



# Danger in the Air:

Unhealthy Air Days in 2010 and 2011

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Courtney Abrams,  
Environment Arizona  
Research & Policy Center

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# Executive Summary

All Americans should be able to breathe clean air. But pollution from power plants and vehicles puts the health of our nation's children and families at risk. Ground-level ozone, the main component of smog, is one of the most harmful and one of the most pervasive air pollutants. According to the American Lung Association, nearly half of all Americans – 48 percent – still live in areas with unhealthy levels of smog pollution. Studies show that on days with high concentrations of smog pollution in the air, children and adults suffer more asthma attacks, increased respiratory difficulty, and reduced lung function. Exposure to smog pollution can exacerbate respiratory illness and even cause premature death. Sensitive populations including children, the elderly, and people with respiratory illness are particularly at risk of the adverse health effects of air pollution.

Though air quality has improved significantly in the last decade as a result of policies at the state and federal level, there is still much to be done, as there are millions of people living in metropolitan areas around the country exposed to multiple days each summer when the air is unhealthy to breathe. This report ranks metropolitan areas for their unhealthy air days in 2010 and 2011.

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*There are millions of people living in metropolitan areas around the country exposed to multiple days each summer when the air is unhealthy to breathe.*

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This report also presents data indicating that the problem may have been even worse than we thought. Because the national health standard for smog pollution set in 2008 was set at a level that scientists agree is not protective of public health, people across the country have been exposed to days of poor air quality each summer without even knowing it. We have calculated the additional days on which the air was unhealthy to breathe, according to a pollution threshold that is more consistent with what scientists say is necessary to protect public health. But because the 2008 standard was set too loosely, the public was not alerted to these days of unhealthy air.

The major data and findings of our report are broken down into the following categories:

**National rankings of the smoggiest metropolitan areas across the country in 2010:** The top five smoggiest metropolitan areas in the country in 2010 were in California. Riverside-San Bernardino, CA ranked as the smoggiest metropolitan area in the country with 110 smog days – meaning that the area, home to more than 3 million residents, had unhealthy air on one out of three days in 2010. Baltimore, MD; Washington, DC-MD-VA-WV; Philadelphia, PA-NJ; Houston, TX; and Atlanta, GA made up the rest of the top-ten smoggiest metropolitan areas list for 2010.

#### **Rankings of smoggiest cities across the country by population size:**

- Of large metropolitan areas, or those with populations over 1 million people, Riverside-San Bernardino, California suffered the worst smog pollution in 2010 by far, with 41 more days than the area in second place: Los Angeles-Long Beach, CA. The top five continue with Baltimore, MD; Washington, DC-VA-MD-WV; and Philadelphia, PA-NJ. Two metropolitan areas in each of the following states were among the top 20 smoggiest large areas for 2010: New Jersey, New York, North Carolina, Ohio, Pennsylvania, and Texas.
- Among mid-sized metropolitan areas, or those with populations between 250,000 and 1 million people, areas in California again topped the list for worst smog pollution, followed by areas in Tennessee, Delaware, New Jersey, Louisiana, Alabama and Ohio. The top twenty smoggiest mid-sized metropolitan areas include three areas in both Ohio and Pennsylvania and two areas each in Louisiana, Texas and Connecticut.
- San Luis Obispo-Atascadero-Paso Robles, California was the smoggiest small metropolitan area (population less than 250,000) in 2010. Three places in Wisconsin were among the top 10 smoggiest small metropolitan areas.

**State-by-state rankings of smog in 2010:** Across the state of California, there were 135 days in 2010, or more than a third of the year, when at least part of the state experienced smog levels exceeding the health standard. California, Texas, Utah, Maryland, Pennsylvania, New Jersey, Ohio and New York each had at least 30 days in 2010 when part of the state experienced smog levels exceeding the health standard – as many as a month’s worth of days when breathing the air could put people’s health at risk. Seventeen states experienced at least one “red alert” day for unhealthy air, indicating pollution levels high enough in a particular area so that anyone could start experiencing adverse health effects. Nine states did not record any days in 2010 on which levels of smog pollution exceeded the standard: Alaska, Hawaii, Idaho, Montana, Nebraska, North Dakota, South Dakota, Vermont and Wyoming.

**National rankings of the smoggiest metropolitan areas across the country in 2011, through August 21:** The areas of Los Angeles-Long Beach-Riverside, CA; Atlanta-Sandy Springs-Gainesville, GA-AL; Fresno-Madera, CA; Washington-Baltimore-Northern Virginia, DC-MD-VA-WV; and New York-Newark-Bridgeport, NY-NJ-CT-PA are the top five areas with the most smog days so far this summer, through August 21, 2011.

**The air was unhealthy to breathe many more times in 2010 and in 2011 than the public was alerted to because the 2008 standard was not set at a level to protect public health.** To demonstrate the discrepancy between the ozone standard set in 2008 (75 parts per billion) and a level that scientists agree is more protective of public health (60-70 parts per billion), this report also looks at the number of times that air monitors recorded a level of 71-75 ppb in 2010, and calculates how many additional days in each metropolitan area the public was exposed to unhealthy air according to a more protective level of 70 ppb. For example, in the Riverside-San Bernardino, CA area, there were 110 days when pollution levels exceeded the existing health standard, but there were an additional 25 days on which pollution levels exceeded a level that scientists agree is more protective of public health.





credit: "Los Angeles Smog," Ben Amstutz, Creative Commons.

## Policy Recommendations

To protect the health of our children and people across the country, many steps can be taken both at the state and federal level to reduce dangerous pollution.

First, EPA must set a National Ambient Air Quality Standard for ground-level ozone within the range of 60 to 70 parts per billion averaged over eight hours, as unanimously recommended by the independent board of air experts and scientists created under the Clean Air Act to provide periodic review and recommendations on air quality standards. The Obama administration considered updating the 2008 standard, but decided in early September 2011 to abandon this effort and update the standard in 2013.

Pollution from cars and trucks, which accounts for a third of smog-forming nitrogen oxide emissions in the United States, must be cleaned up by developing cleaner and more efficient vehicles and by improving and expanding public transportation systems.

State and federal governments should accelerate the transition away from fossil fuels and toward a clean energy economy, by passing policies to ensure we get more of our energy from clean, renewable sources such as wind and solar power.

Lastly, Congress should eliminate subsidies that help keep our nation dependent on polluting fossil fuels that put our health and environment at risk.

# Smog Pollution Threatens Public Health

Outdoor or “ambient” air pollution in the United States is a direct threat to public health. Ground-level ozone, the primary component of smog, is one of the most harmful air pollutants and is also one of the most pervasive. According to the American Lung Association, nearly half of all Americans - 48 percent - live in areas with unhealthy levels

of smog pollution.<sup>i</sup> Children, older adults, and people with respiratory illness are particularly vulnerable to the health effects of smog pollution.

Repeated exposure to smog pollution can cause permanent lung damage and even premature death. Smog pollution reacts with airway tissues and pro-

## **On days with high levels of smog pollution:**

- Deaths from cardiovascular and respiratory causes increase, according to a 14-year study conducted in 95 U.S. cities.<sup>iv</sup>
- Hospitals admit increased numbers of patients for respiratory and cardiovascular disease.<sup>v</sup> Scientists have estimated that typical summertime smog pollution is responsible for up to half of all respiratory hospital admissions on bad air days.<sup>vi</sup>
- More people visit hospital emergency rooms for asthma, pneumonia and upper respiratory infections.<sup>vii</sup> According to a RAND Corporation health study, in California alone, high levels of smog pollution contributed to nearly 30,000 emergency room visits and hospital admissions and \$193 million in hospital medical care expenses from 2005 to 2007.<sup>viii</sup>
- Children and adults suffer more asthma attacks, increased respiratory difficulty and reduced lung function.<sup>ix</sup> Approximately 3.2 million children and nearly 9.5 million adults with asthma live in regions with very high levels of smog pollution.<sup>x</sup> According to the U.S. Department of Health and Human Services, approximately 5,000 asthma-related deaths occur each year in the United States.<sup>xi</sup>
- Even healthy adults can experience a reduction in lung function of between 15 percent and more than 20 percent from exposure to low levels of ozone over several hours of moderate exercise.<sup>xii</sup>
- More adults miss work and more children miss school due to illness.<sup>xiii</sup>



credit: "Inhalation," Vladislav Gajic, Shutterstock

duces inflammation similar to sunburn on the inside of the lungs. This inflammation makes lung tissues less elastic, more sensitive to allergens, and less able to ward off infections.<sup>ii</sup> Exposure to smog can cause coughing, wheezing and throat irritation. Constant exposure to smog over time permanently damages lung tissues, decreases the ability to breathe normally, and exacerbates or even causes chronic diseases like asthma.<sup>iii</sup> Studies show that on days with high concentrations of smog pollution in the air, children and adults suffer more asthma attacks, increased respiratory difficulty and reduced lung function.

Damaging health effects from smog pollution can occur without any noticeable signs. People who live in areas with frequently high smog levels *may* find that their initial symptoms go away over time – particularly when exposure to high smog levels continues for several days;<sup>xiv</sup> yet smog pollution still causes lung damage even when acute symptoms are not noticeable. Smog exposure can also impact prenatal health, with research finding that in-utero exposure to smog pollution is associated with lower birth weight and intrauterine growth retardation.<sup>xv</sup>

Children, older adults, people who are active outdoors and people with existing respiratory system ailments suffer most from smog pollution. The American Lung Association estimates that more than 54 million people under the age of 18 or over the age of 65 live in counties in the United States with unhealthy levels of smog pollution.<sup>xvi</sup> Because children's respiratory systems are still developing, children who grow up in areas with high levels of smog pollution are at risk for developing permanently diminished lung capacity, increasing the risk of lung disease later in life.<sup>xvii</sup> Additionally, older adults exposed to high levels of smog pollution may experience an accelerated decline in lung function.<sup>xviii</sup>

For individuals suffering from asthma, exposure to smog pollution can make the lungs more sensitive to allergens and/or trigger a narrowing of the pathways of the lungs, so that breathing becomes like trying to suck a thick milkshake through a straw.<sup>xix</sup>

Additionally, smog pollution poses greater risks to people suffering from chronic bronchitis, emphysema, cardiovascular disease and diabetes.<sup>xx</sup>

# Sources of Smog Pollution

Ozone is a clear gas composed of three oxygen atoms that occurs both in the Earth's upper atmosphere and at ground level. Ozone that occurs in the upper atmosphere is generally natural in origin and forms a protective layer that shields life on Earth from the sun's harmful ultra-violet rays. This "good" ozone layer extends upward from approximately 6 to 30 miles above the Earth's surface.<sup>xxi</sup> At ground level, however, ozone can cause serious health problems.

Ground-level ozone, the primary component of smog, is not emitted directly from pollution sources but rather forms when nitrogen oxide (NO<sub>x</sub>) emissions and volatile organic compounds (VOCs) react in

the presence of heat and sunlight. Smog pollution is of particular concern during the summer months, from May to October, because higher temperatures and more abundant sunlight result in the build-up of higher ozone concentrations, putting public health at risk from smog pollution.

NO<sub>x</sub> and VOCs are produced by a variety of industrial and transportation sources. Burning fossil fuels to power our transportation sector, generate electricity, and power other industry produces 92 percent of all U.S. NO<sub>x</sub> emissions (see Figure 1)<sup>xxii</sup>. VOCs come from a range of sources, including transportation and industrial facilities (see Figure 2)<sup>xxiii</sup>.

Figure 1. U.S. NO<sub>x</sub> Emissions by Sector, 2008

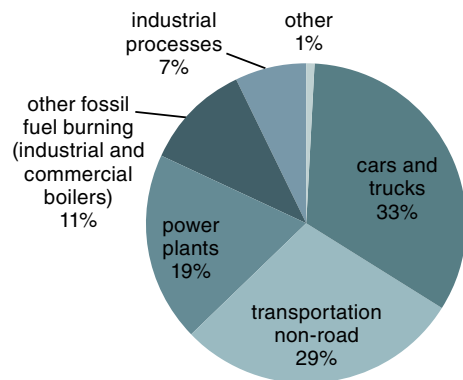
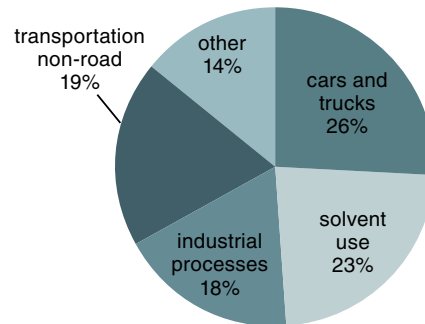


Figure 2. U.S. VOC Emissions by Sector, 2008



2008 is the most recent year for which complete emissions data are available. While EPA estimates emissions data annually, the agency inventories sources only every three years.

# Standards Must Be Set to Protect Public Health

## **NATIONAL HEALTH STANDARD FOR OZONE**

Under the Clean Air Act, the U.S. Environmental Protection Agency (EPA) has set National Ambient Air Quality Standards (NAAQS) for several pollutants, including ground-level ozone pollution. The primary health-based standards are required by law to be set at levels that are protective of public health with an adequate margin of safety, reflecting the latest science on the health impacts of the pollutant being regulated. Under the law, these standards must be re-evaluated and revised as necessary every five years. EPA is not permitted to take costs of implementation into account in setting NAAQS for a pollutant. Areas with high levels of pollution exceeding the standards must implement clean-up measures to protect public health.

In 2008, EPA updated the ozone standard from 80 parts per billion (ppb) averaged over an 8-hour period (set in 1997) to 75 ppb, to increase public health protections. However, this 75 ppb standard, set by then Administrator Stephen L. Johnson, was weaker than the recommendation of the independent board of air experts and scientists, the Clean Air Scientific Advisory Committee (CASAC), created by the Clean Air Act to provide recommendations to EPA's periodic review of the NAAQS. After reviewing more than 1,700 studies of the health impacts of ozone, the CASAC

unanimously recommended that the 2008 primary ozone standard be set within the range of 60-70 ppb averaged over eight hours, to protect public health. Scientists thus agree that the 2008 standard of 75 ppb is not adequate to protect public health.

In January 2010, EPA Administrator Lisa P. Jackson formally decided to reconsider the 2008 primary standard for ozone. In March 2011, the CASAC again reiterated its position that the science supports a tighter standard within 60-70 ppb in order to protect public health. However, in early September 2011, the Obama administration announced that it would not update the standard until 2013.

## **ALERTING THE PUBLIC: AIR QUALITY INDEX**

EPA's Air Quality Index (AQI) is based on the national health-based ambient air quality standards and is meant to help people understand what local air quality means to their health. Local news outlets report air quality by the AQI to inform the public of the best ways to protect their health at varying levels of air pollution.

The AQI has color-coded categories ranging from green (good air quality) to purple (very unhealthy air quality). The "orange-alert" level indicates to the pub-

lic that air pollution levels are high enough to affect sensitive populations, including children, older adults, and people with respiratory or cardiovascular illness. At the “red-alert” level, anyone may begin to experience some adverse health effects, and members of sensitive groups may experience more serious effects. The AQI is standardized across pollutants on a 0-300 scale,

where 100 equals the current air quality standard for each pollutant.

See Figure 3 for a detailed look at EPA’s Air Quality Index for ground-level ozone and what it means for public health.

**Figure 3. EPA’s Air Quality Index for Ground-Level Ozone<sup>xxiv</sup>**

| AQI     | Level of Health Concern                 | 8-Hour Ozone Concentration (parts per billion) | EPA’s Recommendations to Protect Health  |
|---------|---|--|--|
| 0-50    | Green (good)                            | 0-59 ppb                                       | None.  |
| 51-100  | Yellow (moderate)                       | 60-75 ppb                                      | Unusually sensitive people should consider reducing prolonged or heavy exertion.   |
| 101-150 | Orange (Unhealthy for Sensitive Groups) | 76-95 ppb                                      | The following groups should <u>reduce prolonged</u> or <u>heavy</u> outdoor exertion: people with lung disease, such as asthma; children and older adults; people who are active outdoors.   |
| 151-200 | Red (Unhealthy)                         | 96-115 ppb                                     | The following groups should <u>avoid prolonged</u> or <u>heavy</u> outdoor exertion: people with lung disease, such as asthma; children and older adults; people who are active outdoors. Everyone else should limit prolonged outdoor exertion. |
| 201-300 | Purple (Very Unhealthy)                 | 116-374 ppb                                    | The following groups should <u>avoid all</u> outdoor exertion: people with lung disease, such as asthma; children and older adults; people who are active outdoors. Everyone else should limit outdoor exertion.                                 |



# Report Findings

This report examines smog pollution levels in 2010 and 2011 from the nation's networks of ozone air quality monitors, as reported to the U.S. EPA from the states. Though air quality has improved significantly in the last decade, there is still much to be done, as there are millions of people living in metropolitan areas around the country exposed to multiple days each summer when the air is unhealthy to breathe.

This report documents the number of days that smog pollution levels exceeded the 2008 national ozone standard for the calendar year 2010 and for 2011 through Aug 21, 2011, by metropolitan area. Metropolitan areas have varying numbers of air quality monitors, so we've analyzed air quality primarily by the number of "smog days," or days on which at least one air quality monitor in the given area exceeded the national primary ozone standard. We've used U.S. Census-designated Metropolitan Statistical Areas and Primary Metropolitan Statistical Areas for the geographic breakdown of metropolitan areas for 2010, and larger Combined Statistical Areas that encompass multiple cities for 2011.

This report also presents data indicating that the problem may have been worse than we thought. We've calculated the number of additional days that the air was unhealthy to breathe according to the latest scientific studies, but that the public was not

alerted to because the 2008 standard was set outside of scientific recommendations.

## THE SMOGGIEST METROPOLITAN AREAS IN 2010

### National Rankings

The top five smoggiest metropolitan areas in the country in 2010 were in California. Riverside-San Bernardino, CA ranked as the smoggiest city in the country with 110 smog days – meaning that the area, home to more than 3 million residents, had unhealthy air on one out of three days in 2010. Twenty-four of those days were categorized as "red-alert days," meaning that air quality was so poor that anyone could experience adverse health effects, and that sensitive populations – children, the elderly, and people with respiratory illness – could experience worse effects. The Riverside-San Bernardino area also experienced the only two "purple-alert" days recorded in a metropolitan area in 2010, where the air was so unhealthy that everyone was alerted to limit their outdoor exertion, and sensitive groups were alerted to avoid all outdoor exertion.

Areas along the East Coast and in Texas made up the rest of the top ten smoggiest areas list for 2010. See Table 1 for the top twenty smoggiest metropolitan areas in the country, and Appendix A for a full ranking of metropolitan areas across the country.

