule will have on currently pending New Source Review legal disputes, most of which have been in progress since 1999. Following the rule change, lawyers for the EPA said they would close investigations of 70 power plants for past violations of the New Source Review requirements and drop 13 other cases that had been referred to the Justice Department for action.³⁶ The agency announced that cases would instead be judged under the new rule, and while it had not yet decided to drop all the pending investigations, it would review each "on a case-by-case basis to determine whether it will be pursued or set aside." It is estimated that the decision not to pursue the investigations would allow the utility industry to avoid making more than \$10 billion in pollution-control upgrades.³⁷

Seeking to block the rule change, in October 2003, 14 states and more than 20 northeastern cities sued the EPA, arguing that only Congress has the power to make major revisions to the Clean Air Act.³⁸ Their primary point of contention centered on New Source Review violations, and perceived lax enforcement by the Bush administration. On December 5, 2003, seven states, including Maryland, joined in opposing the changes to the modification rule, filing Freedom of Information Act requests with the EPA, Department of Energy and the White House

Council on Environmental Quality as part of a legal challenge to the new rules.³⁹

Responding to the challenge, in late December 2003, the U.S. Court of Appeals in the District of Columbia blocked implementation of the rule change, saying the state litigants "have demonstrated the irreparable harm [of the rule] and likelihood of success on the merits." Following the Court's stay, EPA Administrator Mike Leavitt announced in January 2004 that the agency would aggressively enforce the seven or eight pending New Source Review cases, and bring new actions, under its earlier interpretation of the rules until the courts resolve the legal challenges to the rule change. On January 28, 2004, the Justice Department sued the East Kentucky Power Cooperative, arguing that it modified three of its coal burning power plants without obtaining the proper permission or installing the best available control technology as required by New Source Review. According to the Justice Department, the suit – its first legal action against a utility company since President George W. Bush took office – was "part of a long-standing enforcement initiative aimed at bringing the coal-fired electric power generating industry into full compliance with the Clean Air Act."⁴⁰

Pros and Cons

The proposed NO_x, SO₂ and mercury cap-and-trade plans, and the New Source Review revisions, mirror measures contained in President Bush's proposed Clear Skies Initiative, with critics pointing out that uncertainty of Congressional support of Clear Skies has led the administration to seek to implement Clean Air Act amendments through EPA regulatory actions. They claim the administration's relaxation of New Source Review requirements will make it even more difficult for states to meet clean air standards, particularly relating to fine particulate matter.

Proponents of the president's proposals, such as Guy Donaldson with the EPA's Region VI office in Dallas, Texas, contend that Clear Skies' [now EPA] proposals will reduce NO_x, SO₂ and mercury more quickly and efficiently than current law; create a simpler and more certain path for regulators, industry and citizens; and are more flexible and cost effective, allowing for strategic planning of capital.⁴¹ Initiative supporters also maintain that imposing caps for emissions of the three pollutants will give companies incentives to begin reducing emissions immediately to generate credits.⁴²

SLC State Section

The state sections summarize specifics of 1-hour ozone, 8-hour ozone and PM_{2.5} standard attainment efforts and nonattainment designations in areas located within 16 Southern states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia. While states employ myriad control strategies in their efforts to reach and maintain clean air compliance, an attempt has been made to highlight some of the more significant emission-curbing regulations.

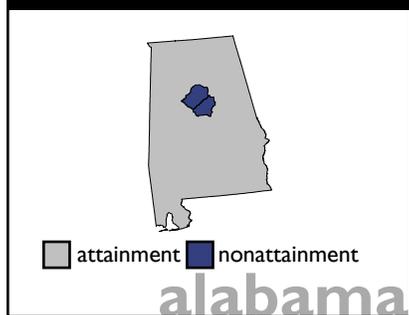
The following information was compiled directly from respective state statutes and administrative regulations, correspondence between states and the EPA, and various EPA documents and data compilations. In select cases, state information has been complemented with information from various newspapers, periodicals and publications from environmental stakeholders and groups.

Alabama

1-hour Ozone Standard – Birmingham, consisting of Jefferson and Shelby counties, is currently a 1-hour ozone nonattainment area, with a marginal classification. There are no 1-hour maintenance areas in the state.

8-hour Ozone Standard – In July 2003, state officials recommended that two counties (Jefferson and Shelby) comprising the bulk of the Birmingham area's population be designated nonattainment under the 8-hour ozone standard.⁴³ The EPA concurred with that recommendation, designating all other areas of the state in attainment, including Blunt and St. Clair counties which, although in the Birmingham CMSA, minimally contribute to the area's overall pollution.⁴⁴

Attainment and Nonattainment Areas 8-hour Ozone Standard



Early Action Compact – There are no Early Action Compacts in the state.

PM_{2.5} Standard – The following counties failed to meet the PM_{2.5} air quality standard based on 2000-2002 air quality monitoring data: DeKalb, Etowah, Jefferson, Montgomery, Russell and Talladega. Based on 2001-2003 data, state officials recommend that Jefferson County in the Birmingham area, and Russell County in the Columbus, Georgia, area, be designated in nonattainment of the standard.⁴⁵

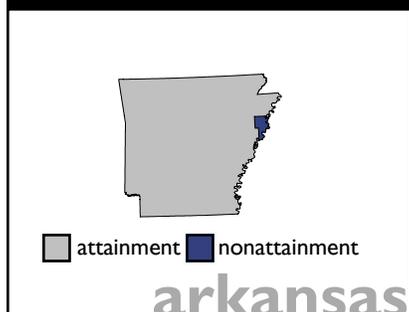


Arkansas

1-hour Ozone Standard – There are no 1-hour ozone nonattainment or maintenance areas in the state. The Little Rock/North Little Rock area has entered into the Central Arkansas Ozone Flex Plan as part of its efforts to maintain its 1-hour ozone attainment designation.

8-hour Ozone Standard – Based on 2000-2002 monitoring data, state officials recommended that two areas of the state be designated as not in attainment with the NAAQS for 8-hour ozone: Crittenden County, part of the Memphis, Tennessee, CMSA, and the Little Rock/North Little Rock area, to include Pulaski, Faulkner, Lonoke and Saline counties.⁴⁶ The EPA, based on more current 2001-2003 ozone monitoring data, designated only Crittenden County nonattainment, noting that the Little Rock MSA had come into compliance with the 8-hour standard.⁴⁷ Complimenting the state, EPA Region VI Administrator Richard E. Greene noted that he would “like to specifically acknowledge the voluntary efforts in Arkansas to improve air quality. Clearly Little Rock has successfully proved (sic) our belief that neighborhood solutions are best in achieving our nation's clean air goals.”⁴⁸

Attainment and Nonattainment Areas 8-hour Ozone Standard



Early Action Compact – While the state had included Crittenden County in an 8-hour ozone Early Action Compact along with area stakeholders in Mississippi and Tennessee, the Memphis area EAC was rejected in April 2004 due to its failure to meet set requirements.

PM_{2.5} Standard – All Arkansas counties were in attainment of the PM_{2.5} standard based on 2000-2002 monitoring data. Accordingly, state officials recommend that the entire state be designated in attainment of the upcoming standard.⁴⁹



Florida

1-hour Ozone Standard – All areas of the state currently are in attainment of the 1-hour ozone standard, though the areas of Jacksonville; Miami/Fort Lauderdale/West Palm Beach; and Tampa/St. Petersburg/Clearwater are 1-hour Ozone Maintenance Areas. Nonattainment classifications were Section 185-A, moderate and marginal, respectively.⁵⁰

8-hour Ozone Standard – Based on 2000-2002 ozone design values, Florida officials recommended that all areas of the state be designated in attainment of the 8-hour ozone standard.⁵¹ The EPA made no modifications to that recommendation and has designated the state as such.⁵²

Early Action Compact – There are no Early Action Compacts in the state.

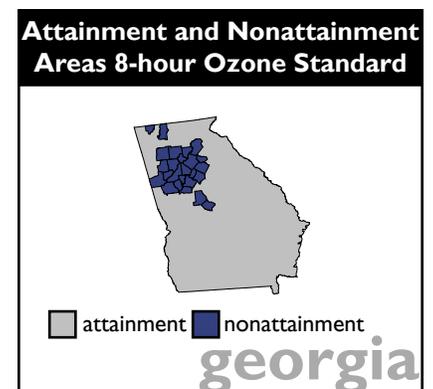
PM_{2.5} Standard – No counties failed to meet the PM_{2.5} standard based on 2000-2002 data. Accordingly, state officials recommend that the entire state be designated in attainment of the standard.⁵³



Georgia

1-hour Ozone Standard – The 13-county Atlanta metropolitan area is the state's only nonattainment area under the 1-hour ozone standard. The state has no 1-hour Ozone Maintenance Areas.

8-hour Ozone Standard – Following EPA's guidance in defining nonattainment boundaries based on population density, emissions and daily commuting trips, the state recommended that 20 counties in metropolitan Atlanta (Barrow, Bartow, Carroll, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Henry, Newton, Paulding, Rockdale, Spalding and Walton) be designated as nonattainment under the 8-hour ozone standard. In addition, state officials recommended that Bibb County (Macon area), and a portion of Murray County (Fort Mountain), be designated nonattainment. As the Fort Mountain area is in a federal wilderness area at high elevation, the state attributes its nonattainment to regional ozone transport.⁵⁴



While concurring with the above-listed nonattainment areas, EPA modified Georgia's recommendation, adding Catoosa County to the Chattanooga, Tennessee, nonattainment area, and parts of Monroe County to the Macon nonattainment area. Regarding Chattanooga, EPA reasoned that all MSA counties that are part of an Early Action Compact should be included as part of one area that would be designated as nonattainment. The EPA added parts of Monroe County to the Macon area because they are a large source of Macon's NO_x emissions.⁵⁵

Early Action Compacts – Columbia and Richmond counties in the Augusta area have entered into an Early Action Compact to maintain attainment with the 8-hour ozone standard. Catoosa and

Walker counties were participating in an EAC covering the Chattanooga, Tennessee, area, but that compact was invalidated in 2004.

PM_{2.5} Standard – The following counties did not meet the PM_{2.5} standard based on 2000-2002 monitoring data: Bibb, Clarke, Clayton, Cobb, DeKalb, Floyd, Fulton, Gwinnett, Hall, Muscogee, Paulding, Richmond, Walker and Wilkinson. Reviewing 2001-2003 data, state officials recommend that 10 of those counties (Bibb, Clarke, Clayton, Cobb, DeKalb, Floyd, Fulton, Gwinnett, Richmond and Walker counties) be designated in PM_{2.5} nonattainment.⁵⁶

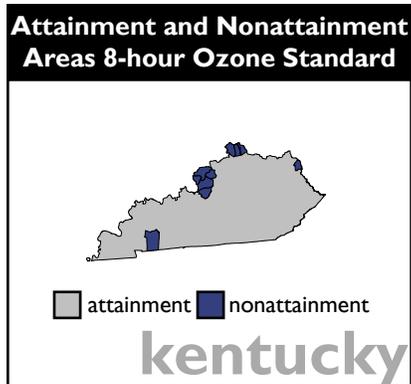
Vehicle Emission Inspection – Georgia’s Inspection and Maintenance Program requires vehicles with model years 1980 and newer with a manufacturer’s gross vehicle weight (the weight of the vehicle plus the maximum weight the vehicle is designed to carry) be tested if they are registered in the following metro-Atlanta counties: Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Paulding and Rockdale. Vehicles must be inspected annually. The three most recent model year, diesel and alternative fuel vehicles are exempt from testing. Also exempted are senior citizens if their vehicle is driven less than 5,000 miles per year, the vehicle is 10 years old or older, and the primary registered owner is 65 years of age or older. Testing is performed at private licensed facilities and costs between \$10 and \$25. Failing cars must be repaired and retested, getting one free retest if the owner returns to the original inspection station within 30 days of the initial inspection. Waivers are available for those who have spent at least \$673 on emissions-related repairs.⁵⁷

Kentucky

1-hour Ozone Standard – Currently, Kentucky has no areas classified as nonattainment under the 1-hour ozone standard. However, the state does encompass 15 counties that are part of the following 1-hour Ozone Maintenance Areas: Cincinnati (Ohio), Edmonson County, Huntington (West Virginia)/Ashland, Lexington/Fayette, Louisville, Owensboro and Paducah.



8-hour Ozone Standard – State officials recommended that the following counties in four metropolitan areas be designated nonattainment: Boone, Campbell and Kenton counties in the Cincinnati area; Christian County in the Clarkesville (Tennessee)/ Hopkinsville area; Boyd County in the Huntington (West Virginia)/Ashland area; and Bullitt, Jefferson and Oldham counties in the Louisville area.⁵⁸ The EPA concurred with the Commonwealth’s recommendations.⁵⁹ Of interest, a total of six counties in otherwise-classified nonattainment areas do not fall into those areas’ “presumptive” boundaries: Gallatin, Grant and Pendleton counties in the Cincinnati area; Henderson County in the Evansville (Indiana)/Henderson area; and Carter and Greenup counties in the Huntington/Ashland area.



Early Action Compact – There are no Early Action Compacts in the state.

PM_{2.5} Standard – Bell, Boyd, Bullitt, Campbell, Fayette, Hardin, Jefferson and Kenton counties failed to meet the PM_{2.5} standard based on 2000-2002 air quality monitoring data. State officials recommend that Jefferson and Fayette counties be designated as nonattainment under the standard, and that Boyd County’s designation be deferred due to significant variations in air quality monitoring data.⁶⁰

Vehicle Emission Inspection – Since September 1999, the Northern Kentucky Emissions Check has required biennial emissions testing for vehicles registered in Boone, Campbell and Kenton (metropolitan Cincinnati) counties. Odd-numbered model year vehicles are tested in odd years and even-year models are tested in even years, with all vehicles requiring testing within three months of their registration. Vehicles with model years of 1968 or newer are affected, as are diesel-fueled vehicles weighing less than 18,000 pounds (gross vehicle weight). Motorcycles, alternative-fuel vehicles and all vehicles weighing over 18,000 pounds are exempt. Testing costs \$20, regardless of whether vehicles pass or fail, and may take place in one of three stations located in each of the three covered counties. Waivers are available for those whom have spent at least \$75

on emissions-related repairs on 1980 or older model year vehicles; \$200 for 1981 or newer model years; and \$75 for repairs to diesel vehicles.⁶¹

The Jefferson County (Louisville) Vehicle Emissions Testing program, which began in 1984, ended October 31, 2003, in accordance with legislation passed during the General Assembly's 2002 session. Many attribute the program's success to cleaning up the area's air, with the Louisville Air Pollution Control District proclaiming it was "one of the most effective emissions testing programs in the United States."⁶²



Louisiana

1-hour Ozone Standard – The Baton Rouge area is designated in nonattainment of the 1-hour ozone standard. The state has four 1-hour Ozone Maintenance Areas: Lafayette, Lake Charles, New Orleans and Point Coupee Parish. The New Orleans and Shreveport/Bossier City areas have both implemented air quality ozone flex programs.