**Table 1. Top Smoggiest Areas in the United States, 2010**

| Rank | Metropolitan Area                          | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Exceedance (ppb) |
|------|--|------------|-------------------|----------------|-------------------|--------------------------|
| 1    | Riverside-San Bernardino, CA               | 3,254,821  | 110               | 24             | 2                 | 123                      |
| 2    | Visalia-Tulare-Porterville, CA             | 368,021    | 78                | 6              | 0                 | 104                      |
| 3    | Bakersfield, CA                            | 661,645    | 69                | 10             | 0                 | 107                      |
| 3    | Los Angeles-Long Beach, CA                 | 9,519,338  | 69                | 3              | 0                 | 105                      |
| 5    | Fresno, CA                                 | 922,516    | 42                | 6              | 0                 | 104                      |
| 6    | Baltimore, MD                              | 2,552,994  | 33                | 6              | 0                 | 115                      |
| 6    | Washington, DC-MD-VA-WV                    | 4,923,153  | 33                | 3              | 0                 | 100                      |
| 8    | Philadelphia, PA-NJ                        | 5,100,931  | 29                | 3              | 0                 | 101                      |
| 9    | Houston, TX                                | 4,177,646  | 27                | 1              | 0                 | 97                       |
| 10   | Atlanta, GA                                | 4,112,198  | 23                | 1              | 0                 | 98                       |
| 10   | Sacramento, CA                             | 1,628,197  | 23                | 4              | 0                 | 112                      |
| 10   | St. Louis, MO-IL                           | 2,603,607  | 23                | 0              | 0                 | 91                       |
| 13   | Knoxville, TN                              | 687,249    | 20                | 0              | 0                 | 84                       |
| 14   | Louisville, KY-IN                          | 1,025,598  | 19                | 1              | 0                 | 96                       |
| 15   | Monmouth-Ocean, NJ                         | 1,126,217  | 18                | 0              | 0                 | 95                       |
| 15   | Wilmington-Newark, DE-MD                   | 586,216    | 18                | 0              | 0                 | 90                       |
| 17   | Charlotte-Gastonia-Rock Hill, NC-SC        | 1,499,293  | 17                | 1              | 0                 | 96                       |
| 17   | Middlesex-Somerset-Hunterdon, NJ           | 1,169,641  | 17                | 0              | 0                 | 94                       |
| 17   | San Luis Obispo-Atascadero-Paso Robles, CA | 246,681    | 17                | 0              | 0                 | 90                       |
| 20   | Cleveland-Lorain-Elyria, OH                | 2,250,871  | 15                | 0              | 0                 | 90                       |
| 20   | Fort Worth-Arlington, TX                   | 1,702,625  | 15                | 0              | 0                 | 94                       |
| 20   | Trenton, NJ                                | 350,761    | 15                | 0              | 0                 | 95                       |

### Rankings By Population Size

In addition to the national rankings, we ranked metropolitan areas based on smog days in two other ways to draw comparisons among areas of similar size and geography, since smog pollution levels can vary highly across both spectrums. For example, larger cities may experience more smog pollution than smaller cities due to increased vehicle and industrial emissions. In order to compare cities of similar sizes, we divided metropolitan areas into three categories, and ranked them by the number of smog days within those size categories: large metropolitan areas with populations above 1 million, mid-sized metropolitan areas with populations between 250,000 and 1 million, and small metropolitan areas with populations under 250,000. Second, since smog pollution varies by geography as well, we've ranked metropolitan areas within each state for smog days. The top areas in each of these

categories is discussed below, and for the full ranking of metropolitan areas by size, see Appendix B; for the full list of metropolitan areas ranked by smog days within each state, see Appendix C.

Of large metropolitan areas, or those with populations over 1 million people, Riverside-San Bernardino, California suffered the worst smog pollution in 2010 by far, with 41 more smog days than the area in second place: Los Angeles-Long Beach, CA. The top five continue with Baltimore, MD; Washington, DC-VA-MD-WV; and Philadelphia, PA-NJ. Two metropolitan areas in each of the following states were among the top 20 smoggiest large areas: New Jersey, New York, North Carolina, Ohio, Pennsylvania and Texas. A list of the top 30 large metropolitan areas with the worst smog pollution in 2010 can be found in Table 2.



**Table 2. Top Smoggiest Large Metropolitan Areas, 2010**

| Rank | Metropolitan Area                       | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Exceedance (ppb) |
|------|---|------------|-------------------|----------------|-------------------|--------------------------|
| 1    | Riverside-San Bernardino, CA            | 3,254,821  | 110               | 24             | 2                 | 123                      |
| 2    | Los Angeles-Long Beach, CA              | 9,519,338  | 69                | 3              | 0                 | 105                      |
| 3    | Baltimore, MD                           | 2,552,994  | 33                | 6              | 0                 | 115                      |
| 3    | Washington, DC-MD-VA-WV                 | 4,923,153  | 33                | 3              | 0                 | 100                      |
| 5    | Philadelphia, PA-NJ                     | 5,100,931  | 29                | 3              | 0                 | 101                      |
| 6    | Houston, TX                             | 4,177,646  | 27                | 1              | 0                 | 97                       |
| 7    | Atlanta, GA                             | 4,112,198  | 23                | 1              | 0                 | 98                       |
| 7    | Sacramento, CA                          | 1,628,197  | 23                | 4              | 0                 | 112                      |
| 7    | St. Louis, MO-IL                        | 2,603,607  | 23                | 0              | 0                 | 91                       |
| 10   | Louisville, KY-IN                       | 1,025,598  | 19                | 1              | 0                 | 96                       |
| 11   | Monmouth-Ocean, NJ                      | 1,126,217  | 18                | 0              | 0                 | 95                       |
| 12   | Charlotte-Gastonia-Rock Hill, NC-SC     | 1,499,293  | 17                | 1              | 0                 | 96                       |
| 12   | Middlesex-Somerset-Hunterdon, NJ        | 1,169,641  | 17                | 0              | 0                 | 94                       |
| 14   | Cleveland-Lorain-Elyria, OH             | 2,250,871  | 15                | 0              | 0                 | 90                       |
| 14   | Fort Worth-Arlington, TX                | 1,702,625  | 15                | 0              | 0                 | 94                       |
| 16   | Cincinnati, OH-KY-IN                    | 1,646,395  | 14                | 0              | 0                 | 94                       |
| 16   | New York, NY                            | 9,314,235  | 14                | 1              | 0                 | 113                      |
| 16   | San Diego, CA                           | 2,813,833  | 14                | 0              | 0                 | 90                       |
| 19   | Greensboro-Winston Salem-High Point, NC | 1,251,509  | 13                | 0              | 0                 | 93                       |
| 19   | Memphis, TN-AR-MS                       | 1,135,614  | 13                | 0              | 0                 | 91                       |
| 19   | Nassau-Suffolk, NY                      | 2,753,913  | 13                | 0              | 0                 | 92                       |
| 19   | Pittsburgh, PA                          | 2,358,695  | 13                | 1              | 0                 | 105                      |
| 23   | Dallas, TX                              | 3,519,176  | 12                | 0              | 0                 | 87                       |
| 23   | Detroit, MI                             | 4,441,551  | 12                | 0              | 0                 | 89                       |
| 25   | Denver, CO                              | 2,109,282  | 11                | 0              | 0                 | 89                       |
| 26   | Chicago, IL                             | 8,272,768  | 10                | 0              | 0                 | 88                       |
| 26   | Nashville, TN                           | 1,231,311  | 10                | 0              | 0                 | 88                       |
| 26   | Phoenix-Mesa, AZ                        | 3,251,876  | 10                | 0              | 0                 | 85                       |
| 29   | Las Vegas, NV-AZ                        | 1,563,282  | 9                 | 0              | 0                 | 84                       |
| 29   | Newark, NJ                              | 2,032,989  | 9                 | 0              | 0                 | 94                       |

Among mid-sized metropolitan areas, or those with populations between 250,000 and 1 million people, areas in California again topped the list for worst smog pollution, followed by areas in Tennessee, Delaware, New Jersey, Louisiana, Alabama and Ohio. See Table 3 for the top twenty rankings among mid-sized metropolitan areas, which include three areas in both Ohio and Pennsylvania and two areas each in Louisiana, Texas and Connecticut.

**Table 3. Top Smoggiest Mid-Sized Metropolitan Areas, 2010**

| Rank | Metropolitan Area                   | Population | Smog Days in 2010 | Red-Alert Days | Highest Exceedance (ppb) |
|------|-------------------------------------|------------|-------------------|----------------|--------------------------|
| 1    | Visalia-Tulare-Porterville, CA      | 368,021    | 78                | 6              | 104                      |
| 2    | Bakersfield, CA                     | 661,645    | 69                | 10             | 107                      |
| 3    | Fresno, CA                          | 922,516    | 42                | 6              | 104                      |
| 4    | Knoxville, TN                       | 687,249    | 20                | 0              | 84                       |
| 5    | Wilmington-Newark, DE-MD            | 586,216    | 18                | 0              | 90                       |
| 6    | Trenton, NJ                         | 350,761    | 15                | 0              | 95                       |
| 7    | Baton Rouge, LA                     | 602,894    | 14                | 0              | 89                       |
| 7    | Birmingham, AL                      | 921,106    | 14                | 0              | 88                       |
| 7    | Hamilton-Middletown, OH             | 332,807    | 14                | 0              | 86                       |
| 10   | Beaumont-Port Arthur, TX            | 385,090    | 13                | 0              | 91                       |
| 10   | Lancaster, PA                       | 470,658    | 13                | 0              | 95                       |
| 10   | Ventura, CA                         | 753,197    | 13                | 0              | 90                       |
| 13   | Allentown-Bethlehem-Easton, PA      | 637,958    | 12                | 0              | 94                       |
| 14   | Dayton-Springfield, OH              | 950,558    | 11                | 0              | 82                       |
| 14   | Modesto, CA                         | 446,997    | 11                | 1              | 96                       |
| 14   | Stamford-Norwalk, CT                | 353,556    | 11                | 0              | 91                       |
| 17   | Richmond-Petersburg, VA             | 996,512    | 10                | 2              | 98                       |
| 18   | Bridgeport, CT                      | 459,479    | 9                 | 0              | 80                       |
| 18   | Shreveport-Bossier City, LA         | 392,302    | 9                 | 0              | 90                       |
| 20   | Canton-Massillon, OH                | 406,934    | 8                 | 0              | 88                       |
| 20   | Galveston-Texas City, TX            | 250,158    | 8                 | 0              | 91                       |
| 20   | Greenville-Spartanburg-Anderson, SC | 962,441    | 8                 | 0              | 82                       |
| 20   | Reading, PA                         | 373,638    | 8                 | 0              | 87                       |

San Luis Obispo-Atascadero-Paso Robles, California was the smoggiest small metropolitan area (population less than 250,000) in 2010. Three places in Wisconsin were among the top 10 (see Table 4).

**Table 4. Top Smoggiest Small Metropolitan Areas, 2010**

| Rank | Metropolitan Area                          | Population | Smog Days in 2010 | Red-Alert Days | Highest Exceedance (ppb) |
|------|--|------------|-------------------|----------------|--------------------------|
| 1    | San Luis Obispo-Atascadero-Paso Robles, CA | 246,681    | 17                | 0              | 90                       |
| 2    | Brazoria, TX                               | 241,767    | 11                | 0              | 94                       |
| 2    | Merced, CA                                 | 210,554    | 11                | 1              | 96                       |
| 4    | Danbury, CT                                | 217,980    | 7                 | 1              | 97                       |
| 4    | Kenosha, WI                                | 149,577    | 7                 | 0              | 89                       |
| 4    | Sheboygan, WI                              | 112,646    | 7                 | 0              | 92                       |
| 7    | Jamestown, NY                              | 139,750    | 6                 | 0              | 89                       |
| 7    | Longview-Marshall, TX                      | 208,780    | 6                 | 0              | 80                       |
| 7    | Racine, WI                                 | 188,831    | 6                 | 0              | 84                       |
| 7    | Vineland-Millville-Bridgeton, NJ           | 146,438    | 6                 | 0              | 83                       |
| 11   | Dover, DE                                  | 126,697    | 5                 | 0              | 92                       |
| 11   | Hagerstown, MD                             | 131,923    | 5                 | 0              | 90                       |
| 11   | Lake Charles, LA                           | 183,577    | 5                 | 0              | 84                       |
| 11   | New Bedford, MA                            | 175,198    | 5                 | 0              | 81                       |
| 11   | Parkersburg-Marietta, WV-OH                | 151,237    | 5                 | 0              | 79                       |
| 16   | Chico-Paradise, CA                         | 203,171    | 4                 | 0              | 78                       |
| 16   | Sharon, PA                                 | 120,293    | 4                 | 0              | 82                       |
| 16   | Steubenville-Weirton, OH-WV                | 132,008    | 4                 | 0              | 83                       |
| 16   | Wheeling, WV-OH                            | 153,172    | 4                 | 0              | 82                       |
| 16   | Yuma, AZ                                   | 160,026    | 4                 | 0              | 84                       |
| 21   | Altoona, PA                                | 129,144    | 3                 | 0              | 84                       |
| 21   | Charlottesville, VA                        | 159,576    | 3                 | 0              | 79                       |

## Rankings by Geography

Smog pollution varies by geography, as well. Some states create more pollution than others, and other states are subject to air pollution blowing into their borders from upwind states. Some states also have geography and weather patterns that make them inherently more subject to the development of smog than others. We've both ranked metropolitan areas within each state for smog days (see Table 5 for the smoggiest area in each state and Appendix C for a full list of metropolitan areas by state) and calculated the number of smog days for each state as a whole (Table 6). The numbers presented for full states include all the ozone-monitoring stations in the state, including monitoring stations not in metropolitan statistical areas.

Across the state of California, there were 135 days in 2010, or more than a third of the year, when at least part of the state experienced smog levels exceeding the health standard. California, Texas, Utah, Maryland, Pennsylvania, New Jersey, Ohio and New York each experienced at least 30 days in 2010 when part of the state experienced smog levels exceeding the health standard – as many as a month's worth of days when breathing the air could put people's health at risk. Seventeen states experienced at least one "red alert" day for unhealthy air, indicating pollution levels high enough in a particular area so that anyone could start experiencing adverse health effects. Nine states did not record any days on which levels of smog pollution exceeded the standard in 2010: Alaska, Hawaii, Idaho, Montana, Nebraska, North Dakota, South Dakota, Vermont and Wyoming.

**Table 5. Smoggiest Metropolitan Area in Each State, 2010**

| State         | Metropolitan Area            | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Exceedance (ppb) |
|---------------|------------------------------|------------|-------------------|----------------|-------------------|--------------------------|
| Alabama       | Birmingham, AL               | 921,106    | 14                | 0              | 0                 | 88                       |
| Arizona       | Phoenix-Mesa, AZ             | 3,251,876  | 10                | 0              | 0                 | 85                       |
| Arkansas      | Memphis, TN-AR-MS            | 1,135,614  | 13                | 0              | 0                 | 91                       |
| California    | Riverside-San Bernardino, CA | 3,254,821  | 110               | 24             | 2                 | 123                      |
| Colorado      | Denver, CO                   | 2,109,282  | 11                | 0              | 0                 | 89                       |
| Connecticut   | Stamford-Norwalk, CT         | 353,556    | 11                | 0              | 0                 | 91                       |
| DC            | Washington, DC-MD-VA-WV      | 4,923,153  | 33                | 3              | 0                 | 100                      |
| Delaware      | Wilmington-Newark, DE-MD     | 586,216    | 18                | 0              | 0                 | 90                       |
| Florida       | Pensacola, FL                | 412,153    | 3                 | 0              | 0                 | 88                       |
| Georgia       | Atlanta, GA                  | 4,112,198  | 23                | 1              | 0                 | 98                       |
| Illinois      | St. Louis, MO-IL             | 2,603,607  | 23                | 0              | 0                 | 91                       |
| Indiana       | Louisville, KY-IN            | 1,025,598  | 19                | 1              | 0                 | 96                       |
| Kansas        | Kansas City, MO-KS           | 1,776,062  | 6                 | 0              | 0                 | 84                       |
| Kentucky      | Louisville, KY-IN            | 1,025,598  | 19                | 1              | 0                 | 96                       |
| Louisiana     | Baton Rouge, LA              | 602,894    | 14                | 0              | 0                 | 89                       |
| Maine         | Portland, ME                 | 243,537    | 2                 | 1              | 0                 | 96                       |
|               | Portsmouth-Rochester, NH-ME  | 240,698    | 2                 | 0              | 0                 | 81                       |
| Maryland      | Baltimore, MD                | 2,552,994  | 33                | 6              | 0                 | 115                      |
|               | Washington, DC-MD-VA-WV      | 4,923,153  | 33                | 3              | 0                 | 100                      |
| Massachusetts | New Bedford, MA              | 175,198    | 5                 | 0              | 0                 | 81                       |
|               | Springfield, MA              | 591,932    | 5                 | 0              | 0                 | 91                       |
| Michigan      | Detroit, MI                  | 4,441,551  | 12                | 0              | 0                 | 89                       |
| Mississippi   | Memphis, TN-AR-MS            | 1,135,614  | 13                | 0              | 0                 | 91                       |
| Missouri      | St. Louis, MO-IL             | 2,603,607  | 23                | 0              | 0                 | 91                       |

**Table 5. Smoggiest Metropolitan Area in Each State, 2010, Continued**

| State          | Metropolitan Area                    | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Exceedance (ppb) |
|----------------|--------------------------------------|------------|-------------------|----------------|-------------------|--------------------------|
| Nevada         | Las Vegas, NV-AZ                     | 1,563,282  | 9                 | 0              | 0                 | 84                       |
| New Hampshire  | Boston, MA-NH                        | 3,406,829  | 3                 | 0              | 0                 | 83                       |
| New Jersey     | Philadelphia, PA-NJ                  | 5,100,931  | 29                | 3              | 0                 | 101                      |
| New Mexico     | Las Cruces, NM                       | 174,682    | 2                 | 0              | 0                 | 84                       |
| New York       | New York, NY                         | 9,314,235  | 14                | 1              | 0                 | 113                      |
| North Carolina | Charlotte-Gastonia-Rock Hill, NC-SC  | 1,499,293  | 17                | 1              | 0                 | 96                       |
| Ohio           | Cleveland-Lorain-Elyria, OH          | 2,250,871  | 15                | 0              | 0                 | 90                       |
| Oklahoma       | Oklahoma City, OK                    | 1,083,346  | 3                 | 0              | 0                 | 79                       |
| Oregon         | Portland-Vancouver, OR-WA            | 1,918,009  | 1                 | 0              | 0                 | 94                       |
|                | Salem, OR                            | 347,214    | 1                 | 0              | 0                 | 78                       |
| Pennsylvania   | Philadelphia, PA-NJ                  | 5,100,931  | 29                | 3              | 0                 | 101                      |
| Rhode Island   | New London-Norwich, CT-RI            | 293,566    | 3                 | 0              | 0                 | 78                       |
|                | Providence-Fall River-Warwick, RI-MA | 1,188,613  | 3                 | 0              | 0                 | 86                       |
| South Carolina | Charlotte-Gastonia-Rock Hill, NC-SC  | 1,499,293  | 17                | 1              | 0                 | 96                       |
| Tennessee      | Knoxville, TN                        | 687,249    | 20                | 0              | 0                 | 84                       |
| Texas          | Houston, TX                          | 4,177,646  | 27                | 1              | 0                 | 97                       |
| Utah           | Salt Lake City-Ogden, UT             | 1,333,914  | 4                 | 0              | 0                 | 91                       |
| Virginia       | Washington, DC-MD-VA-WV              | 4,923,153  | 33                | 3              | 0                 | 100                      |
| Washington     | Portland-Vancouver, OR-WA            | 1,918,009  | 1                 | 0              | 0                 | 94                       |
|                | Seattle-Bellevue-Everett, WA         | 2,414,616  | 1                 | 0              | 0                 | 77                       |
| West Virginia  | Washington, DC-MD-VA-WV              | 4,923,153  | 33                | 3              | 0                 | 100                      |
| Wisconsin      | Kenosha, WI                          | 149,577    | 7                 | 0              | 0                 | 89                       |
|                | Sheboygan, WI                        | 112,646    | 7                 | 0              | 0                 | 92                       |