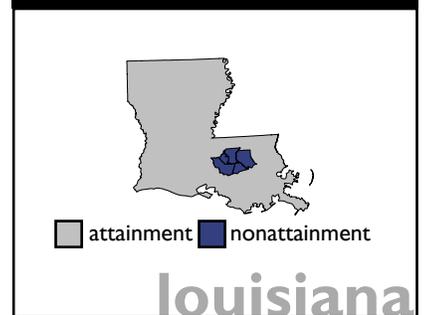
8-hour Ozone Standard – State officials recommended that Ascension, East Baton Rouge, Iberville, Livingston and West Baton Rouge parishes, all part of the Baton Rouge metropolitan area, be designated as nonattainment for the 8-hour ozone standard.⁶³ The EPA concurred with the state's recommendation, made no modifications to the proposal, and praised Louisiana's voluntary efforts to improve air quality, particularly in the Shreveport/Bossier City area.⁶⁴

Early Action Compacts – There are no Early Action Compact areas in the state.

PM_{2.5} Standard – No parishes exceeded the PM_{2.5} standard in the 2000-2002 data monitoring period. Accordingly, state officials recommend that the entire state be designated in attainment with the upcoming standard.⁶⁵

Vehicle Emission Inspection – Model year 1980 or newer gasoline-fueled cars and trucks with a gross vehicle weight of 10,000 pounds or less are subject to annual vehicle evaporative emission inspections if they are registered in the Baton Rouge nonattainment area, consisting of Ascension, East Baton Rouge, Iberville, Livingston, and West Baton Rouge parishes. This test consists of a safety equipment and a visual anti-tampering check of the emissions system, and a gas cap integrity test. All light-duty cars and trucks that are 1996 models or newer must also pass OMB II testing. Failing vehicles must be repaired and re-inspected within 30 days. There is a \$13 fee for the combined safety and emission test.⁶⁶

Attainment and Nonattainment Areas 8-hour Ozone Standard



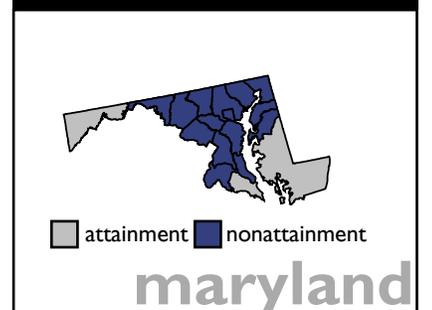
Maryland

1-hour Ozone Standard – Three areas of Maryland, constituting 12 counties, are designated in nonattainment of the 1-hour ozone standard: Baltimore area, including the city of Baltimore and Anne Arundel, Baltimore, Carroll, Harford and Howard counties; the Washington, D.C. area, including Calvert, Charles, Frederick, Montgomery and Prince George's counties; and an area near Baltimore consisting of Kent and Queen Anne's counties. There are no 1-hour Ozone Maintenance Areas in the state.

8-hour Ozone Standard – In July 2003, state officials recommended that the above 1-hour ozone nonattainment counties be designated as nonattainment with the 8-hour standard, and that Cecil County in the Philadelphia (PA)/Wilmington (PA)/Atlantic City (NJ) area and Washington County in the Hagerstown area be classified nonattainment as well.⁶⁷

While concurring with the state's designation recommendations, EPA warned the state that it would include Kent and Queen Anne's counties in the Baltimore

Attainment and Nonattainment Areas 8-hour Ozone Standard



nonattainment area unless the state revised its SIP to acknowledge that the counties would rely on the Baltimore-area design monitor for redesignation purposes and would share the area's same ozone classification.⁶⁸ Maryland met EPA's requirements prior to the April 15 designation deadline, and was thus able to maintain Kent and Queen Anne's counties' separate nonattainment area status.

Early Action Compact – Washington County, part of the Hagerstown area, is a signatory to an Early Action Compact.

PM_{2.5} Standard – The city of Baltimore, along with Anne Arundel, Baltimore and Prince George's counties, failed to meet the PM_{2.5} air quality standard based on 2000-2002 monitoring data. In February 2004, based on 2001-2003 data, state officials recommended that all areas and counties (except Kent County) that had been recommended as nonattainment for the 8-hour ozone standard also be designated in nonattainment of the PM_{2.5} standard. The state recommended these particular counties in order to “make PM_{2.5} nonattainment areas as consistent with the 8-hour ozone nonattainment areas as possible.”⁶⁹

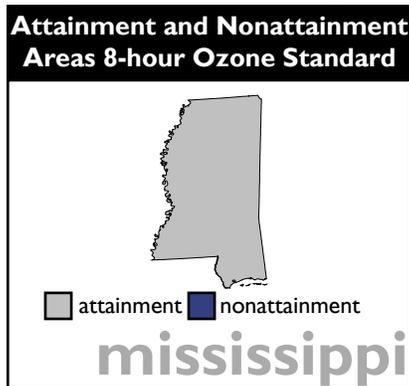
Vehicle Emission Inspection – First implemented in October 1984, Maryland's Vehicle Emissions Inspection Program (VEIP) requires biennial inspections of vehicle emission systems in city of Baltimore and Anne Arundel, Baltimore, Calvert, Carroll, Cecil, Charles, Frederick, Harford, Howard, Montgomery, Prince George's, Queen Anne's and Washington counties. Environmental Systems Products of Maryland, Inc. (ESP), a private contractor, carries out the testing operations at a cost of \$14. A dynamometer emissions test is administered to 1984 and newer light-duty vehicles weighing up to 9,999 pounds vehicle gross weight. Vehicles with model years from 1977 to 1983, and vehicles weighing between 10,000 and 26,000 pounds, are required to take an idle test. All vehicles receive an advisory gas cap pressure integrity test. Mandatory On-Board Diagnostic (OBD) testing was implemented in July 2002, for model year 1996 and newer light-duty vehicles. The two newest model years of a vehicle are exempted from emissions tests. Failing vehicles must be repaired and are required to pass re-inspection within 120 days. A two-year waiver may be obtained if at least \$450 has been spent to repair emissions system components.⁷⁰

Diesel Emission Inspection – In 1999, legislation was passed establishing Maryland's Diesel Vehicle Emissions Control Program. Under the law, effective July 10, 2000, diesel trucks and buses with a gross combination or gross vehicle weight rating of over 10,000 pounds may be subject to exhaust emissions testing and must meet certain smoke opacity standards. The Maryland State Police are authorized to pull vehicles over (regardless of in- or out-of-state registration) and administer the test at weigh and inspection stations, or along any safe roadside location.⁷¹

Mississippi

1-hour Ozone Standard – The entire state of Mississippi is in attainment of the 1-hour ozone standard. There are no 1-hour Ozone Maintenance Areas in the state.

8-hour Ozone Standard – State officials recommended only that DeSoto County, in the Memphis, Tennessee, metropolitan area be designated in nonattainment with the 8-hour ozone standard. Officials asked that the county be a separate nonattainment area from the Memphis MSA based on its low population density and “negligible” emissions.⁷² While the EPA initially concurred with DeSoto County's nonattainment designation, the agency held that Mississippi should have used the larger Memphis metropolitan area, the presumptive boundary, in classifying DeSoto County, and that the state did not provide a justifiable explanation why the county is a separable area.⁷³ In the end, however, when EPA released its official 8-hour ozone standard designations on April 15, the agency listed DeSoto County, along with the rest of the state, in attainment.



Early Action Compact – Although DeSoto County had entered into an Early Action Compact with other Memphis, Tennessee, nonattainment counties, that EAC was subsequently terminated by the EPA due to the areas' inability to meet set milestones.