**Table 6. States Ranked by Smog Days, 2010**

| State          | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) |
|----------------|-------------------|----------------|-------------------|-----------------------------|
| California     | 135               | 37             | 2                 | 123                         |
| Texas          | 48                | 1              |                   | 97                          |
| Utah*          | 45                | 15             | 5                 | 123                         |
| Maryland       | 43                | 7              |                   | 115                         |
| New Jersey     | 35                | 2              |                   | 111                         |
| Pennsylvania   | 35                | 3              |                   | 105                         |
| Ohio           | 33                |                |                   | 94                          |
| New York       | 30                | 1              |                   | 113                         |
| Tennessee      | 29                |                |                   | 88                          |
| Georgia        | 28                | 1              |                   | 98                          |
| North Carolina | 26                | 1              |                   | 96                          |
| Illinois       | 25                |                |                   | 88                          |
| Missouri       | 25                |                |                   | 91                          |
| Virginia       | 25                | 3              |                   | 98                          |
| Connecticut    | 24                | 1              |                   | 101                         |
| Louisiana      | 23                |                |                   | 93                          |
| Kentucky       | 21                | 1              |                   | 96                          |
| Colorado       | 19                |                |                   | 89                          |
| DC             | 18                | 1              |                   | 100                         |
| Delaware       | 18                | 2              |                   | 98                          |
| Indiana        | 18                |                |                   | 86                          |
| Alabama        | 15                |                |                   | 88                          |
| Arizona        | 14                |                |                   | 85                          |
| Massachusetts  | 14                | 1              |                   | 100                         |
| Michigan       | 14                |                |                   | 91                          |
| Wisconsin      | 11                |                |                   | 95                          |

| State          | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) |
|----------------|-------------------|----------------|-------------------|-----------------------------|
| Nevada         | 10                |                |                   | 84                          |
| West Virginia  | 10                |                |                   | 89                          |
| Florida        | 9                 |                |                   | 88                          |
| Arkansas       | 8                 |                |                   | 91                          |
| Maine          | 8                 | 1              |                   | 96                          |
| New Hampshire  | 8                 |                |                   | 82                          |
| Oklahoma       | 8                 |                |                   | 86                          |
| South Carolina | 8                 |                |                   | 82                          |
| Washington     | 8                 | 2              |                   | 110                         |
| Kansas         | 7                 |                |                   | 83                          |
| Mississippi    | 7                 |                |                   | 84                          |
| Rhode Island   | 6                 |                |                   | 86                          |
| New Mexico     | 4                 |                |                   | 84                          |
| Oregon         | 2                 |                |                   | 94                          |
| Iowa           | 1                 |                |                   | 77                          |
| Minnesota      | 1                 |                |                   | 76                          |
| Alaska         | 0                 |                |                   | 53                          |
| Hawaii         | 0                 |                |                   | 52                          |
| Idaho          | 0                 |                |                   | 73                          |
| Montana        | 0                 |                |                   | 65                          |
| Nebraska       | 0                 |                |                   | 71                          |
| North Dakota   | 0                 |                |                   | 70                          |
| South Dakota   | 0                 |                |                   | 69                          |
| Vermont        | 0                 |                |                   | 71                          |
| Wyoming        | 0                 |                |                   | 72                          |

\*In Utah, all but 5 of the smog days recorded occurred in Jan-Mar at monitoring stations in the desert, likely as a result of natural gas exploration, and not from the usual culprits of vehicles and power plants. Smog days are more likely during summer months because pollution from vehicles and power plants reacts with heat and sunlight to form smog.

## The Smoggiest Metropolitan Areas So Far in 2011

This report also documents preliminary data on smog pollution for the summer of 2011, through August 21, 2011. As this data is preliminary from EPA, it is not broken down into the distinct metropolitan areas through which the 2010 data was reported. Rather, the data is presented for broader Combined Statistical Areas, which are larger geographic areas that encompass multiple cities, as designated by the U.S.

Census. The areas of Los Angeles-Long Beach-Riverside, CA; Atlanta-Sandy Springs-Gainesville, GA-AL; Fresno-Madera, CA; Washington-Baltimore-Northern Virginia, DC-MD-VA-WV; and New York-Newark-Bridgeport, NY-NJ-CT-PA are the top five areas with the most smog days so far this summer. A list of the top 25 areas for smog pollution in 2011 can be found in Table 7, and a full list of all areas can be found in Appendix D.

**Table 7. Top Smoggiest Combined Statistical Areas, 2011 through Aug 21 - Preliminary**

| Rank | Combined Statistical Area                           | Smog Days in 2011 | Red-Alert Days | Purple-Alert Days | Highest Exceedance (ppb) |
|------|---|-------------------|----------------|-------------------|--------------------------|
| 1    | Los Angeles-Long Beach-Riverside, CA                | 85                | 21             | 3                 | 136                      |
| 2    | Atlanta-Sandy Springs-Gainesville, GA-AL            | 34                |                |                   | 94                       |
| 3    | Fresno-Madera, CA                                   | 28                | 1              |                   | 104                      |
| 3    | Washington-Baltimore-Northern Virginia, DC-MD-VA-WV | 28                | 7              |                   | 114                      |
| 5    | New York-Newark-Bridgeport, NY-NJ-CT-PA             | 27                | 7              |                   | 114                      |
| 6    | Sacramento--Arden-Arcade--Yuba City, CA-NV          | 23                | 1              |                   | 97                       |
| 6    | St. Louis-St. Charles-Farmington, MO-IL             | 23                | 2              |                   | 102                      |
| 8    | Charlotte-Gastonia-Salisbury, NC-SC                 | 21                |                |                   | 91                       |
| 9    | Cincinnati-Middletown-Wilmington, OH-KY-IN          | 20                | 1              |                   | 97                       |
| 10   | Dallas-Fort Worth, TX                               | 19                |                |                   | 95                       |
| 11   | Philadelphia-Camden-Vineland, PA-NJ-DE-MD           | 18                | 3              |                   | 101                      |
| 12   | Denver-Aurora-Boulder, CO                           | 17                | 1              |                   | 106                      |

| Rank | Combined Statistical Area                                   | Smog Days in 2011 | Red-Alert Days | Purple-Alert Days | Highest Exceedance (ppb) |
|------|---|-------------------|----------------|-------------------|--------------------------|
| 12   | Oklahoma City-Shawnee, OK                                   | 17                |                |                   | 86                       |
| 14   | Birmingham-Hoover-Cullman, AL                               | 15                | 1              |                   | 98                       |
| 14   | Chicago-Naperville-Michigan City, IL-IN-WI                  | 15                |                |                   | 93                       |
| 14   | Houston-Baytown-Huntsville, TX                              | 15                | 2              |                   | 112                      |
| 14   | Knoxville-Sevierville-La Follette, TN                       | 15                | 1              |                   | 98                       |
| 14   | Louisville/Jefferson County-Elizabethtown-Scottsburg, KY-IN | 15                | 2              |                   | 100                      |
| 14   | Tulsa-Bartlesville, OK                                      | 15                |                |                   | 95                       |
| 20   | Baton Rouge-Pierre Part, LA                                 | 12                |                |                   | 90                       |
| 20   | Kansas City-Overland Park-Kansas City, MO-KS                | 12                |                |                   | 90                       |
| 22   | Cleveland-Akron-Elyria, OH                                  | 11                |                |                   | 90                       |
| 22   | Pittsburgh-New Castle, PA                                   | 11                |                |                   | 84                       |
| 24   | Detroit-Warren-Flint, MI                                    | 10                |                |                   | 88                       |
| 24   | Little Rock-North Little Rock-Pine Bluff, AR                | 10                |                |                   | 84                       |

## Worse Than We Thought: Additional Days of Unhealthy Air in 2010 and 2011

A strong science-based public health standard is critical to limit dangerous air pollution, but also to alert the public to unhealthy air and ways to protect health. When the standard is set outside of the boundaries of the latest scientific recommendations, as it was in 2008, it means the public may be unknowingly exposed to unhealthy levels of air pollution.

To demonstrate the discrepancy between the ozone standard set in 2008 (75 parts per billion) and a level that scientists agree is more protective of public health (60-70 parts per billion), this report also looks at the number of times that air monitors recorded smog pollution levels of 71-75 ppb in 2010, and calculates how many additional days in each metropolitan area the public was exposed to unhealthy air according to a more protective level of 70 ppb. **These numbers illustrate that the air was unhealthy to breathe many more times in 2010 and 2011 than was reported to the public.**

We've calculated additional days of unhealthy air for all metropolitan areas in 2010, states as a whole in 2010, and for Combined Statistical Areas in 2011. For example, in the Riverside-San Bernardino, CA area, there were 110 days when pollution levels exceeded the existing health standard, but there were an additional 25 days on which pollution levels exceeded a level that scientists agree is more protective of public health. The top 25 metropolitan areas with the most total days on which the area's air was unhealthy to breathe according to a more protective standard can be found in Table 8, with a side-by-side comparison between the area's smog days in 2010 and additional days of unhealthy air, with three metropolitan areas experiencing 100 or more days of unhealthy air. The additional days of unhealthy air for each metropolitan area in 2010 can be found in Appendix A, listed according to smog day rankings, and in Appendix C, listed by state.

The additional days of unhealthy air for each state in 2010 can be found in Appendix E, and the additional days for each Combined Statistical Area in 2011 can be found in Appendix D, each with a side-by-side comparison to smog days in 2010.

**Table 8. Top Metropolitan Areas with the Most Total Days the Air was Unhealthy to Breathe According to a More Protective Standard, 2010**

| Rank | Metropolitan Area                          | Population | Total Days the Air Was Unhealthy to Breathe According to a More Protective Standard | Smog Days in 2010 | Additional Days the Air Was Unhealthy to Breathe |
|------|--|------------|---|-------------------|--|
| 1    | Riverside-San Bernardino, CA               | 3,254,821  | 135   | 110               | 25   |
| 2    | Los Angeles-Long Beach, CA                 | 9,519,338  | 101   | 69                | 32   |
| 3    | Visalia-Tulare-Porterville, CA             | 368,021    | 100   | 78                | 22   |
| 4    | Bakersfield, CA                            | 661,645    | 93  | 69                | 24   |
| 5    | Fresno, CA                                 | 922,516    | 59  | 42                | 17   |
| 6    | Baltimore, MD                              | 2,552,994  | 50  | 33                | 17   |
| 6    | Washington, DC-MD-VA-WV                    | 4,923,153  | 50  | 33                | 17   |
| 8    | Knoxville, TN                              | 687,249    | 47  | 20                | 27   |
| 9    | St. Louis, MO-IL                           | 2,603,607  | 41  | 23                | 18   |
| 10   | Atlanta, GA                                | 4,112,198  | 39  | 23                | 16   |
| 11   | Sacramento, CA                             | 1,628,197  | 38  | 23                | 15   |
| 12   | Charlotte-Gastonia-Rock Hill, NC-SC        | 1,499,293  | 37  | 17                | 20   |
| 13   | Philadelphia, PA-NJ                        | 5,100,931  | 36  | 29                | 7  |
| 14   | Louisville, KY-IN                          | 1,025,598  | 35  | 19                | 16   |
| 15   | Houston, TX                                | 4,177,646  | 34  | 27                | 7  |
| 16   | Middlesex-Somerset-Hunterdon, NJ           | 1,169,641  | 33  | 17                | 16   |
| 17   | San Luis Obispo-Atascadero-Paso Robles, CA | 246,681    | 32  | 17                | 15   |
| 18   | Las Vegas, NV-AZ                           | 1,563,282  | 31  | 9                 | 22   |
| 19   | Birmingham, AL                             | 921,106    | 30  | 14                | 16   |
| 19   | Cincinnati, OH-KY-IN                       | 1,646,395  | 30  | 14                | 16   |
| 19   | Wilmington-Newark, DE-MD                   | 586,216    | 30  | 18                | 12   |
| 22   | Greensboro-Winston Salem-High Point, NC    | 1,251,509  | 29  | 13                | 16   |
| 22   | Trenton, NJ                                | 350,761    | 29  | 15                | 14   |
| 24   | Nashville, TN                              | 1,231,311  | 28  | 10                | 18   |
| 24   | New York, NY                               | 9,314,235  | 28  | 14                | 14   |

# Policy Recommendations

Thanks to the steps EPA has already taken, air quality standards and emission controls are reducing emissions of dangerous smog-forming pollution from power plants and cars, and pollution levels have decreased in recent years. In addition, this summer EPA finalized its Cross-State Air Pollution Rule to reduce emissions of nitrogen oxides and sulfur dioxides from power plants in the eastern half of the country in order to protect families and communities downwind of dangerous smog and soot pollution. This rule is expected to save as many as 34,000 lives in 2014, and will help downwind communities meet national smog and soot standards to keep their residents safe.

However, the science is clear that the national primary standard for ozone set in 2008 at 75 parts per billion is not sufficiently protective of public health. As a result, emissions from power plants and vehicles are still too high and the public is breathing unhealthy air far too often. The primary national health standard is also what informs the Air Quality Index, EPA's tool for communicating to the public and communities that ambient air pollution levels are high enough to put public health at risk. The public has a right to know when the air is unhealthy to breathe, and having a standard that does not adhere to what the science says is sufficiently protective means that the public is sometimes unaware of unhealthy pollution levels, and

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*However, the science is clear that the national primary standard for ozone set in 2008 at 75 parts per billion is not sufficiently protective of public health.*

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as such, may not be prepared to take precautionary measures to protect their health or the health of their families.

**To protect public health, EPA must set a National Ambient Air Quality Standard for ground-level ozone within the range of 60-70 parts per billion averaged over eight hours.** This range was unanimously recommended to EPA prior to the 2008 rulemaking by the Clean Air Scientific Advisory Committee – the independent board of air experts and scientists created under the Clean Air Act to provide periodic review and recommendations on air quality standards – after they reviewed more than 1,700 studies on the health effects of smog pollution. The Clean Air Act requires that the standard be set based on protecting public health, and therefore must be set to meet the scientific recommendations.





credit: Lina Hayes, Creative Commons

**Pollution from cars and trucks accounts for a third of smog-forming nitrogen oxide emissions in the United States, and steps should be taken to reduce that pollution.** Vehicles should have the most up-to-date pollution control technology, and public transportation systems should be improved and expanded to enable people to drive less in their daily lives.

**State and federal governments should accelerate the transition away from fossil fuels and toward a clean energy economy.** Clean, renewable energy sources such as wind and solar power don't pollute our air and will never run out. Twenty-nine states already require a portion of their energy to be generated from clean, renewable sources; those states should increase their clean energy standards, and other states and the

federal government should adopt policies to ensure we get more of our energy from clean, renewable sources.

**Lastly, Congress should eliminate subsidies that help keep our nation dependent on polluting fossil fuels.** For decades, the coal and oil industry have been given hand-outs from the federal government. A 2009 report by the Environmental Law Institute found that traditional fossil fuels received more than five times more federal subsidies—including direct spending and tax breaks—than traditional renewables received during 2002-2008.<sup>xxv</sup> Electricity production incentives should target energy sources that provide benefits to our environment and our economy and that don't put our health at risk.

# Methodology

We obtained data on exceedances of the primary National Ambient Air Quality Standard for ozone, set in 2008 at 75 parts per billion averaged over eight hours, from the U.S. EPA for 2010, and for 2011 through August 21, 2011. We obtained the 2010 data from EPA's AirExplorer online tool, accessed the weeks of August 17-28, 2011. The 2011 data cited here is preliminary data compiled by EPA from multiple EPA sources and has not yet been verified; EPA does not use unverified data for regulatory purposes.

For each ozone-monitoring site, we obtained the maximum daily 8-hour ozone concentrations exceeding 75 parts per billion (ppb). We define a "smog day" as a day on which at least one monitor in a given metropolitan area exceeded the 8-hour ozone standard. We also obtained maximum daily 8-hour ozone concentrations of 71-75 ppb and calculated additional days of unhealthy air that each metropolitan area experienced, as the scientific community has recommended a standard within the range of 60-70 ppb to better protect public health. We calculated this data for 2010 for each metropolitan area and for each state. The numbers for each metropolitan area may not add up to the numbers for the particular state, because some ozone-monitoring stations are located outside of metropolitan areas. We calculated this data for 2011 for Combined Statistical Areas, which are broader geographic regions that encompass multiple cities.

A state can mark an exceedance of a standard as an

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*We define a "smog day" as a day on which at least one monitor in a given metropolitan area exceeded the 8-hour ozone standard.*

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"exceptional event" when it is caused by an unusual or naturally occurring event that is not reasonably controlled, such as a fire or fireworks. The data for 2010 does not include exceptional events; however, the data for 2011 may include exceptional events, as it is preliminary from EPA.

Metropolitan Statistical Areas (MSA) and Combined Statistical Areas (CSAs) are defined by the Office of Management and Budget. EPA compiles air quality data by MSA and CSA, as well as by county, state, and individual air quality monitors. We chose to present data by MSA and CSA to highlight pollution problems that put the public at risk in cities across the country.

The populations presented in this report for MSAs are from the 2000 decennial U.S. Census. This is because the U.S. Census only compiles population data by MSA every ten years and the data for MSA populations from the 2010 decennial census will not be ready until 2013.