PM_{2.5} Standard – Current three-year monitoring data indicates that all areas of the state will meet the PM_{2.5} standard. Accordingly, state officials recommend that all areas of the state be designated in attainment.⁷⁴



Missouri

1-hour Ozone Standard – No Missouri counties are included within 1-hour ozone nonattainment boundaries. Two areas within the state, Kansas City and St. Louis, are 1-hour Ozone Maintenance Areas, with the Kansas City area encompassing Clay, Jackson and Platte counties in Missouri, and the St. Louis area covering Franklin, Jefferson, St. Charles and St. Louis counties in the state.

8-hour Ozone Standard – State officials recommended that the above Kansas City and St. Louis counties be designated as nonattainment with the 8-hour ozone NAAQS. In addition, the state recommended including the city of St. Louis and the northern portion of Cass County (the area of the county that is part of the Kansas City metropolitan planning organization) in the respective nonattainment areas.⁷⁵

Citing the Clean Air Act's definition of a nonattainment area and its own guidance on presumptive boundaries, the EPA initially planned to modify the state's recommendation and include St. Genevieve County as part of the St. Louis nonattainment area, but did not do so when official designations were posted on April 15. However, the EPA, using more recent air quality monitoring data, did modify the state's recommendation by designating all counties in the Kansas City area as unclassifiable, thus avoiding, at least for now, a nonattainment designation.⁷⁶ The EPA currently is reviewing monitoring data and is expected to designate the area either in attainment or nonattainment by the end of 2004. Should the Kansas City area be designated nonattainment, the EPA has requested that all of Cass County be included, noting that the entire county is within the area's presumptive boundaries.⁷⁷



Early Action Compacts – There are no Early Action Compacts in the state.

PM_{2.5} Standard – The city of St. Louis failed to meet the PM_{2.5} air quality standard based on 2000-2002 monitoring data. State officials recommend that the area, to include Franklin, Jefferson, St. Charles and St. Louis counties and the city of St. Louis, be designated nonattainment for the upcoming standard.⁷⁸

Vehicle Emission Inspection – In April 2000, the Department of Natural Resources launched the Gateway Clean Air Program, requiring motor vehicles registered in the St. Louis area (city of St. Louis, along with St. Louis, St. Charles, Jefferson and Franklin counties) to undergo an enhanced emissions test. On January 1, 2003, the program began phasing in OBDII (on-board diagnostic) testing. Vehicles are tested every two years at a cost of \$24. Failing vehicles are allowed free retests if they do so within 20 business days in Franklin County, and within 30 calendar days in all other affected areas. Waivers may be issued if a predetermined minimum dollar amount is spent on emissions-related repairs: \$200 for model years 1980 and older, and \$450 for model years 1981 and newer. Exempted are the two newest model year vehicles; vehicles of model years 1970 and older; diesel, propane or other alternate fuel vehicles; motorcycles and vehicles with a gross weight of over 8,500 pounds. This program has been largely successful in reducing ground-level ozone and played a large part in bringing the St. Louis area into attainment with the 1-hour ozone standard in May 2003.⁷⁹

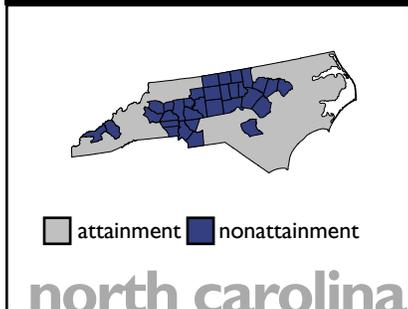
North Carolina

1-hour Ozone Standard – There are no areas in the state that have been designated nonattainment for the 1-hour ozone standard; however, nine counties in the Charlotte/Gastonia, Greensboro/Winston-Salem/High Point, and Raleigh/Durham metropolitan regions are 1-hour Ozone Maintenance Areas.



8-hour Ozone Standard – State officials recommended that the following 11 areas encompassing over 30 counties, in whole or in part, be designated nonattainment for the 8-hour

Attainment and Nonattainment Areas 8-hour Ozone Standard



ozone standard: Plott Balsam Mountains – area above 4,000 feet in Haywood County; Great Balsam Mountains – areas above 4,000 feet in Haywood, Jackson and Transylvania regions; Great Smoky Mountains National Park – area in Haywood and Swain counties; Blue Ridge, Black and Great Craggy Mountains – areas above 4,000 feet in Buncombe, McDowell and Yancey counties; Asheville area, covering Buncombe County; Charlotte/Gastonia/Rock Hill area, including Gaston and Mecklenburg counties and portions of five other counties; Fayetteville area, covering Cumberland County; Greensboro/Winston-Salem/High Point area, including Alamance, Davidson, Forsyth, Guilford and portions of four other counties; Hickory/Morganton/Lenoir area,

including portions of Burke, Caldwell, Catawba and Alexander counties; Raleigh/Durham/Chapel Hill area, including Durham, Orange, Wake and portions of five other counties; and the Rocky Mount area, including a portion of Edgecombe County.⁸⁰

The EPA modified North Carolina's recommendations, designating as nonattainment Nash County in the Rocky Mount area; and the whole of all of the above partially-recommended counties in the Charlotte/Gastonia/Rock Hill and Greensboro/Winston-Salem/High Point areas. The EPA also modified the state's plan so that only one county, Chatham, will be partially designated nonattainment in the Raleigh/Durham/Chapel Hill area, with all other state-recommended nonattainment counties in that area incorporated entirely, and only two counties, Burke and Caldwell, are to be partially designated nonattainment in the Hickory/Morganton/Lenoir area, with the other two counties listed in whole. The primary justification EPA gave for including entire counties was that they all are within presumptive nonattainment areas, and that the state had not sufficiently met the 11 factors qualifying them for partial designation.⁸¹

Early Action Compacts – Five areas of the state have entered into Early Action Compacts: the Asheville area, covering Buncombe County; Fayetteville, covering Cumberland County; the Hickory/Morganton/Lenoir area, covering all or parts of Alexander, Burke, Caldwell and Catawba counties; the Piedmont Triad, including the cities of Winston-Salem, Greensboro and Highpoint, and encompassing 11 counties; and the Unifour area, covering Alexander, Burke, Caldwell and Catawba counties.

PM_{2.5} Standard – Cabarrus, Catawba, Davidson, Forsyth, McDowell and Mecklenburg counties failed to meet the PM_{2.5} standard based on 2000-2002 air quality monitoring data. Based on 2001-2003 data, state officials recommend that Davidson and Catawba counties (in the Greensboro/Winston-Salem/Highpoint and Hickory/Newton/Conover areas, respectively) be designated nonattainment.⁸²

Vehicle Emission Inspection – Currently, 23 North Carolina counties require biennial automobile emission inspections. By January 1, 2006, the inspection program will have expanded to 48 counties. Beginning July 1, 2002, all 1996 and newer gasoline-powered vehicles registered in an affected county have been required to receive the On Board Diagnostics (OBD II) emission test. All other vehicles less than 25 years old will require an exhaust (tailpipe) emission inspection. Testing is decentralized and is performed at privately-owned facilities licensed by the state. The total cost of an inspection cannot exceed \$30. Waivers are allowed if an automobile's owner has spent a required waiver amount in parts and/or labor to bring the vehicle into compliance: a minimum expenditure of \$75 is required for 1976-1980 model year vehicles; and a minimum expenditure of \$200 is required for model years 1981 and newer.⁸³

Other Significant Control Strategies – North Carolina has long been championed by environmentalists as aggressive with its clean air improvements. In 1999, several Clean Air Act Amendments were passed that, among other measures, required on-board diagnostic testing of vehicle emissions, expanded vehicle inspection and maintenance testing from nine to 48 counties, and implemented the state’s own 8-hour ozone standard while the federal 8-hour standard was tied up in court. This legislation also expanded incentives for alternative fuel vehicles.

In 2002, North Carolina enacted the Clean Smokestacks Act, imposing stricter limits than the federal government requires on nitrogen oxides and sulfur dioxide. Under the Act, coal-fired power plants must cut NO_x emissions, year-round, by 77 percent by 2009, and SO₂ emissions by 75 percent by 2013. The Act also calls for a study of mercury and carbon dioxide emissions in North Carolina, with recommendations to be made to the General Assembly by September 2005 on possible controls for those two pollutants.⁸⁴ The law freezes electric rates for five years while allowing utilities to accelerate the write-off of their costs for installing new pollution controls - estimated at \$2.3 billion. It also allows the state attorney general to pursue lawsuits to force neighboring states to also cut their emissions to reduce transport into North Carolina. As previously noted, Attorney General Roy Cooper made use of this authority on March 18, 2004, formally petitioning to force the EPA to determine whether power plants in the following states significantly contribute to North Carolina’s challenges in meeting or maintaining particulate matter and ozone clean air standards: Alabama, Georgia, Illinois, Indiana, Kentucky, Maryland, Michigan, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia and West Virginia.⁸⁵

In March 2004, the state received the EPA’s distinguished Clean Air Excellence Award for the Clean Smokestacks Act. The annual accolade, established in 2000, “recognizes and honors outstanding projects, programs and individuals achieving cleaner air through innovative approaches.”⁸⁶



Oklahoma

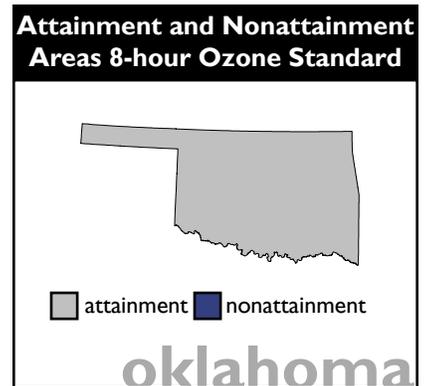
1-hour Standard – Oklahoma has no nonattainment areas under the 1-hour ozone standard, nor does the state contain any 1-hour Ozone Maintenance Areas. The Tulsa and Oklahoma City metropolitan areas have implemented Ozone Flex Plans.

8-hour Standard – State officials recommended that the Tulsa area be designated unclassifiable based on 2000-2002 ozone monitoring data, noting that 2003 data was incomplete.⁸⁷ The EPA, using 2001-2003 air monitoring data, modified the state’s recommendation, designating the area, and entire state, in attainment. The EPA notes, however, that Tulsa is at risk of recording an 8-hour ozone violation during the quality assurance process, in which case the entire Tulsa MSA would be designated in nonattainment.⁸⁸

Early Action Compacts – With preliminary tests showing that the Tulsa and Oklahoma City areas have at various times exceeded the 8-hour ozone standard in recent years, though neither have been designated nonattainment, both have entered into EACs with the EPA.

PM_{2.5} Standard – No counties failed to meet the PM_{2.5} standard based on 2000-2002 air quality monitoring data. Accordingly, officials recommend that the entire state be designated attainment.⁸⁹

Vehicle Emission Inspection – In 2001, the state of Oklahoma passed legislation ending its vehicle emission inspection program in Oklahoma City and Tulsa; however, Tulsa has proposed re-implementing one as part of its Early Action Compact for the 8-hour ozone standard.⁹⁰



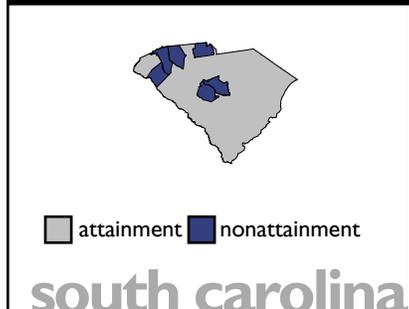
South Carolina

1-hour Ozone Standard – The state has no 1-hour ozone nonattainment areas. Cherokee County is a 1-hour Ozone Maintenance Area.



8-hour Ozone Standard – State officials recommended that the following two areas and counties be designated nonattainment areas: Columbia area, incorporating portions of Richland and Lexington counties, and the Greenville/Spartanburg/Anderson area, covering portions of Anderson, Greenville and Spartanburg counties.⁹¹

Attainment and Nonattainment Areas 8-hour Ozone Standard



The EPA modified the state's request and has designated parts of York County as part of the Charlotte/Gastonia/Rock Hill (in both North Carolina and South Carolina) nonattainment area, and has designated all, not portions, of Anderson, Greenville and Spartanburg counties in the Greenville/Spartanburg/Anderson nonattainment area.⁹²

Early Action Compact – South Carolina leads both the South and the nation with nine areas, incorporating 45 of the state's 46 counties, having entered into a statewide Early Action Compact. This achievement is the result of state stakeholders (including the General Assembly, the Department of Health and Environmental Control [DHEC], and many local communities, governments and groups) electing to take a voluntary, proactive approach to attain clean air prior to federal requirements and their attendant consequences. By way of background, in 2002, DHEC's Bureau of Air Quality (BAQ) developed a protocol of responsibilities for areas wishing to participate in an EAC, subsequently holding a series of public meetings around the state to garner support of their pursuit to form one.⁹³ The BAQ allowed stakeholders the opportunity to comment and participate in the EAC development, met individually with myriad local groups to further emphasize the importance of the statewide compact, and was successful in soliciting the statewide approach prior to EPA's 2002 Early Action Compact deadline.

In May 2003, the General Assembly passed a concurrent resolution that supported the EAC effort, officially establishing the dates and milestones for the plan's implementation and creating an intergovernmental workgroup for the purpose of promoting policies to reduce air pollution throughout the state.⁹⁴ As a result of South Carolina's efforts, all 8-hour ozone standard nonattainment counties have joined the statewide EAC. The state expects to submit its early action SIP by November 2004, and have its emission control strategies in place and begin its transportation conformity within a year of that date.

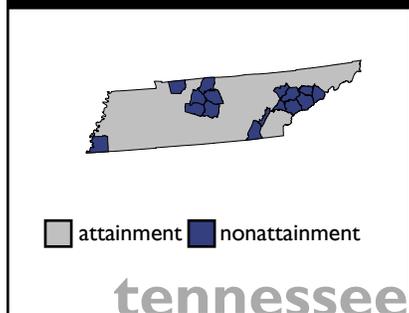
PM_{2.5} Standard – Based on 2000-2002 air quality monitoring data, Greenville County was the only county in the state failing to meet the PM_{2.5} standard. Reviewing 2001-2003 data, officials recommend that the entire state be designated in attainment.

Tennessee

1-hour Standard – All areas of Tennessee currently meet the 1-hour ozone standard. The metropolitan areas of Knoxville, Memphis and Nashville had previously been in nonattainment, classified as marginal, marginal and moderate, respectively, but are now 1-hour Ozone Maintenance Areas.