# Appendices

## Appendix A. National Ranking of Metropolitan Areas by Smog Days in 2010

| Rank | Metropolitan Area                          | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard | Highest Concentration (ppb) |
|------|--|------------|-------------------|----------------|-------------------|--|-----------------------------|
| 1    | Riverside-San Bernardino, CA               | 3,254,821  | 110               | 24             | 2                 | 25   | 123                         |
| 2    | Visalia-Tulare-Porterville, CA             | 368,021    | 78                | 6              | 0                 | 22   | 104                         |
| 3    | Bakersfield, CA                            | 661,645    | 69                | 10             | 0                 | 24   | 107                         |
| 3    | Los Angeles-Long Beach, CA                 | 9,519,338  | 69                | 3              | 0                 | 32   | 105                         |
| 5    | Fresno, CA                                 | 922,516    | 42                | 6              | 0                 | 17   | 104                         |
| 6    | Baltimore, MD                              | 2,552,994  | 33                | 6              | 0                 | 17   | 115                         |
| 6    | Washington, DC-MD-VA-WV                    | 4,923,153  | 33                | 3              | 0                 | 17   | 100                         |
| 8    | Philadelphia, PA-NJ                        | 5,100,931  | 29                | 3              | 0                 | 7  | 101                         |
| 9    | Houston, TX                                | 4,177,646  | 27                | 1              | 0                 | 7  | 97                          |
| 10   | Atlanta, GA                                | 4,112,198  | 23                | 1              | 0                 | 16   | 98                          |
| 10   | Sacramento, CA                             | 1,628,197  | 23                | 4              | 0                 | 15   | 112                         |
| 10   | St. Louis, MO-IL                           | 2,603,607  | 23                | 0              | 0                 | 18   | 91                          |
| 13   | Knoxville, TN                              | 687,249    | 20                | 0              | 0                 | 27   | 84                          |
| 14   | Louisville, KY-IN                          | 1,025,598  | 19                | 1              | 0                 | 16   | 96                          |
| 15   | Monmouth-Ocean, NJ                         | 1,126,217  | 18                | 0              | 0                 | 9  | 95                          |
| 15   | Wilmington-Newark, DE-MD                   | 586,216    | 18                | 0              | 0                 | 12   | 90                          |
| 17   | Charlotte-Gastonia-Rock Hill, NC-SC        | 1,499,293  | 17                | 1              | 0                 | 20   | 96                          |
| 17   | Middlesex-Somerset-Hunterdon, NJ           | 1,169,641  | 17                | 0              | 0                 | 16   | 94                          |
| 17   | San Luis Obispo-Atascadero-Paso Robles, CA | 246,681    | 17                | 0              | 0                 | 15   | 90                          |
| 20   | Cleveland-Lorain-Elyria, OH                | 2,250,871  | 15                | 0              | 0                 | 10   | 90                          |

## Appendix A. National Ranking of Metropolitan Areas by Smog Days in 2010, Continued

| Rank | Metropolitan Area                       | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard | Highest Concentration (ppb) |
|------|---|------------|-------------------|----------------|-------------------|--|-----------------------------|
| 20   | Fort Worth-Arlington, TX                | 1,702,625  | 15                | 0              | 0                 | 3  | 94                          |
| 20   | Trenton, NJ                             | 350,761    | 15                | 0              | 0                 | 14   | 95                          |
| 23   | Baton Rouge, LA                         | 602,894    | 14                | 0              | 0                 | 9  | 89                          |
| 23   | Birmingham, AL                          | 921,106    | 14                | 0              | 0                 | 16   | 88                          |
| 23   | Cincinnati, OH-KY-IN                    | 1,646,395  | 14                | 0              | 0                 | 16   | 94                          |
| 23   | Hamilton-Middletown, OH                 | 332,807    | 14                | 0              | 0                 | 9  | 86                          |
| 23   | New York, NY                            | 9,314,235  | 14                | 1              | 0                 | 14   | 113                         |
| 23   | San Diego, CA                           | 2,813,833  | 14                | 0              | 0                 | 7  | 90                          |
| 29   | Beaumont-Port Arthur, TX                | 385,090    | 13                | 0              | 0                 | 11   | 91                          |
| 29   | Greensboro-Winston Salem-High Point, NC | 1,251,509  | 13                | 0              | 0                 | 16   | 93                          |
| 29   | Lancaster, PA                           | 470,658    | 13                | 0              | 0                 | 9  | 95                          |
| 29   | Memphis, TN-AR-MS                       | 1,135,614  | 13                | 0              | 0                 | 11   | 91                          |
| 29   | Nassau-Suffolk, NY                      | 2,753,913  | 13                | 0              | 0                 | 12   | 92                          |
| 29   | Pittsburgh, PA                          | 2,358,695  | 13                | 1              | 0                 | 6  | 105                         |
| 29   | Ventura, CA                             | 753,197    | 13                | 0              | 0                 | 5  | 90                          |
| 36   | Allentown-Bethlehem-Easton, PA          | 637,958    | 12                | 0              | 0                 | 9  | 94                          |
| 36   | Dallas, TX                              | 3,519,176  | 12                | 0              | 0                 | 12   | 87                          |
| 36   | Detroit, MI                             | 4,441,551  | 12                | 0              | 0                 | 6  | 89                          |
| 39   | Brazoria, TX                            | 241,767    | 11                | 0              | 0                 | 7  | 94                          |
| 39   | Dayton-Springfield, OH                  | 950,558    | 11                | 0              | 0                 | 10   | 82                          |
| 39   | Denver, CO                              | 2,109,282  | 11                | 0              | 0                 | 16   | 89                          |
| 39   | Merced, CA                              | 210,554    | 11                | 1              | 0                 | 14   | 96                          |
| 39   | Modesto, CA                             | 446,997    | 11                | 1              | 0                 | 8  | 96                          |
| 39   | Stamford-Norwalk, CT                    | 353,556    | 11                | 0              | 0                 | 2  | 91                          |
| 45   | Chicago, IL                             | 8,272,768  | 10                | 0              | 0                 | 10   | 88                          |
| 45   | Nashville, TN                           | 1,231,311  | 10                | 0              | 0                 | 18   | 88                          |
| 45   | Phoenix-Mesa, AZ                        | 3,251,876  | 10                | 0              | 0                 | 15   | 85                          |
| 45   | Richmond-Petersburg, VA                 | 996,512    | 10                | 2              | 0                 | 15   | 98                          |
| 49   | Bridgeport, CT                          | 459,479    | 9                 | 0              | 0                 | 9  | 80                          |
| 49   | Las Vegas, NV-AZ                        | 1,563,282  | 9                 | 0              | 0                 | 22   | 84                          |
| 49   | Newark, NJ                              | 2,032,989  | 9                 | 0              | 0                 | 9  | 94                          |
| 49   | Shreveport-Bossier City, LA             | 392,302    | 9                 | 0              | 0                 | 8  | 90                          |
| 53   | Canton-Massillon, OH                    | 406,934    | 8                 | 0              | 0                 | 10   | 88                          |
| 53   | Galveston-Texas City, TX                | 250,158    | 8                 | 0              | 0                 | 6  | 91                          |
| 53   | Greenville-Spartanburg-Anderson, SC     | 962,441    | 8                 | 0              | 0                 | 13   | 82                          |
| 53   | New Orleans, LA                         | 1,337,726  | 8                 | 0              | 0                 | 7  | 93                          |

**Appendix A. National Ranking of Metropolitan Areas by Smog Days in 2010, Continued**

| Rank | Metropolitan Area                          | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard | Highest Concentration (ppb) |
|------|--|------------|-------------------|----------------|-------------------|--|-----------------------------|
| 53   | Reading, PA                                | 373,638    | 8                 | 0              | 0                 | 15   | 87                          |
| 58   | Bergen-Passaic, NJ                         | 1,373,167  | 7                 | 0              | 0                 | 10   | 94                          |
| 58   | Danbury, CT                                | 217,980    | 7                 | 1              | 0                 | 8  | 97                          |
| 58   | Fort Collins-Loveland, CO                  | 251,494    | 7                 | 0              | 0                 | 14   | 82                          |
| 58   | Hartford, CT                               | 1,183,110  | 7                 | 0              | 0                 | 2  | 89                          |
| 58   | Kenosha, WI                                | 149,577    | 7                 | 0              | 0                 | 5  | 89                          |
| 58   | San Jose, CA                               | 1,682,585  | 7                 | 0              | 0                 | 2  | 91                          |
| 58   | Sheboygan, WI                              | 112,646    | 7                 | 0              | 0                 | 5  | 92                          |
| 65   | Atlantic-Cape May, NJ                      | 354,878    | 6                 | 0              | 0                 | 3  | 85                          |
| 65   | Chattanooga, TN-GA                         | 465,161    | 6                 | 0              | 0                 | 11   | 82                          |
| 65   | Columbus, OH                               | 1,540,157  | 6                 | 0              | 0                 | 14   | 88                          |
| 65   | Jamestown, NY                              | 139,750    | 6                 | 0              | 0                 | 10   | 89                          |
| 65   | Jersey City, NJ                            | 608,975    | 6                 | 1              | 0                 | 5  | 111                         |
| 65   | Kansas City, MO-KS                         | 1,776,062  | 6                 | 0              | 0                 | 16   | 84                          |
| 65   | Longview-Marshall, TX                      | 208,780    | 6                 | 0              | 0                 | 12   | 80                          |
| 65   | Milwaukee-Waukesha, WI                     | 1,500,741  | 6                 | 0              | 0                 | 5  | 92                          |
| 65   | Norfolk-Virginia Beach-Newport News, VA-NC | 1,569,541  | 6                 | 1              | 0                 | 9  | 97                          |
| 65   | Racine, WI                                 | 188,831    | 6                 | 0              | 0                 | 0  | 84                          |
| 65   | Vineland-Millville-Bridgeton, NJ           | 146,438    | 6                 | 0              | 0                 | 5  | 83                          |
| 76   | Dover, DE                                  | 126,697    | 5                 | 0              | 0                 | 7  | 92                          |
| 76   | Evansville-Henderson, IN-KY                | 296,195    | 5                 | 0              | 0                 | 13   | 77                          |
| 76   | Hagerstown, MD                             | 131,923    | 5                 | 0              | 0                 | 6  | 90                          |
| 76   | Lake Charles, LA                           | 183,577    | 5                 | 0              | 0                 | 4  | 84                          |
| 76   | New Bedford, MA                            | 175,198    | 5                 | 0              | 0                 | 0  | 81                          |
| 76   | Parkersburg-Marietta, WV-OH                | 151,237    | 5                 | 0              | 0                 | 7  | 79                          |
| 76   | Raleigh-Durham-Chapel Hill, NC             | 1,187,941  | 5                 | 0              | 0                 | 9  | 83                          |
| 76   | Springfield, MA                            | 591,932    | 5                 | 0              | 0                 | 4  | 91                          |
| 84   | Akron, OH                                  | 694,960    | 4                 | 0              | 0                 | 9  | 82                          |
| 84   | Albany-Schenectady-Troy, NY                | 875,583    | 4                 | 0              | 0                 | 5  | 84                          |
| 84   | Chico-Paradise, CA                         | 203,171    | 4                 | 0              | 0                 | 9  | 78                          |
| 84   | Dutchess County, NY                        | 280,150    | 4                 | 0              | 0                 | 2  | 92                          |
| 84   | Grand Rapids-Muskegon-Holland, MI          | 1,088,514  | 4                 | 0              | 0                 | 7  | 79                          |
| 84   | Harrisburg-Lebanon-Carlisle, PA            | 629,401    | 4                 | 0              | 0                 | 5  | 87                          |
| 84   | Huntington-Ashland, WV-KY-OH               | 315,538    | 4                 | 0              | 0                 | 8  | 79                          |
| 84   | Mobile, AL                                 | 540,258    | 4                 | 0              | 0                 | 6  | 85                          |

## Appendix A. National Ranking of Metropolitan Areas by Smog Days in 2010, Continued

| Rank | Metropolitan Area                    | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard | Highest Concentration (ppb) |
|------|--------------------------------------|------------|-------------------|----------------|-------------------|--|-----------------------------|
| 84   | Oakland, CA                          | 2,392,557  | 4                 | 1              | 0                 | 4  | 97                          |
| 84   | Salt Lake City-Ogden, UT             | 1,333,914  | 4                 | 0              | 0                 | 7  | 91                          |
| 84   | San Antonio, TX                      | 1,592,383  | 4                 | 0              | 0                 | 7  | 87                          |
| 84   | Santa Barbara-Santa Maria-Lompoc, CA | 399,347    | 4                 | 0              | 0                 | 3  | 83                          |
| 84   | Sharon, PA                           | 120,293    | 4                 | 0              | 0                 | 5  | 82                          |
| 84   | Steubenville-Weirton, OH-WV          | 132,008    | 4                 | 0              | 0                 | 7  | 83                          |
| 84   | Stockton-Lodi, CA                    | 563,598    | 4                 | 0              | 0                 | 4  | 95                          |
| 84   | Vallejo-Fairfield-Napa, CA           | 518,821    | 4                 | 0              | 0                 | 0  | 89                          |
| 84   | Wheeling, WV-OH                      | 153,172    | 4                 | 0              | 0                 | 3  | 82                          |
| 84   | York, PA                             | 381,751    | 4                 | 0              | 0                 | 12   | 88                          |
| 84   | Youngstown-Warren, OH                | 594,746    | 4                 | 0              | 0                 | 4  | 89                          |
| 84   | Yuma, AZ                             | 160,026    | 4                 | 0              | 0                 | 4  | 84                          |
| 104  | Altoona, PA                          | 129,144    | 3                 | 0              | 0                 | 5  | 84                          |
| 104  | Austin-San Marcos, TX                | 1,249,763  | 3                 | 0              | 0                 | 7  | 80                          |
| 104  | Boston, MA-NH                        | 3,406,829  | 3                 | 0              | 0                 | 5  | 83                          |
| 104  | Charlottesville, VA                  | 159,576    | 3                 | 0              | 0                 | 1  | 79                          |
| 104  | El Paso, TX                          | 679,622    | 3                 | 0              | 0                 | 5  | 87                          |
| 104  | Erie, PA                             | 280,843    | 3                 | 0              | 0                 | 5  | 83                          |
| 104  | Hickory-Morganton-Lenoir, NC         | 341,851    | 3                 | 0              | 0                 | 4  | 82                          |
| 104  | Indianapolis, IN                     | 1,607,486  | 3                 | 0              | 0                 | 13   | 83                          |
| 104  | New London-Norwich, CT-RI            | 293,566    | 3                 | 0              | 0                 | 5  | 78                          |
| 104  | Oklahoma City, OK                    | 1,083,346  | 3                 | 0              | 0                 | 8  | 79                          |
| 104  | Orange County, CA                    | 2,846,289  | 3                 | 1              | 0                 | 3  | 96                          |
| 104  | Pensacola, FL                        | 412,153    | 3                 | 0              | 0                 | 5  | 88                          |
| 104  | Providence-Fall River-Warwick, RI-MA | 1,188,613  | 3                 | 0              | 0                 | 3  | 86                          |
| 104  | Scranton-Wilkes-Barre-Hazleton, PA   | 624,776    | 3                 | 0              | 0                 | 5  | 82                          |
| 104  | Syracuse, NY                         | 732,117    | 3                 | 0              | 0                 | 3  | 82                          |
| 104  | Toledo, OH                           | 618,203    | 3                 | 0              | 0                 | 3  | 91                          |
| 104  | Worcester, MA-CT                     | 511,389    | 3                 | 0              | 0                 | 2  | 83                          |
| 121  | Athens, GA                           | 153,444    | 2                 | 0              | 0                 | 3  | 84                          |
| 121  | Augusta-Aiken, GA-SC                 | 477,441    | 2                 | 0              | 0                 | 4  | 81                          |
| 121  | Biloxi-Gulfport-Pascagoula, MS       | 363,988    | 2                 | 0              | 0                 | 10   | 82                          |
| 121  | Clarksville-Hopkinsville, TN-KY      | 207,033    | 2                 | 0              | 0                 | 6  | 77                          |
| 121  | Columbia, SC                         | 536,691    | 2                 | 0              | 0                 | 4  | 81                          |
| 121  | Corpus Christi, TX                   | 380,783    | 2                 | 0              | 0                 | 6  | 78                          |
| 121  | Fayetteville, NC                     | 302,963    | 2                 | 0              | 0                 | 5  | 86                          |

## Appendix A. National Ranking of Metropolitan Areas by Smog Days in 2010, Continued

| Rank | Metropolitan Area                     | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard | Highest Concentration (ppb) |
|------|---------------------------------------|------------|-------------------|----------------|-------------------|--|-----------------------------|
| 121  | Fort Walton Beach, FL                 | 170,498    | 2                 | 0              | 0                 | 1  | 84                          |
| 121  | Gary, IN                              | 631,362    | 2                 | 0              | 0                 | 4  | 80                          |
| 121  | Greeley, CO                           | 180,936    | 2                 | 0              | 0                 | 5  | 78                          |
| 121  | Johnson City-Kingsport-Bristol, TN-VA | 480,091    | 2                 | 0              | 0                 | 4  | 80                          |
| 121  | Johnstown, PA                         | 232,621    | 2                 | 0              | 0                 | 3  | 85                          |
| 121  | Joplin, MO                            | 157,322    | 2                 | 0              | 0                 | 4  | 82                          |
| 121  | Lafayette, LA                         | 385,647    | 2                 | 0              | 0                 | 8  | 79                          |
| 121  | Las Cruces, NM                        | 174,682    | 2                 | 0              | 0                 | 1  | 84                          |
| 121  | Lima, OH                              | 155,084    | 2                 | 0              | 0                 | 3  | 78                          |
| 121  | Little Rock-North Little Rock, AR     | 583,845    | 2                 | 0              | 0                 | 6  | 80                          |
| 121  | Macon, GA                             | 322,549    | 2                 | 0              | 0                 | 2  | 80                          |
| 121  | Montgomery, AL                        | 333,055    | 2                 | 0              | 0                 | 6  | 79                          |
| 121  | Nashua, NH                            | 190,949    | 2                 | 0              | 0                 | 0  | 81                          |
| 121  | Newburgh, NY-PA                       | 387,669    | 2                 | 0              | 0                 | 6  | 87                          |
| 121  | Orlando, FL                           | 1,644,561  | 2                 | 0              | 0                 | 6  | 81                          |
| 121  | Panama City, FL                       | 148,217    | 2                 | 0              | 0                 | 3  | 82                          |
| 121  | Portland, ME                          | 243,537    | 2                 | 1              | 0                 | 2  | 96                          |
| 121  | Portsmouth-Rochester, NH-ME           | 240,698    | 2                 | 0              | 0                 | 1  | 81                          |
| 121  | Redding, CA                           | 163,256    | 2                 | 0              | 0                 | 12   | 76                          |
| 121  | State College, PA                     | 135,758    | 2                 | 0              | 0                 | 4  | 78                          |
| 121  | Tampa-St. Petersburg-Clearwater, FL   | 2,395,997  | 2                 | 0              | 0                 | 8  | 87                          |
| 121  | Topeka, KS                            | 169,871    | 2                 | 0              | 0                 | 0  | 82                          |
| 121  | Tulsa, OK                             | 803,235    | 2                 | 0              | 0                 | 6  | 78                          |
| 121  | Wichita, KS                           | 545,220    | 2                 | 0              | 0                 | 10   | 77                          |
| 152  | Albuquerque, NM                       | 712,738    | 1                 | 0              | 0                 | 2  | 78                          |
| 152  | Asheville, NC                         | 225,965    | 1                 | 0              | 0                 | 3  | 76                          |
| 152  | Benton Harbor, MI                     | 162,453    | 1                 | 0              | 0                 | 4  | 79                          |
| 152  | Boulder-Longmont, CO                  | 291,288    | 1                 | 0              | 0                 | 5  | 82                          |
| 152  | Buffalo-Niagara Falls, NY             | 1,170,111  | 1                 | 0              | 0                 | 7  | 77                          |
| 152  | Charleston, WV                        | 251,662    | 1                 | 0              | 0                 | 2  | 87                          |
| 152  | Columbus, GA-AL                       | 274,624    | 1                 | 0              | 0                 | 1  | 79                          |
| 152  | Elmira, NY                            | 91,070     | 1                 | 0              | 0                 | 2  | 77                          |
| 152  | Flagstaff, AZ-UT                      | 122,366    | 1                 | 0              | 0                 | 3  | 81                          |
| 152  | Fort Smith, AR-OK                     | 207,290    | 1                 | 0              | 0                 | 0  | 79                          |
| 152  | Fort Wayne, IN                        | 502,141    | 1                 | 0              | 0                 | 0  | 76                          |
| 152  | Greenville, NC                        | 133,798    | 1                 | 0              | 0                 | 2  | 81                          |
| 152  | Houma, LA                             | 194,477    | 1                 | 0              | 0                 | 7  | 79                          |