Attainment and Nonattainment Areas 8-hour Ozone Standard



8-hour Standard – State officials recommended that seven areas be designated as nonattainment for the 8-hour ozone standard: the Chattanooga area, to include Hamilton and Meigs counties; Haywood County; the Knoxville area, covering Anderson, Blount, Jefferson, Knox, Loudon and Sevier counties; the Memphis area, Shelby County; the Nashville area, to cover Davidson, Sumner, Rutherford, Wilson and Williamson counties; and the Tri-Cities area, incorporating Sullivan and Washington counties.⁹⁵ Initially, the EPA intended to add Marion County to the Chattanooga area, Union County to the

Knoxville area, Fayette and Tipton counties to the Memphis area, and Cheatham, Dickson and Robertson counties to the Nashville area, noting that the state had not adequately justified why these counties should not be within the nonattainment areas' presumptive boundaries.⁹⁶ On April 15, when EPA released its final designations, none of those modifications had been made. However, the EPA did make some adjustments, adding Hawkins County to the Tri-Cities nonattainment area and creating a new nonattainment area, Clarkesville/Hopkinsville (in both Tennessee and Kentucky), incorporating Montgomery County.

Early Action Compacts – Tennessee was second only to South Carolina, both in the South and nationally, in the number of Early Action Compacts having been adopted in the state: the Chattanooga area, Haywood County, the Knoxville area, the Memphis area, the Nashville area, Putnam County, and the Tri-Cities area. However, in 2004, the EPA invalidated the Chattanooga, Knoxville and Memphis EACs, claiming that the areas had not met set milestones with improving their air quality.

PM_{2.5} Standard – The following counties failed to meet the PM_{2.5} standard based on 2000-2002 data: Davidson, Hamilton, Knox, McMinn, Roane, and Sullivan.⁹⁷ Based on preliminary 2001-2003 data, state officials recommend that all of these counties, except Davidson, be designated PM_{2.5} nonattainment.⁹⁷

Vehicle Emission Inspection – Under the Middle Tennessee Vehicle Inspection Program, vehicles with a model year of 1975 and newer, and a gross weight of 8,500 pounds or less, are required to undergo annual vehicle emission testing in Davidson, Rutherford, Sumner, Williamson and Wilson counties.⁹⁸ Motorcycles and diesel fueled vehicles are exempt. The test fee is \$10. Vehicles registered in Shelby county must pass emission testing administered by the city of Memphis.⁹⁹

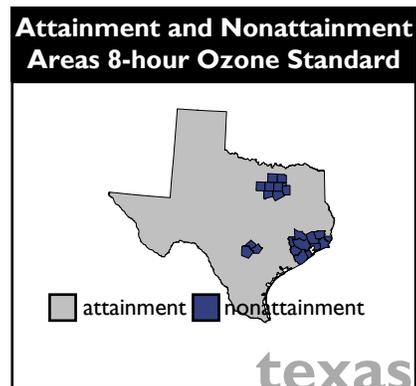
Other Significant Control Strategies – On July 23, 2003, Governor Phil Bredesen issued an executive order creating an Interagency Working Group on Air Quality to “identify actions state agencies can take to reduce their own impacts on air quality while supporting Tennessee communities and businesses in their ongoing efforts to comply with federal air quality standards.” The group, headed by the commissioner of the Department of Environment and Conservation, will make recommendations on state action to help Tennessee meet the 8-hour standard, coordinate interagency resources, collect and analyze information and data, and identify and implement needed training. It will also explore specific air quality efforts including transportation control measures, mass transit, congestion mitigation projects, idling minimization, use of alternative, cleaner fuels, and local air quality education programs.¹⁰⁰



Texas

1-hour Standard – Texas encompasses four 1-hour nonattainment areas: Houston/Galveston, Beaumont/Port Arthur, El Paso and Dallas/Fort Worth. Together, these areas cover 16 counties. While there are no 1-hour Ozone Maintenance Areas within the state, three areas have voluntarily implemented Ozone Flex Plans: Austin/San Marcos, Corpus Christi, and San Antonio.

8-hour Standard – State officials recommended that the 1-hour ozone nonattainment areas of Houston, covering Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery and Waller counties; Beaumont/Port Arthur, covering Hardin, Jefferson and Orange counties; and Dallas/Fort Worth, incorporating Collin, Dallas, Denton, Ellis, Johnson, Parker, and Tarrant counties be designated nonattainment under the 8-hour ozone standard. In addition, the state recommended that one additional area, San Antonio, covering Bexar, Comal, Guadalupe and Wilson counties, be designated nonattainment.¹⁰¹ Although 2000-2002 air quality data showed that the Austin/San Marcos and Longview/Marshall metropolitan areas were in violation, both areas had substantially improved their air quality by 2003 and had attained the 8-hour ozone standard. Noting Texas' significant air



quality improvements, EPA only slightly modified the states' initial recommendation by including Kaufman and Rockwall counties within the Dallas/Fort Worth nonattainment area.¹⁰²

Early Action Compacts – Three areas of the state have entered into Early Action Compacts for early compliance with the 8-hour ozone standard: Austin/San Marcos, covering Bastrop, Caldwell, Hays, Travis and Williamson counties; Longview/Marshall, including Gregg, Harrison, Rusk and Smith counties; and San Antonio, incorporating Bexar, Comal, Guadalupe and Wilson counties.

PM_{2.5} Standard – The Dallas/Fort Worth and Houston/Galveston areas may not have met the PM_{2.5} standard based on 2000-2002 monitoring data. State officials recommend that the entire state be designated in attainment with the upcoming standard.¹⁰³

Other Significant Control Strategies: The Texas Emissions Reduction Plan – Texas has long been challenged with meeting clean air requirements, a task made more difficult by the fact that the state is home to 19 million automobiles, 437 electric generating plants, 60 percent of the nation's petrochemical production and 25 percent of its refining capacity, and a population of nearly 22 million. Accordingly, reaching attainment has required active, sweeping emission control measures.

In addition to the many voluntary local planning efforts to improve air quality, in 2001, the Legislature passed the Texas Emissions Reduction Plan (TERP), one of the nation's most aggressive pollution reduction incentive programs. The Plan offers incentives to private and public facilities that voluntarily adopt cleaner emissions technology. With the overall goal of assuring that the state meets clean air requirements, one of its biggest aims has been to reduce polluting diesel emissions from construction, industrial, commercial and lawn equipment, with emphasis in the Dallas/Fort Worth and Houston/Galveston nonattainment areas.¹⁰⁴ Toward this end, a number of incentive programs have been implemented in those and other areas across the state, including:

- ▶ Emissions Reduction Incentive Grants Program – providing grants to offset the incremental cost associated with activities to reduce emissions of NO_x from high-emitting mobile diesel sources in nonattainment areas;
- ▶ Heavy-Duty Motor Vehicle Purchase or Lease Incentive Program – a statewide program whereby the state may reimburse a purchaser or lessee of a new, lower emission on-road, heavy-duty (over 10,000 pounds) vehicle in lieu of a higher-emitting diesel-powered vehicle;
- ▶ Light-Duty Motor Vehicle Purchase or Lease Incentive Program – similar to the Heavy-Duty Program, but providing incentives statewide for the purchase or lease of light-duty motor vehicles which meet lower NO_x emissions standards; and
- ▶ several energy efficiency programs – providing grants to electric utilities, public and private, for energy efficiency programs that include the retirement of materials and appliances that contribute to peak energy demand to ensure the reduction of energy demand, peak loads and associated pollutant emissions.¹⁰⁵

In addition, TERP offers funding for air quality research that focuses on reducing emissions and achieving compliance in nonattainment areas. In a blow to the state and its clean air efforts, TERP had its initial funding mechanism declared unconstitutional. As the plan was submitted among the SIP's control strategies, its termination would have caused the EPA to levy sanctions and halt federal highway dollars, and would have significantly jeopardized economic development in nonattainment areas. It was estimated that such sanctions would have cost the state between \$24 billion to \$35 billion over a decade if a legal funding mechanism could not be found.¹⁰⁶