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| Rank | Metropolitan Area                    | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard | Highest Concentration (ppb) |
|------|--------------------------------------|------------|-------------------|----------------|-------------------|--|-----------------------------|
| 152  | Huntsville, AL                       | 342,376    | 1                 | 0              | 0                 | 3  | 81                          |
| 152  | Jacksonville, FL                     | 1,100,491  | 1                 | 0              | 0                 | 3  | 84                          |
| 152  | Kalamazoo-Battle Creek, MI           | 452,851    | 1                 | 0              | 0                 | 0  | 76                          |
| 152  | Lakeland-Winter Haven, FL            | 483,924    | 1                 | 0              | 0                 | 1  | 77                          |
| 152  | Lawrence, MA-NH                      | 396,230    | 1                 | 0              | 0                 | 3  | 76                          |
| 152  | Lawton, OK                           | 114,996    | 1                 | 0              | 0                 | 1  | 81                          |
| 152  | Manchester, NH                       | 198,378    | 1                 | 0              | 0                 | 0  | 77                          |
| 152  | Miami, FL                            | 2,253,362  | 1                 | 0              | 0                 | 2  | 85                          |
| 152  | New Haven-Meriden, CT                | 542,149    | 1                 | 0              | 0                 | 1  | 76                          |
| 152  | Owensboro, KY                        | 91,545     | 1                 | 0              | 0                 | 6  | 80                          |
| 152  | Pittsfield, MA                       | 84,699     | 1                 | 0              | 0                 | 5  | 80                          |
| 152  | Portland-Vancouver, OR-WA            | 1,918,009  | 1                 | 0              | 0                 | 1  | 94                          |
| 152  | Provo-Orem, UT                       | 368,536    | 1                 | 0              | 0                 | 6  | 84                          |
| 152  | Reno, NV                             | 339,486    | 1                 | 0              | 0                 | 2  | 77                          |
| 152  | Roanoke, VA                          | 235,932    | 1                 | 0              | 0                 | 5  | 76                          |
| 152  | Rocky Mount, NC                      | 143,026    | 1                 | 0              | 0                 | 3  | 81                          |
| 152  | Salem, OR                            | 347,214    | 1                 | 0              | 0                 | 0  | 78                          |
| 152  | San Francisco, CA                    | 1,731,183  | 1                 | 0              | 0                 | 0  | 77                          |
| 152  | Sarasota-Bradenton, FL               | 589,959    | 1                 | 0              | 0                 | 4  | 80                          |
| 152  | Seattle-Bellevue-Everett, WA         | 2,414,616  | 1                 | 0              | 0                 | 2  | 77                          |
| 152  | St. Joseph, MO                       | 102,490    | 1                 | 0              | 0                 | 5  | 81                          |
| 152  | West Palm Beach-Boca Raton, FL       | 1,131,184  | 1                 | 0              | 0                 | 1  | 76                          |
| 152  | Williamsport, PA                     | 120,044    | 1                 | 0              | 0                 | 5  | 76                          |
| 152  | Wilmington, NC                       | 233,450    | 1                 | 0              | 0                 | 0  | 79                          |
|      | Anchorage, AK                        | 260,283    | 0                 | 0              | 0                 | 0  | 50                          |
|      | Ann Arbor, MI                        | 578,736    | 0                 | 0              | 0                 | 1  | 74                          |
|      | Appleton-Oshkosh-Neehan, WI          | 358,365    | 0                 | 0              | 0                 | 1  | 72                          |
|      | Bellingham, WA                       | 166,814    | 0                 | 0              | 0                 | 0  | 52                          |
|      | Bismarck, ND                         | 94,719     | 0                 | 0              | 0                 | 0  | 64                          |
|      | Bloomington-Normal, IL               | 150,433    | 0                 | 0              | 0                 | 1  | 72                          |
|      | Boise City, ID                       | 432,345    | 0                 | 0              | 0                 | 1  | 73                          |
|      | Brownsville-Harlingen-San Benito, TX | 335,227    | 0                 | 0              | 0                 | 2  | 72                          |
|      | Cedar Rapids, IA                     | 191,701    | 0                 | 0              | 0                 | 1  | 73                          |
|      | Champaign-Urbana, IL                 | 179,669    | 0                 | 0              | 0                 | 0  | 62                          |
|      | Charleston-North Charleston, SC      | 549,033    | 0                 | 0              | 0                 | 2  | 74                          |
|      | Colorado Springs, CO                 | 516,929    | 0                 | 0              | 0                 | 2  | 73                          |
|      | Columbia, MO                         | 135,454    | 0                 | 0              | 0                 | 2  | 71                          |



**Appendix A. National Ranking of Metropolitan Areas by Smog Days in 2010, Continued**

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|------|-------------------------------------|------------|-------------------|----------------|-------------------|--|-----------------------------|
|      | Davenport-Moline-Rock Island, IA-IL | 359,062    | 0                 | 0              | 0                 | 1  | 71                          |
|      | Daytona Beach, FL                   | 493,175    | 0                 | 0              | 0                 | 1  | 71                          |
|      | Decatur, AL                         | 145,867    | 0                 | 0              | 0                 | 3  | 73                          |
|      | Decatur, IL                         | 114,706    | 0                 | 0              | 0                 | 0  | 69                          |
|      | Des Moines, IA                      | 456,022    | 0                 | 0              | 0                 | 0  | 66                          |
|      | Dothan, AL                          | 137,916    | 0                 | 0              | 0                 | 2  | 75                          |
|      | Duluth-Superior, MN-WI              | 243,815    | 0                 | 0              | 0                 | 1  | 71                          |
|      | Elkhart-Goshen, IN                  | 182,791    | 0                 | 0              | 0                 | 0  | 69                          |
|      | Eugene-Springfield, OR              | 322,959    | 0                 | 0              | 0                 | 1  | 74                          |
|      | Fargo-Moorhead, ND-MN               | 174,367    | 0                 | 0              | 0                 | 0  | 67                          |
|      | Fayetteville-Springdale-Rogers, AR  | 311,121    | 0                 | 0              | 0                 | 1  | 74                          |
|      | Flint, MI                           | 436,141    | 0                 | 0              | 0                 | 3  | 75                          |
|      | Florence, AL                        | 142,950    | 0                 | 0              | 0                 | 1  | 72                          |
|      | Fort Lauderdale, FL                 | 1,623,018  | 0                 | 0              | 0                 | 1  | 72                          |
|      | Fort Myers-Cape Coral, FL           | 440,888    | 0                 | 0              | 0                 | 1  | 71                          |
|      | Fort Pierce-Port St. Lucie, FL      | 319,426    | 0                 | 0              | 0                 | 0  | 68                          |
|      | Gadsden, AL                         | 103,459    | 0                 | 0              | 0                 | 0  | 68                          |
|      | Gainesville, FL                     | 217,955    | 0                 | 0              | 0                 | 1  | 71                          |
|      | Grand Junction, CO                  | 116,255    | 0                 | 0              | 0                 | 0  | 70                          |
|      | Green Bay, WI                       | 226,778    | 0                 | 0              | 0                 | 1  | 73                          |
|      | Honolulu, HI                        | 876,156    | 0                 | 0              | 0                 | 0  | 52                          |
|      | Jackson, MS                         | 440,801    | 0                 | 0              | 0                 | 1  | 73                          |
|      | Janesville-Beloit, WI               | 152,307    | 0                 | 0              | 0                 | 1  | 71                          |
|      | Killeen-Temple, TX                  | 312,952    | 0                 | 0              | 0                 | 6  | 75                          |
|      | La Crosse, WI-MN                    | 126,838    | 0                 | 0              | 0                 | 0  | 69                          |
|      | Lansing-East Lansing, MI            | 447,728    | 0                 | 0              | 0                 | 1  | 75                          |
|      | Laredo, TX                          | 193,117    | 0                 | 0              | 0                 | 0  | 70                          |
|      | Lexington, KY                       | 479,198    | 0                 | 0              | 0                 | 5  | 75                          |
|      | Lincoln, NE                         | 250,291    | 0                 | 0              | 0                 | 0  | 59                          |
|      | Madison, WI                         | 426,526    | 0                 | 0              | 0                 | 0  | 70                          |
|      | McAllen-Edinburg-Mission, TX        | 569,463    | 0                 | 0              | 0                 | 0  | 66                          |
|      | Medford-Ashland, OR                 | 181,269    | 0                 | 0              | 0                 | 0  | 68                          |
|      | Melbourne-Titusville-Palm Bay, FL   | 476,230    | 0                 | 0              | 0                 | 0  | 66                          |
|      | Minneapolis-St. Paul, MN-WI         | 2,968,806  | 0                 | 0              | 0                 | 3  | 75                          |
|      | Missoula, MT                        | 95,802     | 0                 | 0              | 0                 | 0  | 57                          |
|      | Monroe, LA                          | 147,250    | 0                 | 0              | 0                 | 3  | 71                          |

**Appendix A. National Ranking of Metropolitan Areas by Smog Days in 2010, Continued**

| Rank | Metropolitan Area          | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard | Highest Concentration (ppb) |
|------|----------------------------|------------|-------------------|----------------|-------------------|--|-----------------------------|
|      | Muncie, IN                 | 118,769    | 0                 | 0              | 0                 | 1  | 73                          |
|      | Naples, FL                 | 251,377    | 0                 | 0              | 0                 | 0  | 64                          |
|      | Ocala, FL                  | 258,916    | 0                 | 0              | 0                 | 2  | 74                          |
|      | Olympia, WA                | 207,355    | 0                 | 0              | 0                 | 0  | 60                          |
|      | Omaha, NE-IA               | 716,998    | 0                 | 0              | 0                 | 2  | 71                          |
|      | Peoria-Pekin, IL           | 347,387    | 0                 | 0              | 0                 | 3  | 72                          |
|      | Rochester, MN              | 124,277    | 0                 | 0              | 0                 | 0  | 65                          |
|      | Rochester, NY              | 1,098,201  | 0                 | 0              | 0                 | 6  | 74                          |
|      | Rockford, IL               | 371,236    | 0                 | 0              | 0                 | 0  | 66                          |
|      | Salinas, CA                | 401,762    | 0                 | 0              | 0                 | 0  | 70                          |
|      | Santa Cruz-Watsonville, CA | 255,602    | 0                 | 0              | 0                 | 0  | 59                          |
|      | Santa Fe, NM               | 147,635    | 0                 | 0              | 0                 | 1  | 71                          |
|      | Santa Rosa, CA             | 458,614    | 0                 | 0              | 0                 | 0  | 68                          |
|      | Savannah, GA               | 293,000    | 0                 | 0              | 0                 | 0  | 70                          |
|      | Sioux Falls, SD            | 172,412    | 0                 | 0              | 0                 | 0  | 68                          |
|      | South Bend, IN             | 265,559    | 0                 | 0              | 0                 | 0  | 65                          |
|      | Spokane, WA                | 417,939    | 0                 | 0              | 0                 | 0  | 67                          |
|      | Springfield, IL            | 201,437    | 0                 | 0              | 0                 | 1  | 72                          |
|      | Springfield, MO            | 325,721    | 0                 | 0              | 0                 | 0  | 70                          |
|      | St. Cloud, MN              | 167,392    | 0                 | 0              | 0                 | 0  | 70                          |
|      | Tacoma, WA                 | 700,820    | 0                 | 0              | 0                 | 0  | 69                          |
|      | Tallahassee, FL            | 284,539    | 0                 | 0              | 0                 | 0  | 69                          |
|      | Terra Haute, IN            | 149,192    | 0                 | 0              | 0                 | 0  | 66                          |
|      | Tucson, AZ                 | 843,746    | 0                 | 0              | 0                 | 3  | 75                          |
|      | Tuscaloosa, AL             | 164,875    | 0                 | 0              | 0                 | 0  | 63                          |
|      | Tyler, TX                  | 174,706    | 0                 | 0              | 0                 | 6  | 75                          |
|      | Utica-Rome, NY             | 299,896    | 0                 | 0              | 0                 | 1  | 72                          |
|      | Victoria, TX               | 84,088     | 0                 | 0              | 0                 | 1  | 73                          |
|      | Waco, TX                   | 213,517    | 0                 | 0              | 0                 | 2  | 75                          |
|      | Wausau, WI                 | 125,834    | 0                 | 0              | 0                 | 0  | 64                          |
|      | Yolo, CA                   | 168,660    | 0                 | 0              | 0                 | 2  | 72                          |
|      | Yuba City, CA              | 139,149    | 0                 | 0              | 0                 | 3  | 75                          |

## Appendix B. Metropolitan Areas Ranked by Smog Days in 2010 by Population Size

### Smog Days in 2010 in Large Metropolitan Areas

| Rank | Metropolitan Area                          | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) |
|------|--|------------|-------------------|----------------|-------------------|-----------------------------|
| 1    | Riverside-San Bernardino, CA               | 3,254,821  | 110               | 24             | 2                 | 123                         |
| 2    | Los Angeles-Long Beach, CA                 | 9,519,338  | 69                | 3              | 0                 | 105                         |
| 3    | Baltimore, MD                              | 2,552,994  | 33                | 6              | 0                 | 115                         |
| 3    | Washington, DC-MD-VA-WV                    | 4,923,153  | 33                | 3              | 0                 | 100                         |
| 5    | Philadelphia, PA-NJ                        | 5,100,931  | 29                | 3              | 0                 | 101                         |
| 6    | Houston, TX                                | 4,177,646  | 27                | 1              | 0                 | 97                          |
| 7    | Atlanta, GA                                | 4,112,198  | 23                | 1              | 0                 | 98                          |
| 7    | Sacramento, CA                             | 1,628,197  | 23                | 4              | 0                 | 112                         |
| 7    | St. Louis, MO-IL                           | 2,603,607  | 23                | 0              | 0                 | 91                          |
| 10   | Louisville, KY-IN                          | 1,025,598  | 19                | 1              | 0                 | 96                          |
| 11   | Monmouth-Ocean, NJ                         | 1,126,217  | 18                | 0              | 0                 | 95                          |
| 12   | Charlotte-Gastonia-Rock Hill, NC-SC        | 1,499,293  | 17                | 1              | 0                 | 96                          |
| 12   | Middlesex-Somerset-Hunterdon, NJ           | 1,169,641  | 17                | 0              | 0                 | 94                          |
| 14   | Cleveland-Lorain-Elyria, OH                | 2,250,871  | 15                | 0              | 0                 | 90                          |
| 14   | Fort Worth-Arlington, TX                   | 1,702,625  | 15                | 0              | 0                 | 94                          |
| 16   | Cincinnati, OH-KY-IN                       | 1,646,395  | 14                | 0              | 0                 | 94                          |
| 16   | New York, NY                               | 9,314,235  | 14                | 1              | 0                 | 113                         |
| 16   | San Diego, CA                              | 2,813,833  | 14                | 0              | 0                 | 90                          |
| 19   | Greensboro-Winston Salem-High Point, NC    | 1,251,509  | 13                | 0              | 0                 | 93                          |
| 19   | Memphis, TN-AR-MS                          | 1,135,614  | 13                | 0              | 0                 | 91                          |
| 19   | Nassau-Suffolk, NY                         | 2,753,913  | 13                | 0              | 0                 | 92                          |
| 19   | Pittsburgh, PA                             | 2,358,695  | 13                | 1              | 0                 | 105                         |
| 23   | Dallas, TX                                 | 3,519,176  | 12                | 0              | 0                 | 87                          |
| 23   | Detroit, MI                                | 4,441,551  | 12                | 0              | 0                 | 89                          |
| 25   | Denver, CO                                 | 2,109,282  | 11                | 0              | 0                 | 89                          |
| 26   | Chicago, IL                                | 8,272,768  | 10                | 0              | 0                 | 88                          |
| 26   | Nashville, TN                              | 1,231,311  | 10                | 0              | 0                 | 88                          |
| 26   | Phoenix-Mesa, AZ                           | 3,251,876  | 10                | 0              | 0                 | 85                          |
| 29   | Las Vegas, NV-AZ                           | 1,563,282  | 9                 | 0              | 0                 | 84                          |
| 29   | Newark, NJ                                 | 2,032,989  | 9                 | 0              | 0                 | 94                          |
| 31   | New Orleans, LA                            | 1,337,726  | 8                 | 0              | 0                 | 93                          |
| 32   | Bergen-Passaic, NJ                         | 1,373,167  | 7                 | 0              | 0                 | 94                          |
| 32   | Hartford, CT                               | 1,183,110  | 7                 | 0              | 0                 | 89                          |
| 32   | San Jose, CA                               | 1,682,585  | 7                 | 0              | 0                 | 91                          |
| 35   | Columbus, OH                               | 1,540,157  | 6                 | 0              | 0                 | 88                          |
| 35   | Kansas City, MO-KS                         | 1,776,062  | 6                 | 0              | 0                 | 84                          |
| 35   | Milwaukee-Waukesha, WI                     | 1,500,741  | 6                 | 0              | 0                 | 92                          |
| 35   | Norfolk-Virginia Beach-Newport News, VA-NC | 1,569,541  | 6                 | 1              | 0                 | 97                          |

## Appendix B. Metropolitan Areas Ranked by Smog Days in 2010 by Population Size, Continued

### Smog Days in 2010 in Large Metropolitan Areas

| Rank | Metropolitan Area                    | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) |
|------|--------------------------------------|------------|-------------------|----------------|-------------------|-----------------------------|
| 39   | Raleigh-Durham-Chapel Hill, NC       | 1,187,941  | 5                 | 0              | 0                 | 83                          |
| 40   | Grand Rapids-Muskegon-Holland, MI    | 1,088,514  | 4                 | 0              | 0                 | 79                          |
| 40   | Oakland, CA                          | 2,392,557  | 4                 | 1              | 0                 | 97                          |
| 40   | Salt Lake City-Ogden, UT             | 1,333,914  | 4                 | 0              | 0                 | 91                          |
| 40   | San Antonio, TX                      | 1,592,383  | 4                 | 0              | 0                 | 87                          |
| 44   | Austin-San Marcos, TX                | 1,249,763  | 3                 | 0              | 0                 | 80                          |
| 44   | Boston, MA-NH                        | 3,406,829  | 3                 | 0              | 0                 | 83                          |
| 44   | Indianapolis, IN                     | 1,607,486  | 3                 | 0              | 0                 | 83                          |
| 44   | Oklahoma City, OK                    | 1,083,346  | 3                 | 0              | 0                 | 79                          |
| 44   | Orange County, CA                    | 2,846,289  | 3                 | 1              | 0                 | 96                          |
| 44   | Providence-Fall River-Warwick, RI-MA | 1,188,613  | 3                 | 0              | 0                 | 86                          |
| 50   | Orlando, FL                          | 1,644,561  | 2                 | 0              | 0                 | 81                          |
| 50   | Tampa-St. Petersburg-Clearwater, FL  | 2,395,997  | 2                 | 0              | 0                 | 87                          |
| 52   | Buffalo-Niagara Falls, NY            | 1,170,111  | 1                 | 0              | 0                 | 77                          |
| 52   | Jacksonville, FL                     | 1,100,491  | 1                 | 0              | 0                 | 84                          |
| 52   | Miami, FL                            | 2,253,362  | 1                 | 0              | 0                 | 85                          |
| 52   | Portland-Vancouver, OR-WA            | 1,918,009  | 1                 | 0              | 0                 | 94                          |
| 52   | San Francisco, CA                    | 1,731,183  | 1                 | 0              | 0                 | 77                          |
| 52   | Seattle-Bellevue-Everett, WA         | 2,414,616  | 1                 | 0              | 0                 | 77                          |
| 52   | West Palm Beach-Boca Raton, FL       | 1,131,184  | 1                 | 0              | 0                 | 76                          |
|      | Fort Lauderdale, FL                  | 1,623,018  | 0                 | 0              | 0                 | 72                          |
|      | Minneapolis-St. Paul, MN-WI          | 2,968,806  | 0                 | 0              | 0                 | 75                          |
|      | Rochester, NY                        | 1,098,201  | 0                 | 0              | 0                 | 74                          |