The Legislature revisited funding issues and, in 2003, passed legislation setting out incentives and fees to reduce emissions and raise the needed revenue to fund the plan. Among other measures, the law assessed a 3-cent per gallon fee on most diesel fuels, which is projected to raise about \$90 million annually; a 2 percent surcharge on the sale, rental and lease of construction equipment, up from a previous 1 percent surcharge, which is expected to raise about \$35 million annually; a new 1 percent surcharge on diesel trucks; and a \$20 increase on vehicle title applications in nonattainment areas – those living in attainment areas were subjected to a \$15 increase. The legislation also authorized the Texas Commission on Environmental Quality to adopt new rules designed to streamline the grant-awarding process and make the program more accessible to small businesses.¹⁰⁷

Vehicle Emission Inspection – Since the mid-1990s, AirCheck Texas has required emissions inspections for gasoline-powered vehicles from two years to 24 years old if those vehicles are registered in the following areas and counties: Dallas/Fort Worth area, including Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall and Tarrant counties; the Houston area, consisting of Brazoria, Fort Bend, Galveston, Harris, and Montgomery counties; and the El Paso area covering El Paso County.

Motorcycles, antique and circus vehicles, and vehicles required to display a slow-moving vehicle emblem are exempt from testing. The combined safety and emissions inspection costs up to \$39.50, and failing vehicles may be retested for free at the same testing location within 15 days of the initial inspection. Waivers are available, per each testing cycle, to motorists who have “taken every reasonable measure to comply” with inspection requirements, and if such a waiver has a “minimal impact on air quality.” Also available is a low-mileage exemption for motorists who drive fewer than 5,000 miles per year so long as they have incurred at least \$100 of emissions-related repairs. Persons with incomes below the federal poverty level may be granted a one-year inspections extension; however, a second extension is not permitted in the following year. The AirCheck Texas Repair and Replacement Assistance Program provides vouchers to assist low-income persons to repair or replace emissions-failing vehicles. Persons whose total annual family take-home pay is less than or equal to twice the amount of the federal poverty level for designated family units are eligible to participate. A maximum \$600 voucher is available to assist with emissions-related repairs and, should the vehicle be retired, a voucher good for up to \$1,000 is available toward the purchase of a replacement automobile.¹⁰⁸



Virginia

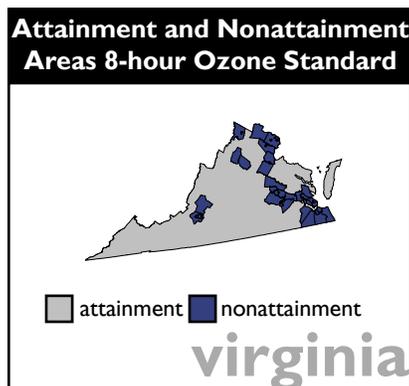
1-hour Ozone Standard – Virginia encompasses two 1-hour ozone nonattainment areas: the metropolitan Washington, D.C. area, covering the cities of Alexandria, Fairfax, Falls Church and Manassas, and Arlington, Fairfax, Loudoun, Prince William and Stafford counties; and the White Top Mountain area, covering Smyth County. The Hampton Roads and Richmond areas are 1-hour Ozone Maintenance Areas, with their nonattainment classifications having been marginal and moderate, respectively.

8-hour Ozone Standard – State officials recommended that the Frederick County, Hampton Roads, Richmond/Petersburg, Roanoke, Shenandoah National Park, Washington, D.C., and Fredericksburg areas be designated in nonattainment of the 8-hour ozone standard. Together, these areas encompass, in whole or in part, 19 counties and 21 cities.¹⁰⁹ The EPA modified the state’s request by adding two counties to the Norfolk nonattainment area and an additional city and county to the Richmond nonattainment area. The EPA also changed a partial county recommendation in the Richmond area to a full county inclusion.¹¹⁰

Early Action Compacts – The state covers two Early Action Compact areas: the Frederick County area, including the city of Winchester and Frederick County; and the Roanoke area, covering the cities of Roanoke and Salem, and Botetourt and Roanoke counties.

PM_{2.5} Standard – Based on 2000-2002 data, the city of Roanoke and Bristol and Salem counties failed to meet the PM_{2.5} air quality standard. Reviewing 2001-2003 data, state officials recommend that the entire state be designated in attainment of the standard.¹¹¹

Vehicle Emission Inspection – Vehicle owners in Northern Virginia (covering Arlington, Fairfax, Loudoun, Prince William and Stafford counties; and the cities of Alexandria, Fairfax, Falls Church, Manassas and Manassas Park), as well as regular commuters into the area and vehicles operating on federal installations, are subject to Air Check Virginia, an emissions inspection program. Emission inspections, which can cost up to a maximum of \$28, must be performed every two years at a permitted emissions inspection station. The program covers gasoline-powered vehicles less than 25 years old prior to January 1, of the current calendar year and that have a



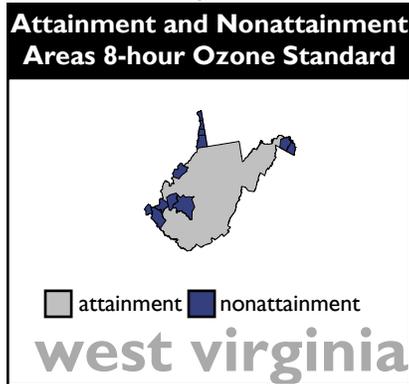
vehicle gross weight of 10,000 pounds or less.¹¹² Diesel-fueled vehicles, motorcycles, antique vehicles, fire and rescue equipment and vehicles powered exclusively by clean fuels are exempted from testing. Failing vehicles may be re-inspected for free, provided the test is performed within 14 days at the same facility which performed the initial inspection. Waivers, valid for up to two years, are available provided the owner has spent up to \$620 on emissions-related repairs to the vehicle at a certified emissions repair facility.

West Virginia

1-hour Ozone Standard – There are no 1-hour ozone nonattainment areas in the state; however, the Charleston, Greenbrier County, Huntington/Ashland (Kentucky), and Parkersburg areas are 1-hour Ozone Maintenance Areas, covering a combined total of six counties.



8-hour Ozone Standard – State officials recommended that the following five areas and counties be designated nonattainment for the 8-hour ozone standard: the Charleston area, covering Kanawha and Putnam counties; the Huntington/Ashland/Ironton area (in Kentucky, Ohio and West Virginia), covering Cabell and Wayne counties; the Parkersburg/Marietta area (Ohio and West Virginia), covering Wood County; the Steubenville/Weirton area (Ohio and West Virginia), to include Brooke and Hancock counties; and the Wheeling area (Ohio and West Virginia), including Marshall and Ohio counties.¹¹³ The EPA, while agreeing to the above recommendations, modified the state's plan by additionally designating the Martinsburg area (Berkeley and Jefferson counties) as nonattainment.¹¹⁴



Early Action Compact – The Martinsburg area has entered into an Early Action Compact.