## Appendix B. Metropolitan Areas Ranked by Smog Days in 2010 by Population Size

### Smog Days in 2010 in Mid-Sized Metropolitan Areas

| Rank | Metropolitan Area                    | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) |
|------|--------------------------------------|------------|-------------------|----------------|-------------------|-----------------------------|
| 1    | Visalia-Tulare-Porterville, CA       | 368,021    | 78                | 6              | 0                 | 104                         |
| 2    | Bakersfield, CA                      | 661,645    | 69                | 10             | 0                 | 107                         |
| 3    | Fresno, CA                           | 922,516    | 42                | 6              | 0                 | 104                         |
| 4    | Knoxville, TN                        | 687,249    | 20                | 0              | 0                 | 84                          |
| 5    | Wilmington-Newark, DE-MD             | 586,216    | 18                | 0              | 0                 | 90                          |
| 6    | Trenton, NJ                          | 350,761    | 15                | 0              | 0                 | 95                          |
| 7    | Baton Rouge, LA                      | 602,894    | 14                | 0              | 0                 | 89                          |
| 7    | Birmingham, AL                       | 921,106    | 14                | 0              | 0                 | 88                          |
| 7    | Hamilton-Middletown, OH              | 332,807    | 14                | 0              | 0                 | 86                          |
| 10   | Beaumont-Port Arthur, TX             | 385,090    | 13                | 0              | 0                 | 91                          |
| 10   | Lancaster, PA                        | 470,658    | 13                | 0              | 0                 | 95                          |
| 10   | Ventura, CA                          | 753,197    | 13                | 0              | 0                 | 90                          |
| 13   | Allentown-Bethlehem-Easton, PA       | 637,958    | 12                | 0              | 0                 | 94                          |
| 14   | Dayton-Springfield, OH               | 950,558    | 11                | 0              | 0                 | 82                          |
| 14   | Modesto, CA                          | 446,997    | 11                | 1              | 0                 | 96                          |
| 14   | Stamford-Norwalk, CT                 | 353,556    | 11                | 0              | 0                 | 91                          |
| 17   | Richmond-Petersburg, VA              | 996,512    | 10                | 2              | 0                 | 98                          |
| 18   | Bridgeport, CT                       | 459,479    | 9                 | 0              | 0                 | 80                          |
| 18   | Shreveport-Bossier City, LA          | 392,302    | 9                 | 0              | 0                 | 90                          |
| 20   | Canton-Massillon, OH                 | 406,934    | 8                 | 0              | 0                 | 88                          |
| 20   | Galveston-Texas City, TX             | 250,158    | 8                 | 0              | 0                 | 91                          |
| 20   | Greenville-Spartanburg-Anderson, SC  | 962,441    | 8                 | 0              | 0                 | 82                          |
| 20   | Reading, PA                          | 373,638    | 8                 | 0              | 0                 | 87                          |
| 24   | Fort Collins-Loveland, CO            | 251,494    | 7                 | 0              | 0                 | 82                          |
| 25   | Atlantic-Cape May, NJ                | 354,878    | 6                 | 0              | 0                 | 85                          |
| 25   | Chattanooga, TN-GA                   | 465,161    | 6                 | 0              | 0                 | 82                          |
| 25   | Jersey City, NJ                      | 608,975    | 6                 | 1              | 0                 | 111                         |
| 28   | Evansville-Henderson, IN-KY          | 296,195    | 5                 | 0              | 0                 | 77                          |
| 28   | Springfield, MA                      | 591,932    | 5                 | 0              | 0                 | 91                          |
| 30   | Akron, OH                            | 694,960    | 4                 | 0              | 0                 | 82                          |
| 30   | Albany-Schenectady-Troy, NY          | 875,583    | 4                 | 0              | 0                 | 84                          |
| 30   | Dutchess County, NY                  | 280,150    | 4                 | 0              | 0                 | 92                          |
| 30   | Harrisburg-Lebanon-Carlisle, PA      | 629,401    | 4                 | 0              | 0                 | 87                          |
| 30   | Huntington-Ashland, WV-KY-OH         | 315,538    | 4                 | 0              | 0                 | 79                          |
| 30   | Mobile, AL                           | 540,258    | 4                 | 0              | 0                 | 85                          |
| 30   | Santa Barbara-Santa Maria-Lompoc, CA | 399,347    | 4                 | 0              | 0                 | 83                          |
| 30   | Stockton-Lodi, CA                    | 563,598    | 4                 | 0              | 0                 | 95                          |
| 30   | Vallejo-Fairfield-Napa, CA           | 518,821    | 4                 | 0              | 0                 | 89                          |
| 30   | York, PA                             | 381,751    | 4                 | 0              | 0                 | 88                          |

**Appendix B. Metropolitan Areas Ranked by Smog Days in 2010 by Population Size, Continued**

**Smog Days in 2010 in Mid-Sized Metropolitan Areas**

| Rank | Metropolitan Area                     | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) |
|------|---------------------------------------|------------|-------------------|----------------|-------------------|-----------------------------|
| 30   | Youngstown-Warren, OH                 | 594,746    | 4                 | 0              | 0                 | 89                          |
| 41   | El Paso, TX                           | 679,622    | 3                 | 0              | 0                 | 87                          |
| 41   | Erie, PA                              | 280,843    | 3                 | 0              | 0                 | 83                          |
| 41   | Hickory-Morganton-Lenoir, NC          | 341,851    | 3                 | 0              | 0                 | 82                          |
| 41   | New London-Norwich, CT-RI             | 293,566    | 3                 | 0              | 0                 | 78                          |
| 41   | Pensacola, FL                         | 412,153    | 3                 | 0              | 0                 | 88                          |
| 41   | Scranton-Wilkes-Barre-Hazleton, PA    | 624,776    | 3                 | 0              | 0                 | 82                          |
| 41   | Syracuse, NY                          | 732,117    | 3                 | 0              | 0                 | 82                          |
| 41   | Toledo, OH                            | 618,203    | 3                 | 0              | 0                 | 91                          |
| 41   | Worcester, MA-CT                      | 511,389    | 3                 | 0              | 0                 | 83                          |
| 50   | Augusta-Aiken, GA-SC                  | 477,441    | 2                 | 0              | 0                 | 81                          |
| 50   | Biloxi-Gulfport-Pascagoula, MS        | 363,988    | 2                 | 0              | 0                 | 82                          |
| 50   | Columbia, SC                          | 536,691    | 2                 | 0              | 0                 | 81                          |
| 50   | Corpus Christi, TX                    | 380,783    | 2                 | 0              | 0                 | 78                          |
| 50   | Fayetteville, NC                      | 302,963    | 2                 | 0              | 0                 | 86                          |
| 50   | Gary, IN                              | 631,362    | 2                 | 0              | 0                 | 80                          |
| 50   | Johnson City-Kingsport-Bristol, TN-VA | 480,091    | 2                 | 0              | 0                 | 80                          |
| 50   | Lafayette, LA                         | 385,647    | 2                 | 0              | 0                 | 79                          |
| 50   | Little Rock-North Little Rock, AR     | 583,845    | 2                 | 0              | 0                 | 80                          |
| 50   | Macon, GA                             | 322,549    | 2                 | 0              | 0                 | 80                          |
| 50   | Montgomery, AL                        | 333,055    | 2                 | 0              | 0                 | 79                          |
| 50   | Newburgh, NY-PA                       | 387,669    | 2                 | 0              | 0                 | 87                          |
| 50   | Tulsa, OK                             | 803,235    | 2                 | 0              | 0                 | 78                          |
| 50   | Wichita, KS                           | 545,220    | 2                 | 0              | 0                 | 77                          |
| 64   | Albuquerque, NM                       | 712,738    | 1                 | 0              | 0                 | 78                          |
| 64   | Boulder-Longmont, CO                  | 291,288    | 1                 | 0              | 0                 | 82                          |
| 64   | Charleston, WV                        | 251,662    | 1                 | 0              | 0                 | 87                          |
| 64   | Columbus, GA-AL                       | 274,624    | 1                 | 0              | 0                 | 79                          |
| 64   | Fort Wayne, IN                        | 502,141    | 1                 | 0              | 0                 | 76                          |
| 64   | Huntsville, AL                        | 342,376    | 1                 | 0              | 0                 | 81                          |
| 64   | Kalamazoo-Battle Creek, MI            | 452,851    | 1                 | 0              | 0                 | 76                          |
| 64   | Lakeland-Winter Haven, FL             | 483,924    | 1                 | 0              | 0                 | 77                          |
| 64   | Lawrence, MA-NH                       | 396,230    | 1                 | 0              | 0                 | 76                          |
| 64   | New Haven-Meriden, CT                 | 542,149    | 1                 | 0              | 0                 | 76                          |
| 64   | Provo-Orem, UT                        | 368,536    | 1                 | 0              | 0                 | 84                          |
| 64   | Reno, NV                              | 339,486    | 1                 | 0              | 0                 | 77                          |
| 64   | Salem, OR                             | 347,214    | 1                 | 0              | 0                 | 78                          |
| 64   | Sarasota-Bradenton, FL                | 589,959    | 1                 | 0              | 0                 | 80                          |
|      | Anchorage, AK                         | 260,283    | 0                 | 0              | 0                 | 50                          |

## Appendix B. Metropolitan Areas Ranked by Smog Days in 2010 by Population Size, Continued

### Smog Days in 2010 in Mid-Sized Metropolitan Areas

| Rank | Metropolitan Area                    | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) |
|------|--------------------------------------|------------|-------------------|----------------|-------------------|-----------------------------|
|      | Ann Arbor, MI                        | 578,736    | 0                 | 0              | 0                 | 74                          |
|      | Appleton-Oshkosh-Neehan, WI          | 358,365    | 0                 | 0              | 0                 | 72                          |
|      | Boise City, ID                       | 432,345    | 0                 | 0              | 0                 | 73                          |
|      | Brownsville-Harlingen-San Benito, TX | 335,227    | 0                 | 0              | 0                 | 72                          |
|      | Charleston-North Charleston, SC      | 549,033    | 0                 | 0              | 0                 | 74                          |
|      | Colorado Springs, CO                 | 516,929    | 0                 | 0              | 0                 | 73                          |
|      | Davenport-Moline-Rock Island, IA-IL  | 359,062    | 0                 | 0              | 0                 | 71                          |
|      | Daytona Beach, FL                    | 493,175    | 0                 | 0              | 0                 | 71                          |
|      | Des Moines, IA                       | 456,022    | 0                 | 0              | 0                 | 66                          |
|      | Eugene-Springfield, OR               | 322,959    | 0                 | 0              | 0                 | 74                          |
|      | Fayetteville-Springdale-Rogers, AR   | 311,121    | 0                 | 0              | 0                 | 74                          |
|      | Flint, MI                            | 436,141    | 0                 | 0              | 0                 | 75                          |
|      | Fort Myers-Cape Coral, FL            | 440,888    | 0                 | 0              | 0                 | 71                          |
|      | Fort Pierce-Port St. Lucie, FL       | 319,426    | 0                 | 0              | 0                 | 68                          |
|      | Honolulu, HI                         | 876,156    | 0                 | 0              | 0                 | 52                          |
|      | Jackson, MS                          | 440,801    | 0                 | 0              | 0                 | 73                          |
|      | Killeen-Temple, TX                   | 312,952    | 0                 | 0              | 0                 | 75                          |
|      | Lansing-East Lansing, MI             | 447,728    | 0                 | 0              | 0                 | 75                          |
|      | Lexington, KY                        | 479,198    | 0                 | 0              | 0                 | 75                          |
|      | Lincoln, NE                          | 250,291    | 0                 | 0              | 0                 | 59                          |
|      | Madison, WI                          | 426,526    | 0                 | 0              | 0                 | 70                          |
|      | McAllen-Edinburg-Mission, TX         | 569,463    | 0                 | 0              | 0                 | 66                          |
|      | Melbourne-Titusville-Palm Bay, FL    | 476,230    | 0                 | 0              | 0                 | 66                          |
|      | Naples, FL                           | 251,377    | 0                 | 0              | 0                 | 64                          |
|      | Ocala, FL                            | 258,916    | 0                 | 0              | 0                 | 74                          |
|      | Omaha, NE-IA                         | 716,998    | 0                 | 0              | 0                 | 71                          |
|      | Peoria-Pekin, IL                     | 347,387    | 0                 | 0              | 0                 | 72                          |
|      | Rockford, IL                         | 371,236    | 0                 | 0              | 0                 | 66                          |
|      | Salinas, CA                          | 401,762    | 0                 | 0              | 0                 | 70                          |
|      | Santa Cruz-Watsonville, CA           | 255,602    | 0                 | 0              | 0                 | 59                          |
|      | Santa Rosa, CA                       | 458,614    | 0                 | 0              | 0                 | 68                          |
|      | Savannah, GA                         | 293,000    | 0                 | 0              | 0                 | 70                          |
|      | South Bend, IN                       | 265,559    | 0                 | 0              | 0                 | 65                          |
|      | Spokane, WA                          | 417,939    | 0                 | 0              | 0                 | 67                          |
|      | Springfield, MO                      | 325,721    | 0                 | 0              | 0                 | 70                          |
|      | Tacoma, WA                           | 700,820    | 0                 | 0              | 0                 | 69                          |
|      | Tallahassee, FL                      | 284,539    | 0                 | 0              | 0                 | 69                          |
|      | Tucson, AZ                           | 843,746    | 0                 | 0              | 0                 | 75                          |
|      | Utica-Rome, NY                       | 299,896    | 0                 | 0              | 0                 | 72                          |

## Appendix B. Metropolitan Areas Ranked by Smog Days in 2010 by Population Size

### Smog Days in 2010 in Small Metropolitan Areas

| Rank | Metropolitan Area                          | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) |
|------|--|------------|-------------------|----------------|-------------------|-----------------------------|
| 1    | San Luis Obispo-Atascadero-Paso Robles, CA | 246,681    | 17                | 0              | 0                 | 90                          |
| 2    | Brazoria, TX                               | 241,767    | 11                | 0              | 0                 | 94                          |
| 2    | Merced, CA                                 | 210,554    | 11                | 1              | 0                 | 96                          |
| 4    | Danbury, CT                                | 217,980    | 7                 | 1              | 0                 | 97                          |
| 4    | Kenosha, WI                                | 149,577    | 7                 | 0              | 0                 | 89                          |
| 4    | Sheboygan, WI                              | 112,646    | 7                 | 0              | 0                 | 92                          |
| 7    | Jamestown, NY                              | 139,750    | 6                 | 0              | 0                 | 89                          |
| 7    | Longview-Marshall, TX                      | 208,780    | 6                 | 0              | 0                 | 80                          |
| 7    | Racine, WI                                 | 188,831    | 6                 | 0              | 0                 | 84                          |
| 7    | Vineland-Millville-Bridgeton, NJ           | 146,438    | 6                 | 0              | 0                 | 83                          |
| 11   | Dover, DE                                  | 126,697    | 5                 | 0              | 0                 | 92                          |
| 11   | Hagerstown, MD                             | 131,923    | 5                 | 0              | 0                 | 90                          |
| 11   | Lake Charles, LA                           | 183,577    | 5                 | 0              | 0                 | 84                          |
| 11   | New Bedford, MA                            | 175,198    | 5                 | 0              | 0                 | 81                          |
| 11   | Parkersburg-Marietta, WV-OH                | 151,237    | 5                 | 0              | 0                 | 79                          |
| 16   | Chico-Paradise, CA                         | 203,171    | 4                 | 0              | 0                 | 78                          |
| 16   | Sharon, PA                                 | 120,293    | 4                 | 0              | 0                 | 82                          |
| 16   | Steubenville-Weirton, OH-WV                | 132,008    | 4                 | 0              | 0                 | 83                          |
| 16   | Wheeling, WV-OH                            | 153,172    | 4                 | 0              | 0                 | 82                          |
| 16   | Yuma, AZ                                   | 160,026    | 4                 | 0              | 0                 | 84                          |
| 21   | Altoona, PA                                | 129,144    | 3                 | 0              | 0                 | 84                          |
| 21   | Charlottesville, VA                        | 159,576    | 3                 | 0              | 0                 | 79                          |
| 23   | Athens, GA                                 | 153,444    | 2                 | 0              | 0                 | 84                          |
| 23   | Clarksville-Hopkinsville, TN-KY            | 207,033    | 2                 | 0              | 0                 | 77                          |
| 23   | Fort Walton Beach, FL                      | 170,498    | 2                 | 0              | 0                 | 84                          |
| 23   | Greeley, CO                                | 180,936    | 2                 | 0              | 0                 | 78                          |
| 23   | Johnstown, PA                              | 232,621    | 2                 | 0              | 0                 | 85                          |
| 23   | Joplin, MO                                 | 157,322    | 2                 | 0              | 0                 | 82                          |
| 23   | Las Cruces, NM                             | 174,682    | 2                 | 0              | 0                 | 84                          |
| 23   | Lima, OH                                   | 155,084    | 2                 | 0              | 0                 | 78                          |
| 23   | Nashua, NH                                 | 190,949    | 2                 | 0              | 0                 | 81                          |
| 23   | Panama City, FL                            | 148,217    | 2                 | 0              | 0                 | 82                          |
| 23   | Portland, ME                               | 243,537    | 2                 | 1              | 0                 | 96                          |
| 23   | Portsmouth-Rochester, NH-ME                | 240,698    | 2                 | 0              | 0                 | 81                          |
| 23   | Redding, CA                                | 163,256    | 2                 | 0              | 0                 | 76                          |
| 23   | State College, PA                          | 135,758    | 2                 | 0              | 0                 | 78                          |
| 23   | Topeka, KS                                 | 169,871    | 2                 | 0              | 0                 | 82                          |
| 38   | Asheville, NC                              | 225,965    | 1                 | 0              | 0                 | 76                          |
| 38   | Benton Harbor, MI                          | 162,453    | 1                 | 0              | 0                 | 79                          |



**Appendix B. Metropolitan Areas Ranked by Smog Days in 2010 by Population Size, Continued**

**Smog Days in 2010 in Small Metropolitan Areas**

| Rank | Metropolitan Area      | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) |
|------|------------------------|------------|-------------------|----------------|-------------------|-----------------------------|
| 38   | Elmira, NY             | 91,070     | 1                 | 0              | 0                 | 77                          |
| 38   | Flagstaff, AZ-UT       | 122,366    | 1                 | 0              | 0                 | 81                          |
| 38   | Fort Smith, AR-OK      | 207,290    | 1                 | 0              | 0                 | 79                          |
| 38   | Greenville, NC         | 133,798    | 1                 | 0              | 0                 | 81                          |
| 38   | Houma, LA              | 194,477    | 1                 | 0              | 0                 | 79                          |
| 38   | Lawton, OK             | 114,996    | 1                 | 0              | 0                 | 81                          |
| 38   | Manchester, NH         | 198,378    | 1                 | 0              | 0                 | 77                          |
| 38   | Owensboro, KY          | 91,545     | 1                 | 0              | 0                 | 80                          |
| 38   | Pittsfield, MA         | 84,699     | 1                 | 0              | 0                 | 80                          |
| 38   | Roanoke, VA            | 235,932    | 1                 | 0              | 0                 | 76                          |
| 38   | Rocky Mount, NC        | 143,026    | 1                 | 0              | 0                 | 81                          |
| 38   | St. Joseph, MO         | 102,490    | 1                 | 0              | 0                 | 81                          |
| 38   | Williamsport, PA       | 120,044    | 1                 | 0              | 0                 | 76                          |
| 38   | Wilmington, NC         | 233,450    | 1                 | 0              | 0                 | 79                          |
|      | Bellingham, WA         | 166,814    | 0                 | 0              | 0                 | 52                          |
|      | Bismarck, ND           | 94,719     | 0                 | 0              | 0                 | 64                          |
|      | Bloomington-Normal, IL | 150,433    | 0                 | 0              | 0                 | 72                          |
|      | Cedar Rapids, IA       | 191,701    | 0                 | 0              | 0                 | 73                          |
|      | Champaign-Urbana, IL   | 179,669    | 0                 | 0              | 0                 | 62                          |
|      | Columbia, MO           | 135,454    | 0                 | 0              | 0                 | 71                          |
|      | Decatur, AL            | 145,867    | 0                 | 0              | 0                 | 73                          |
|      | Decatur, IL            | 114,706    | 0                 | 0              | 0                 | 69                          |
|      | Dothan, AL             | 137,916    | 0                 | 0              | 0                 | 75                          |
|      | Duluth-Superior, MN-WI | 243,815    | 0                 | 0              | 0                 | 71                          |
|      | Elkhart-Goshen, IN     | 182,791    | 0                 | 0              | 0                 | 69                          |
|      | Fargo-Moorhead, ND-MN  | 174,367    | 0                 | 0              | 0                 | 67                          |
|      | Florence, AL           | 142,950    | 0                 | 0              | 0                 | 72                          |
|      | Gadsden, AL            | 103,459    | 0                 | 0              | 0                 | 68                          |
|      | Gainesville, FL        | 217,955    | 0                 | 0              | 0                 | 71                          |
|      | Grand Junction, CO     | 116,255    | 0                 | 0              | 0                 | 70                          |
|      | Green Bay, WI          | 226,778    | 0                 | 0              | 0                 | 73                          |
|      | Janesville-Beloit, WI  | 152,307    | 0                 | 0              | 0                 | 71                          |
|      | La Crosse, WI-MN       | 126,838    | 0                 | 0              | 0                 | 69                          |
|      | Laredo, TX             | 193,117    | 0                 | 0              | 0                 | 70                          |
|      | Medford-Ashland, OR    | 181,269    | 0                 | 0              | 0                 | 68                          |
|      | Missoula, MT           | 95,802     | 0                 | 0              | 0                 | 57                          |
|      | Monroe, LA             | 147,250    | 0                 | 0              | 0                 | 71                          |
|      | Muncie, IN             | 118,769    | 0                 | 0              | 0                 | 73                          |
|      | Olympia, WA            | 207,355    | 0                 | 0              | 0                 | 60                          |

**Appendix B. Metropolitan Areas Ranked by Smog Days in 2010 by Population Size, Continued**

**Smog Days in 2010 in Small Metropolitan Areas**

| Rank | Metropolitan Area | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) |
|------|-------------------|------------|-------------------|----------------|-------------------|-----------------------------|
|      | Rochester, MN     | 124,277    | 0                 | 0              | 0                 | 65                          |
|      | Santa Fe, NM      | 147,635    | 0                 | 0              | 0                 | 71                          |
|      | Sioux Falls, SD   | 172,412    | 0                 | 0              | 0                 | 68                          |
|      | Springfield, IL   | 201,437    | 0                 | 0              | 0                 | 72                          |
|      | St. Cloud, MN     | 167,392    | 0                 | 0              | 0                 | 70                          |
|      | Terra Haute, IN   | 149,192    | 0                 | 0              | 0                 | 66                          |
|      | Tuscaloosa, AL    | 164,875    | 0                 | 0              | 0                 | 63                          |
|      | Tyler, TX         | 174,706    | 0                 | 0              | 0                 | 75                          |
|      | Victoria, TX      | 84,088     | 0                 | 0              | 0                 | 73                          |
|      | Waco, TX          | 213,517    | 0                 | 0              | 0                 | 75                          |
|      | Wausau, WI        | 125,834    | 0                 | 0              | 0                 | 64                          |
|      | Yolo, CA          | 168,660    | 0                 | 0              | 0                 | 72                          |
|      | Yuba City, CA     | 139,149    | 0                 | 0              | 0                 | 75                          |

## Appendix C. Metropolitan Areas Ranked by Smog Days in 2010 Within Each State

### Alabama

| Metropolitan Area | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard |
|-------------------|------------|-------------------|----------------|-------------------|-----------------------------|--|
| Birmingham, AL    | 921,106    | 14                | 0              | 0                 | 88                          | 16   |
| Mobile, AL        | 540,258    | 4                 | 0              | 0                 | 85                          | 6  |
| Montgomery, AL    | 333,055    | 2                 | 0              | 0                 | 79                          | 6  |
| Columbus, GA-AL   | 274,624    | 1                 | 0              | 0                 | 79                          | 1  |
| Huntsville, AL    | 342,376    | 1                 | 0              | 0                 | 81                          | 3  |
| Decatur, AL       | 145,867    | 0                 | 0              | 0                 | 73                          | 3  |
| Dothan, AL        | 137,916    | 0                 | 0              | 0                 | 75                          | 2  |
| Florence, AL      | 142,950    | 0                 | 0              | 0                 | 72                          | 1  |
| Gadsden, AL       | 103,459    | 0                 | 0              | 0                 | 68                          | 0  |
| Tuscaloosa, AL    | 164,875    | 0                 | 0              | 0                 | 63                          | 0  |

### Alaska

|               |         |   |   |   |    |   |
|---------------|---------|---|---|---|----|---|
| Anchorage, AK | 260,283 | 0 | 0 | 0 | 50 | 0 |
|---------------|---------|---|---|---|----|---|

### Arizona

|                  |           |    |   |   |    |    |
|------------------|-----------|----|---|---|----|----|
| Phoenix-Mesa, AZ | 3,251,876 | 10 | 0 | 0 | 85 | 15 |
| Las Vegas, NV-AZ | 1,563,282 | 9  | 0 | 0 | 84 | 22 |
| Yuma, AZ         | 160,026   | 4  | 0 | 0 | 84 | 4  |
| Flagstaff, AZ-UT | 122,366   | 1  | 0 | 0 | 81 | 3  |
| Tucson, AZ       | 843,746   | 0  | 0 | 0 | 75 | 3  |

### Arkansas

|                                    |           |    |   |   |    |    |
|------------------------------------|-----------|----|---|---|----|----|
| Memphis, TN-AR-MS                  | 1,135,614 | 13 | 0 | 0 | 91 | 11 |
| Little Rock-North Little Rock, AR  | 583,845   | 2  | 0 | 0 | 80 | 6  |
| Fort Smith, AR-OK                  | 207,290   | 1  | 0 | 0 | 79 | 0  |
| Fayetteville-Springdale-Rogers, AR | 311,121   | 0  | 0 | 0 | 74 | 1  |

### California

|  |           |     |    |   |     |    |
|--|-----------|-----|----|---|-----|----|
| Riverside-San Bernardino, CA               | 3,254,821 | 110 | 24 | 2 | 123 | 25 |
| Visalia-Tulare-Porterville, CA             | 368,021   | 78  | 6  | 0 | 104 | 22 |
| Bakersfield, CA                            | 661,645   | 69  | 10 | 0 | 107 | 24 |
| Los Angeles-Long Beach, CA                 | 9,519,338 | 69  | 3  | 0 | 105 | 32 |
| Fresno, CA                                 | 922,516   | 42  | 6  | 0 | 104 | 17 |
| Sacramento, CA                             | 1,628,197 | 23  | 4  | 0 | 112 | 15 |
| San Luis Obispo-Atascadero-Paso Robles, CA | 246,681   | 17  | 0  | 0 | 90  | 15 |
| San Diego, CA                              | 2,813,833 | 14  | 0  | 0 | 90  | 7  |
| Ventura, CA                                | 753,197   | 13  | 0  | 0 | 90  | 5  |
| Merced, CA                                 | 210,554   | 11  | 1  | 0 | 96  | 14 |

## Appendix C. Metropolitan Areas Ranked by Smog Days in 2010 Within Each State, Continued

### California

| Metropolitan Area                    | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard |
|--------------------------------------|------------|-------------------|----------------|-------------------|-----------------------------|--|
| Modesto, CA                          | 446,997    | 11                | 1              | 0                 | 96                          | 8  |
| San Jose, CA                         | 1,682,585  | 7                 | 0              | 0                 | 91                          | 2  |
| Chico-Paradise, CA                   | 203,171    | 4                 | 0              | 0                 | 78                          | 9  |
| Oakland, CA                          | 2,392,557  | 4                 | 1              | 0                 | 97                          | 4  |
| Santa Barbara-Santa Maria-Lompoc, CA | 399,347    | 4                 | 0              | 0                 | 83                          | 3  |
| Stockton-Lodi, CA                    | 563,598    | 4                 | 0              | 0                 | 95                          | 4  |
| Vallejo-Fairfield-Napa, CA           | 518,821    | 4                 | 0              | 0                 | 89                          | 0  |
| Orange County, CA                    | 2,846,289  | 3                 | 1              | 0                 | 96                          | 3  |
| Redding, CA                          | 163,256    | 2                 | 0              | 0                 | 76                          | 12   |
| San Francisco, CA                    | 1,731,183  | 1                 | 0              | 0                 | 77                          | 0  |
| Salinas, CA                          | 401,762    | 0                 | 0              | 0                 | 70                          | 0  |
| Santa Cruz-Watsonville, CA           | 255,602    | 0                 | 0              | 0                 | 59                          | 0  |
| Santa Rosa, CA                       | 458,614    | 0                 | 0              | 0                 | 68                          | 0  |
| Yolo, CA                             | 168,660    | 0                 | 0              | 0                 | 72                          | 2  |
| Yuba City, CA                        | 139,149    | 0                 | 0              | 0                 | 75                          | 3  |

### Colorado

|                           |           |    |   |   |    |    |
|---------------------------|-----------|----|---|---|----|----|
| Denver, CO                | 2,109,282 | 11 | 0 | 0 | 89 | 16 |
| Fort Collins-Loveland, CO | 251,494   | 7  | 0 | 0 | 82 | 14 |
| Greeley, CO               | 180,936   | 2  | 0 | 0 | 78 | 5  |
| Boulder-Longmont, CO      | 291,288   | 1  | 0 | 0 | 82 | 5  |
| Colorado Springs, CO      | 516,929   | 0  | 0 | 0 | 73 | 2  |
| Grand Junction, CO        | 116,255   | 0  | 0 | 0 | 70 | 0  |

### Connecticut

|                           |           |    |   |   |    |   |
|---------------------------|-----------|----|---|---|----|---|
| Stamford-Norwalk, CT      | 353,556   | 11 | 0 | 0 | 91 | 2 |
| Bridgeport, CT            | 459,479   | 9  | 0 | 0 | 80 | 9 |
| Danbury, CT               | 217,980   | 7  | 1 | 0 | 97 | 8 |
| Hartford, CT              | 1,183,110 | 7  | 0 | 0 | 89 | 2 |
| New London-Norwich, CT-RI | 293,566   | 3  | 0 | 0 | 78 | 5 |
| Worcester, MA-CT          | 511,389   | 3  | 0 | 0 | 83 | 2 |
| New Haven-Meriden, CT     | 542,149   | 1  | 0 | 0 | 76 | 1 |

### Washington, DC

|                         |           |    |   |   |     |    |
|-------------------------|-----------|----|---|---|-----|----|
| Washington, DC-MD-VA-WV | 4,923,153 | 33 | 3 | 0 | 100 | 17 |
|-------------------------|-----------|----|---|---|-----|----|

### Delaware

|                          |         |    |   |   |    |    |
|--------------------------|---------|----|---|---|----|----|
| Wilmington-Newark, DE-MD | 586,216 | 18 | 0 | 0 | 90 | 12 |
| Dover, DE                | 126,697 | 5  | 0 | 0 | 92 | 7  |

## Appendix C. Metropolitan Areas Ranked by Smog Days in 2010 Within Each State, Continued

### Florida

| Metropolitan Area                   | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard |
|-------------------------------------|------------|-------------------|----------------|-------------------|-----------------------------|--|
| Pensacola, FL                       | 412,153    | 3                 | 0              | 0                 | 88                          | 5  |
| Fort Walton Beach, FL               | 170,498    | 2                 | 0              | 0                 | 84                          | 1  |
| Orlando, FL                         | 1,644,561  | 2                 | 0              | 0                 | 81                          | 6  |
| Panama City, FL                     | 148,217    | 2                 | 0              | 0                 | 82                          | 3  |
| Tampa-St. Petersburg-Clearwater, FL | 2,395,997  | 2                 | 0              | 0                 | 87                          | 8  |
| Jacksonville, FL                    | 1,100,491  | 1                 | 0              | 0                 | 84                          | 3  |
| Lakeland-Winter Haven, FL           | 483,924    | 1                 | 0              | 0                 | 77                          | 1  |
| Miami, FL                           | 2,253,362  | 1                 | 0              | 0                 | 85                          | 2  |
| Sarasota-Bradenton, FL              | 589,959    | 1                 | 0              | 0                 | 80                          | 4  |
| West Palm Beach-Boca Raton, FL      | 1,131,184  | 1                 | 0              | 0                 | 76                          | 1  |
| Daytona Beach, FL                   | 493,175    | 0                 | 0              | 0                 | 71                          | 1  |
| Fort Lauderdale, FL                 | 1,623,018  | 0                 | 0              | 0                 | 72                          | 1  |
| Fort Myers-Cape Coral, FL           | 440,888    | 0                 | 0              | 0                 | 71                          | 1  |
| Fort Pierce-Port St. Lucie, FL      | 319,426    | 0                 | 0              | 0                 | 68                          | 0  |
| Gainesville, FL                     | 217,955    | 0                 | 0              | 0                 | 71                          | 1  |
| Melbourne-Titusville-Palm Bay, FL   | 476,230    | 0                 | 0              | 0                 | 66                          | 0  |
| Naples, FL                          | 251,377    | 0                 | 0              | 0                 | 64                          | 0  |
| Ocala, FL                           | 258,916    | 0                 | 0              | 0                 | 74                          | 2  |
| Tallahassee, FL                     | 284,539    | 0                 | 0              | 0                 | 69                          | 0  |

### Georgia

|                      |           |    |   |   |    |    |
|----------------------|-----------|----|---|---|----|----|
| Atlanta, GA          | 4,112,198 | 23 | 1 | 0 | 98 | 16 |
| Chattanooga, TN-GA   | 465,161   | 6  | 0 | 0 | 82 | 11 |
| Athens, GA           | 153,444   | 2  | 0 | 0 | 84 | 3  |
| Augusta-Aiken, GA-SC | 477,441   | 2  | 0 | 0 | 81 | 4  |
| Macon, GA            | 322,549   | 2  | 0 | 0 | 80 | 2  |
| Columbus, GA-AL      | 274,624   | 1  | 0 | 0 | 79 | 1  |
| Savannah, GA         | 293,000   | 0  | 0 | 0 | 70 | 0  |

### Hawaii

|              |         |   |   |   |    |   |
|--------------|---------|---|---|---|----|---|
| Honolulu, HI | 876,156 | 0 | 0 | 0 | 52 | 0 |
|--------------|---------|---|---|---|----|---|

### Idaho

|                |         |   |   |   |    |   |
|----------------|---------|---|---|---|----|---|
| Boise City, ID | 432,345 | 0 | 0 | 0 | 73 | 1 |
|----------------|---------|---|---|---|----|---|

### Illinois

|                  |           |    |   |   |    |    |
|------------------|-----------|----|---|---|----|----|
| St. Louis, MO-IL | 2,603,607 | 23 | 0 | 0 | 91 | 18 |
| Chicago, IL      | 8,272,768 | 10 | 0 | 0 | 88 | 10 |

## Appendix C. Metropolitan Areas Ranked by Smog Days in 2010 Within Each State, Continued

### Illinois

| Metropolitan Area                   | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard |
|-------------------------------------|------------|-------------------|----------------|-------------------|-----------------------------|--|
| Bloomington-Normal, IL              | 150,433    | 0                 | 0              | 0                 | 72                          | 1  |
| Champaign-Urbana, IL                | 179,669    | 0                 | 0              | 0                 | 62                          | 0  |
| Davenport-Moline-Rock Island, IA-IL | 359,062    | 0                 | 0              | 0                 | 71                          | 1  |
| Decatur, IL                         | 114,706    | 0                 | 0              | 0                 | 69                          | 0  |
| Peoria-Pekin, IL                    | 347,387    | 0                 | 0              | 0                 | 72                          | 3  |
| Rockford, IL                        | 371,236    | 0                 | 0              | 0                 | 66                          | 0  |
| Springfield, IL                     | 201,437    | 0                 | 0              | 0                 | 72                          | 1  |

### Indiana

|                             |           |    |   |   |    |    |
|-----------------------------|-----------|----|---|---|----|----|
| Louisville, KY-IN           | 1,025,598 | 19 | 1 | 0 | 96 | 16 |
| Cincinnati, OH-KY-IN        | 1,646,395 | 14 | 0 | 0 | 94 | 16 |
| Evansville-Henderson, IN-KY | 296,195   | 5  | 0 | 0 | 77 | 13 |
| Indianapolis, IN            | 1,607,486 | 3  | 0 | 0 | 83 | 13 |
| Gary, IN                    | 631,362   | 2  | 0 | 0 | 80 | 4  |
| Fort Wayne, IN              | 502,141   | 1  | 0 | 0 | 76 | 0  |
| Elkhart-Goshen, IN          | 182,791   | 0  | 0 | 0 | 69 | 0  |
| Muncie, IN                  | 118,769   | 0  | 0 | 0 | 73 | 1  |
| South Bend, IN              | 265,559   | 0  | 0 | 0 | 65 | 0  |
| Terra Haute, IN             | 149,192   | 0  | 0 | 0 | 66 | 0  |

### Iowa

|                                     |         |   |   |   |    |   |
|-------------------------------------|---------|---|---|---|----|---|
| Cedar Rapids, IA                    | 191,701 | 0 | 0 | 0 | 73 | 1 |
| Davenport-Moline-Rock Island, IA-IL | 359,062 | 0 | 0 | 0 | 71 | 1 |
| Des Moines, IA                      | 456,022 | 0 | 0 | 0 | 66 | 0 |
| Omaha, NE-IA                        | 716,998 | 0 | 0 | 0 | 71 | 2 |

### Kansas

|                    |           |   |   |   |    |    |
|--------------------|-----------|---|---|---|----|----|
| Kansas City, MO-KS | 1,776,062 | 6 | 0 | 0 | 84 | 16 |
| Topeka, KS         | 169,871   | 2 | 0 | 0 | 82 | 0  |
| Wichita, KS        | 545,220   | 2 | 0 | 0 | 77 | 10 |