PM_{2.5} Standard – The following counties failed to meet the PM_{2.5} air quality standard during the 2000-2002 monitoring period: Berkeley, Brooke, Cabell, Hancock, Kanawha, Marion, Marshall, Ohio and Wood. Evaluating 2001-2003 data, state officials recommend that the following areas be designated nonattainment under the standard: the Charleston area, to include Kanawha and Putnam counties; the Huntington/Ashland(KY)/ Ironton(OH) area, to include Cabell and Wayne counties; the Parkersburg/Marietta(OH) area, to include Wood County; the Steubenville(OH)/Weirton area, to include Brooke and Hancock counties; the Wheeling area, to include Marshall and Ohio counties; the Eastern Panhandle Area, to include Berkeley and Jefferson counties; and Marion County.¹¹⁵

Summary

The Clean Air Act directs state and local officials to develop and implement pollution control strategies to meet National Ambient Air Quality Standards for six criteria pollutants. States, in large part, have stepped up to the challenge, making considerable progress improving air quality through a number of air pollution control approaches, both voluntary and required. Among the most common of these measures have been transportation conformity, vehicle emission inspection and maintenance programs, use of reformulated gasoline, enhanced utility and industry regulation, and pollution reduction incentives and tax credits. Federal pollution abatement programs such as the phasedown of lead from gasoline and the acid rain control program, along with a host of other efforts among community and industrial groups, have greatly aided states' clean air efforts.

As a result, air quality has improved markedly since 1970. At the national level, though the country's economy and energy use have expanded substantially in the last three decades, between 1970 and 2000, carbon monoxide emissions have decreased by 25 percent; sulfur dioxide emissions are down by 44 percent; particulate matter from fuel combustion and industrial sources is down by 88 percent; airborne lead has been reduced by 98 percent; and volatile organic compounds have decreased by 43 percent.¹¹⁶ These are indeed remarkable reductions considering that the U.S. gross domestic product has increased 158 percent, energy consumption has risen 45 percent, and vehicle miles traveled have increased 143 percent over this period.¹¹⁷

While concentrations of five out of six of the Clean Air Act's criteria pollutants have significantly been reduced in the past 30 years, much more remains to be done in order for many areas to meet the ground-level ozone standard, where compliance progress has been the slowest. Meeting this standard will now be more difficult with the implementation of the newer, more stringent 8-hour ozone NAAQS. While there were only six Southern states incorporating 54 localities in nonattainment of the 1-hour ozone standard, there are now 13 states covering 195 local areas in nonattainment of the new 8-hour standard. This number may increase in coming years as cooler summers throughout most of the South in 2003 kept many areas from violating the 8-hour ozone standard over the last three-year air

monitoring period. Should warmer, stagnant weather return, many current attainment regions could fall into noncompliance. All areas, whether in or near nonattainment, will be hard pressed to develop and implement control strategies to come into or maintain clean air compliance.

While VOC emissions have decreased considerably (around 43 percent) in the past two decades, national NO_x emissions have risen by about 20 percent, though that increase has stabilized from 1995 to the present. The EPA attributes the majority of this increase to non-road engines, diesel vehicles and power plants.¹¹⁸ Among the greatest challenges posed to Southern communities in reducing NO_x emissions, and thus complying with the ozone standard, has been the region's immense population growth, coupled with increased automobile use and emissions. And, although today's automobiles produce about 80 percent less pollution than they did in 1960, cars continue to account for a significant portion of air pollution as the number on our roadways has increased, as have commuting distances and the appeal of light trucks and sport utility vehicles.

Accordingly, reducing emissions from mobile sources will have the greatest impact on curbing local ozone. Toward this end, states likely will expand vehicle emission testing and other controls to areas in noncompliance with the 8-hour standard. Efforts to educate and encourage the public on the benefits of reduced vehicle use, taking public transportation, and the use of clean fuels have been successful to some extent, and will be continued and expanded. In addition, EPA's recently adopted nonroad diesel fuel rule and pending motorcycle rule will reduce mobile emissions considerably, greatly aiding states and localities with clean air efforts.

Coal-fired power plants remain among stationary sources' largest contributors to both ground-level ozone (through NO_x emissions) and particulate matter (SO₂ emissions) in the South, though their harmful emissions have been significantly curtailed since the passage of the Clean Air Act. Although coal use for electric generation has increased by 195 percent between 1970 and 2000, total emissions per ton of coal consumed have decreased 70 percent, and particulate matter levels from coal-based utilities have decreased by 84 percent over this period.¹¹⁹ In addition,

SO₂ emissions, a major form of particulate matter, from coal-fired plants have decreased by approximately 33 percent in the last two decades. Nationally, average SO₂ ambient concentrations have been cut approximately 54 percent over the same period. Sulfur dioxide reductions are primarily due to the cap-and-trade controls implemented under the EPA's Acid Rain Program.¹²⁰

Building on that program, the EPA intends to further curb power plant NO_x, SO₂ and mercury emissions and better control interstate transport through its recently proposed Interstate Air Quality and Utility Mercury Reductions rules, among others. These cap-and-trade proposals do have critics who maintain that the anticipated cuts will not be met by industry, and that plants should be forced to install the most modern pollution controls. Proponents point out, however, that the regulations will reduce NO_x, SO₂ and mercury emissions more quickly and efficiently than current law, and will give companies incentives to begin reducing emissions immediately to generate credits. The NO_x SIP call already has set significant ozone-season emission caps on power plants and other industrial combustors, requiring the installation of more strict pollution controls.

While these mobile and stationary controls will continue reducing ozone levels, primarily through reducing NO_x emissions, they likely will not be enough for several areas to comply with the newer, stricter ozone and fine particulate matter standards. And, what is bad for one area is often bad for others. Adding to the contention surrounding states' clean air compliance, there are an increasing number of states taking actions against their upwind neighbors, claiming others' pollution crosses borders and negatively effects downwind states' attainment efforts. Recipient states have called for giving the EPA greater authority to deal with interstate transport, arguing that the federal government needs to take additional actions to control pollution which originates in other areas. EPA and court rulings on these issues already have impacted states' control strategies and attainment efforts, and likely will carry much more influence in future years as evidence of transport builds and interstate disputes are more pronounced.

Comments Richard Greene, EPA Region VI Administrator, "states are at a crossroads: the transition between the 1-hour and 8-hour

ozone standards."¹²¹ There is and will continue to be immense pressure to comply with the new ozone and fine particulate matter standards. Already having geared up for the stricter ozone regulations, Early Action Compacts have been adopted by 27 areas in 10 Southern states, covering 117 counties and three cities. These areas hope to reduce pollutants ahead of federal deadlines in order to avoid the stigma and regulations attached to official nonattainment designation. In addition, nonattainment areas not covered by EACs already have begun considering and implementing myriad control measures in an effort to comply with clean air requirements, with state implementation plans of these controls to be submitted to the EPA by 2007. Compliance dates for nonattainment areas range from 2007 to 2021, depending on the severity of their pollution.

Reaching and maintaining clean air attainment will continue to pose significant challenges to Southern states in coming years, with efforts being more difficult due to the region's continued population growth and increased automobile use, electric generation and industrial expansion. Accordingly, it will take extensive effort, cooperation and coordination among various groups, communities and governing entities at the state and local levels to comply with stricter ozone and particulate matter standards. Although current and pending federal regulatory initiatives may better aid this progress, the responsibility for meeting clean air requirements continues to lie primarily at the state and local level. This comes to the dismay of many, who urge that the federal government play a larger role in setting more strict national regulations. Whatever national standards are set, the prevalent argument among state environmental officials is that EPA's greatest assistance could come through ensuring that state regulations and required milestones are attainable, with technology that is available and affordable.

Currently, more than 150 million Americans reside in 475 counties that are in noncompliance with the 8-hour ozone standard. While most of these areas' air quality has improved in the past few decades, the bar has been raised. And, although deadlines for reaching attainment have been extended, that attainment is all the more difficult to achieve. In all affected areas, balancing health concerns, economic development and energy, industrial and transportation needs will be a challenge. 

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This *Regional Resource* was prepared for the Energy & Environment Committee of the Southern Legislative Conference (SLC) by Todd Edwards, SLC Regional Representative.

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