### Kentucky

|                                 |           |    |   |   |    |    |
|---------------------------------|-----------|----|---|---|----|----|
| Louisville, KY-IN               | 1,025,598 | 19 | 1 | 0 | 96 | 16 |
| Cincinnati, OH-KY-IN            | 1,646,395 | 14 | 0 | 0 | 94 | 16 |
| Evansville-Henderson, IN-KY     | 296,195   | 5  | 0 | 0 | 77 | 13 |
| Huntington-Ashland, WV-KY-OH    | 315,538   | 4  | 0 | 0 | 79 | 8  |
| Clarksville-Hopkinsville, TN-KY | 207,033   | 2  | 0 | 0 | 77 | 6  |
| Owensboro, KY                   | 91,545    | 1  | 0 | 0 | 80 | 6  |
| Lexington, KY                   | 479,198   | 0  | 0 | 0 | 75 | 5  |

## Appendix C. Metropolitan Areas Ranked by Smog Days in 2010 Within Each State, Continued

### Louisiana

| Metropolitan Area           | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard |
|-----------------------------|------------|-------------------|----------------|-------------------|-----------------------------|--|
| Baton Rouge, LA             | 602,894    | 14                | 0              | 0                 | 89                          | 9  |
| Shreveport-Bossier City, LA | 392,302    | 9                 | 0              | 0                 | 90                          | 8  |
| New Orleans, LA             | 1,337,726  | 8                 | 0              | 0                 | 93                          | 7  |
| Lake Charles, LA            | 183,577    | 5                 | 0              | 0                 | 84                          | 4  |
| Lafayette, LA               | 385,647    | 2                 | 0              | 0                 | 79                          | 8  |
| Houma, LA                   | 194,477    | 1                 | 0              | 0                 | 79                          | 7  |
| Monroe, LA                  | 147,250    | 0                 | 0              | 0                 | 71                          | 3  |

### Maine

|                             |         |   |   |   |    |   |
|-----------------------------|---------|---|---|---|----|---|
| Portland, ME                | 243,537 | 2 | 1 | 0 | 96 | 2 |
| Portsmouth-Rochester, NH-ME | 240,698 | 2 | 0 | 0 | 81 | 1 |

### Maryland

|                          |           |    |   |   |     |    |
|--------------------------|-----------|----|---|---|-----|----|
| Baltimore, MD            | 2,552,994 | 33 | 6 | 0 | 115 | 17 |
| Washington, DC-MD-VA-WV  | 4,923,153 | 33 | 3 | 0 | 100 | 17 |
| Wilmington-Newark, DE-MD | 586,216   | 18 | 0 | 0 | 90  | 12 |
| Hagerstown, MD           | 131,923   | 5  | 0 | 0 | 90  | 6  |

### Massachusetts

|                                      |           |   |   |   |    |   |
|--------------------------------------|-----------|---|---|---|----|---|
| New Bedford, MA                      | 175,198   | 5 | 0 | 0 | 81 | 0 |
| Springfield, MA                      | 591,932   | 5 | 0 | 0 | 91 | 4 |
| Boston, MA-NH                        | 3,406,829 | 3 | 0 | 0 | 83 | 5 |
| Providence-Fall River-Warwick, RI-MA | 1,188,613 | 3 | 0 | 0 | 86 | 3 |
| Worcester, MA-CT                     | 511,389   | 3 | 0 | 0 | 83 | 2 |
| Lawrence, MA-NH                      | 396,230   | 1 | 0 | 0 | 76 | 3 |
| Pittsfield, MA                       | 84,699    | 1 | 0 | 0 | 80 | 5 |

### Michigan

|                                   |           |    |   |   |    |   |
|-----------------------------------|-----------|----|---|---|----|---|
| Detroit, MI                       | 4,441,551 | 12 | 0 | 0 | 89 | 6 |
| Grand Rapids-Muskegon-Holland, MI | 1,088,514 | 4  | 0 | 0 | 79 | 7 |
| Benton Harbor, MI                 | 162,453   | 1  | 0 | 0 | 79 | 4 |
| Kalamazoo-Battle Creek, MI        | 452,851   | 1  | 0 | 0 | 76 | 0 |
| Ann Arbor, MI                     | 578,736   | 0  | 0 | 0 | 74 | 1 |
| Flint, MI                         | 436,141   | 0  | 0 | 0 | 75 | 3 |
| Lansing-East Lansing, MI          | 447,728   | 0  | 0 | 0 | 75 | 1 |

### Minnesota

|                        |         |   |   |   |    |   |
|------------------------|---------|---|---|---|----|---|
| Duluth-Superior, MN-WI | 243,815 | 0 | 0 | 0 | 71 | 1 |
| Fargo-Moorhead, ND-MN  | 174,367 | 0 | 0 | 0 | 67 | 0 |

**Appendix C. Metropolitan Areas Ranked by Smog Days in 2010 Within Each State, Continued**

**Minnesota**

| Metropolitan Area           | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard |
|-----------------------------|------------|-------------------|----------------|-------------------|-----------------------------|--|
| La Crosse, WI-MN            | 126,838    | 0                 | 0              | 0                 | 69                          | 0  |
| Minneapolis-St. Paul, MN-WI | 2,968,806  | 0                 | 0              | 0                 | 75                          | 3  |
| Rochester, MN               | 124,277    | 0                 | 0              | 0                 | 65                          | 0  |
| St. Cloud, MN               | 167,392    | 0                 | 0              | 0                 | 70                          | 0  |

**Mississippi**

|                                |           |    |   |   |    |    |
|--------------------------------|-----------|----|---|---|----|----|
| Memphis, TN-AR-MS              | 1,135,614 | 13 | 0 | 0 | 91 | 11 |
| Biloxi-Gulfport-Pascagoula, MS | 363,988   | 2  | 0 | 0 | 82 | 10 |
| Jackson, MS                    | 440,801   | 0  | 0 | 0 | 73 | 1  |

**Missouri**

|                    |           |    |   |   |    |    |
|--------------------|-----------|----|---|---|----|----|
| St. Louis, MO-IL   | 2,603,607 | 23 | 0 | 0 | 91 | 18 |
| Kansas City, MO-KS | 1,776,062 | 6  | 0 | 0 | 84 | 16 |
| Joplin, MO         | 157,322   | 2  | 0 | 0 | 82 | 4  |
| St. Joseph, MO     | 102,490   | 1  | 0 | 0 | 81 | 5  |
| Columbia, MO       | 135,454   | 0  | 0 | 0 | 71 | 2  |
| Springfield, MO    | 325,721   | 0  | 0 | 0 | 70 | 0  |

**Montana**

|              |        |   |   |   |    |   |
|--------------|--------|---|---|---|----|---|
| Missoula, MT | 95,802 | 0 | 0 | 0 | 57 | 0 |
|--------------|--------|---|---|---|----|---|

**Nebraska**

|              |         |   |   |   |    |   |
|--------------|---------|---|---|---|----|---|
| Lincoln, NE  | 250,291 | 0 | 0 | 0 | 59 | 0 |
| Omaha, NE-IA | 716,998 | 0 | 0 | 0 | 71 | 2 |

**Nevada**

|                  |           |   |   |   |    |    |
|------------------|-----------|---|---|---|----|----|
| Las Vegas, NV-AZ | 1,563,282 | 9 | 0 | 0 | 84 | 22 |
| Reno, NV         | 339,486   | 1 | 0 | 0 | 77 | 2  |

**New Hampshire**

|                             |           |   |   |   |    |   |
|-----------------------------|-----------|---|---|---|----|---|
| Boston, MA-NH               | 3,406,829 | 3 | 0 | 0 | 83 | 5 |
| Nashua, NH                  | 190,949   | 2 | 0 | 0 | 81 | 0 |
| Portsmouth-Rochester, NH-ME | 240,698   | 2 | 0 | 0 | 81 | 1 |
| Lawrence, MA-NH             | 396,230   | 1 | 0 | 0 | 76 | 3 |
| Manchester, NH              | 198,378   | 1 | 0 | 0 | 77 | 0 |

**New Jersey**

|                     |           |    |   |   |     |   |
|---------------------|-----------|----|---|---|-----|---|
| Philadelphia, PA-NJ | 5,100,931 | 29 | 3 | 0 | 101 | 7 |
| Monmouth-Ocean, NJ  | 1,126,217 | 18 | 0 | 0 | 95  | 9 |



## Appendix C. Metropolitan Areas Ranked by Smog Days in 2010 Within Each State, Continued

### New Jersey

| Metropolitan Area                | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard |
|----------------------------------|------------|-------------------|----------------|-------------------|-----------------------------|--|
| Middlesex-Somerset-Hunterdon, NJ | 1,169,641  | 17                | 0              | 0                 | 94                          | 16   |
| Trenton, NJ                      | 350,761    | 15                | 0              | 0                 | 95                          | 14   |
| Newark, NJ                       | 2,032,989  | 9                 | 0              | 0                 | 94                          | 9  |
| Bergen-Passaic, NJ               | 1,373,167  | 7                 | 0              | 0                 | 94                          | 10   |
| Atlantic-Cape May, NJ            | 354,878    | 6                 | 0              | 0                 | 85                          | 3  |
| Jersey City, NJ                  | 608,975    | 6                 | 1              | 0                 | 111                         | 5  |
| Vineland-Millville-Bridgeton, NJ | 146,438    | 6                 | 0              | 0                 | 83                          | 5  |

### New Mexico

|                 |         |   |   |   |    |   |
|-----------------|---------|---|---|---|----|---|
| Las Cruces, NM  | 174,682 | 2 | 0 | 0 | 84 | 1 |
| Albuquerque, NM | 712,738 | 1 | 0 | 0 | 78 | 2 |
| Santa Fe, NM    | 147,635 | 0 | 0 | 0 | 71 | 1 |

### New York

|                             |           |    |   |   |     |    |
|-----------------------------|-----------|----|---|---|-----|----|
| New York, NY                | 9,314,235 | 14 | 1 | 0 | 113 | 14 |
| Nassau-Suffolk, NY          | 2,753,913 | 13 | 0 | 0 | 92  | 12 |
| Jamestown, NY               | 139,750   | 6  | 0 | 0 | 89  | 10 |
| Albany-Schenectady-Troy, NY | 875,583   | 4  | 0 | 0 | 84  | 5  |
| Dutchess County, NY         | 280,150   | 4  | 0 | 0 | 92  | 2  |
| Syracuse, NY                | 732,117   | 3  | 0 | 0 | 82  | 3  |
| Newburgh, NY-PA             | 387,669   | 2  | 0 | 0 | 87  | 6  |
| Buffalo-Niagara Falls, NY   | 1,170,111 | 1  | 0 | 0 | 77  | 7  |
| Elmira, NY                  | 91,070    | 1  | 0 | 0 | 77  | 2  |
| Rochester, NY               | 1,098,201 | 0  | 0 | 0 | 74  | 6  |
| Utica-Rome, NY              | 299,896   | 0  | 0 | 0 | 72  | 1  |

### North Carolina

|  |           |    |   |   |    |    |
|--|-----------|----|---|---|----|----|
| Charlotte-Gastonia-Rock Hill, NC-SC        | 1,499,293 | 17 | 1 | 0 | 96 | 20 |
| Greensboro-Winston Salem-High Point, NC    | 1,251,509 | 13 | 0 | 0 | 93 | 16 |
| Norfolk-Virginia Beach-Newport News, VA-NC | 1,569,541 | 6  | 1 | 0 | 97 | 9  |
| Raleigh-Durham-Chapel Hill, NC             | 1,187,941 | 5  | 0 | 0 | 83 | 9  |
| Hickory-Morganton-Lenoir, NC               | 341,851   | 3  | 0 | 0 | 82 | 4  |
| Fayetteville, NC                           | 302,963   | 2  | 0 | 0 | 86 | 5  |
| Asheville, NC                              | 225,965   | 1  | 0 | 0 | 76 | 3  |
| Greenville, NC                             | 133,798   | 1  | 0 | 0 | 81 | 2  |
| Rocky Mount, NC                            | 143,026   | 1  | 0 | 0 | 81 | 3  |
| Wilmington, NC                             | 233,450   | 1  | 0 | 0 | 79 | 0  |

## Appendix C. Metropolitan Areas Ranked by Smog Days in 2010 Within Each State, Continued

### North Dakota

| Metropolitan Area     | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard |
|-----------------------|------------|-------------------|----------------|-------------------|-----------------------------|--|
| Bismarck, ND          | 94,719     | 0                 | 0              | 0                 | 64                          | 0  |
| Fargo-Moorhead, ND-MN | 174,367    | 0                 | 0              | 0                 | 67                          | 0  |

### Ohio

|                              |           |    |   |   |    |    |
|------------------------------|-----------|----|---|---|----|----|
| Cleveland-Lorain-Elyria, OH  | 2,250,871 | 15 | 0 | 0 | 90 | 10 |
| Cincinnati, OH-KY-IN         | 1,646,395 | 14 | 0 | 0 | 94 | 16 |
| Hamilton-Middletown, OH      | 332,807   | 14 | 0 | 0 | 86 | 9  |
| Dayton-Springfield, OH       | 950,558   | 11 | 0 | 0 | 82 | 10 |
| Canton-Massillon, OH         | 406,934   | 8  | 0 | 0 | 88 | 10 |
| Columbus, OH                 | 1,540,157 | 6  | 0 | 0 | 88 | 14 |
| Parkersburg-Marietta, WV-OH  | 151,237   | 5  | 0 | 0 | 79 | 7  |
| Akron, OH                    | 694,960   | 4  | 0 | 0 | 82 | 9  |
| Huntington-Ashland, WV-KY-OH | 315,538   | 4  | 0 | 0 | 79 | 8  |
| Steubenville-Weirton, OH-WV  | 132,008   | 4  | 0 | 0 | 83 | 7  |
| Wheeling, WV-OH              | 153,172   | 4  | 0 | 0 | 82 | 3  |
| Youngstown-Warren, OH        | 594,746   | 4  | 0 | 0 | 89 | 4  |
| Toledo, OH                   | 618,203   | 3  | 0 | 0 | 91 | 3  |
| Lima, OH                     | 155,084   | 2  | 0 | 0 | 78 | 3  |

### Oklahoma

|                   |           |   |   |   |    |   |
|-------------------|-----------|---|---|---|----|---|
| Oklahoma City, OK | 1,083,346 | 3 | 0 | 0 | 79 | 8 |
| Tulsa, OK         | 803,235   | 2 | 0 | 0 | 78 | 6 |
| Fort Smith, AR-OK | 207,290   | 1 | 0 | 0 | 79 | 0 |
| Lawton, OK        | 114,996   | 1 | 0 | 0 | 81 | 1 |

### Oregon

|                           |           |   |   |   |    |   |
|---------------------------|-----------|---|---|---|----|---|
| Portland-Vancouver, OR-WA | 1,918,009 | 1 | 0 | 0 | 94 | 1 |
| Salem, OR                 | 347,214   | 1 | 0 | 0 | 78 | 0 |
| Eugene-Springfield, OR    | 322,959   | 0 | 0 | 0 | 74 | 1 |
| Medford-Ashland, OR       | 181,269   | 0 | 0 | 0 | 68 | 0 |

### Pennsylvania

|                                 |           |    |   |   |     |    |
|---------------------------------|-----------|----|---|---|-----|----|
| Philadelphia, PA-NJ             | 5,100,931 | 29 | 3 | 0 | 101 | 7  |
| Lancaster, PA                   | 470,658   | 13 | 0 | 0 | 95  | 9  |
| Pittsburgh, PA                  | 2,358,695 | 13 | 1 | 0 | 105 | 6  |
| Allentown-Bethlehem-Easton, PA  | 637,958   | 12 | 0 | 0 | 94  | 9  |
| Reading, PA                     | 373,638   | 8  | 0 | 0 | 87  | 15 |
| Harrisburg-Lebanon-Carlisle, PA | 629,401   | 4  | 0 | 0 | 87  | 5  |
| Sharon, PA                      | 120,293   | 4  | 0 | 0 | 82  | 5  |

## Appendix C. Metropolitan Areas Ranked by Smog Days in 2010 Within Each State, Continued

### Pennsylvania

| Metropolitan Area                  | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard |
|------------------------------------|------------|-------------------|----------------|-------------------|-----------------------------|--|
| York, PA                           | 381,751    | 4                 | 0              | 0                 | 88                          | 12   |
| Altoona, PA                        | 129,144    | 3                 | 0              | 0                 | 84                          | 5  |
| Erie, PA                           | 280,843    | 3                 | 0              | 0                 | 83                          | 5  |
| Scranton-Wilkes-Barre-Hazleton, PA | 624,776    | 3                 | 0              | 0                 | 82                          | 5  |
| Johnstown, PA                      | 232,621    | 2                 | 0              | 0                 | 85                          | 3  |
| Newburgh, NY-PA                    | 387,669    | 2                 | 0              | 0                 | 87                          | 6  |
| State College, PA                  | 135,758    | 2                 | 0              | 0                 | 78                          | 4  |
| Williamsport, PA                   | 120,044    | 1                 | 0              | 0                 | 76                          | 5  |

### Rhode Island

|                                      |           |   |   |   |    |   |
|--------------------------------------|-----------|---|---|---|----|---|
| New London-Norwich, CT-RI            | 293,566   | 3 | 0 | 0 | 78 | 5 |
| Providence-Fall River-Warwick, RI-MA | 1,188,613 | 3 | 0 | 0 | 86 | 3 |

### South Carolina

|                                     |           |    |   |   |    |    |
|-------------------------------------|-----------|----|---|---|----|----|
| Charlotte-Gastonia-Rock Hill, NC-SC | 1,499,293 | 17 | 1 | 0 | 96 | 20 |
| Greenville-Spartanburg-Anderson, SC | 962,441   | 8  | 0 | 0 | 82 | 13 |
| Augusta-Aiken, GA-SC                | 477,441   | 2  | 0 | 0 | 81 | 4  |
| Columbia, SC                        | 536,691   | 2  | 0 | 0 | 81 | 4  |
| Charleston-North Charleston, SC     | 549,033   | 0  | 0 | 0 | 74 | 2  |

### South Dakota

|                 |         |   |   |   |    |   |
|-----------------|---------|---|---|---|----|---|
| Sioux Falls, SD | 172,412 | 0 | 0 | 0 | 68 | 0 |
|-----------------|---------|---|---|---|----|---|

### Tennessee

|                                       |           |    |   |   |    |    |
|---------------------------------------|-----------|----|---|---|----|----|
| Knoxville, TN                         | 687,249   | 20 | 0 | 0 | 84 | 27 |
| Memphis, TN-AR-MS                     | 1,135,614 | 13 | 0 | 0 | 91 | 11 |
| Nashville, TN                         | 1,231,311 | 10 | 0 | 0 | 88 | 18 |
| Chattanooga, TN-GA                    | 465,161   | 6  | 0 | 0 | 82 | 11 |
| Clarksville-Hopkinsville, TN-KY       | 207,033   | 2  | 0 | 0 | 77 | 6  |
| Johnson City-Kingsport-Bristol, TN-VA | 480,091   | 2  | 0 | 0 | 80 | 4  |

### Texas

|                          |           |    |   |   |    |    |
|--------------------------|-----------|----|---|---|----|----|
| Houston, TX              | 4,177,646 | 27 | 1 | 0 | 97 | 7  |
| Fort Worth-Arlington, TX | 1,702,625 | 15 | 0 | 0 | 94 | 3  |
| Beaumont-Port Arthur, TX | 385,090   | 13 | 0 | 0 | 91 | 11 |
| Dallas, TX               | 3,519,176 | 12 | 0 | 0 | 87 | 12 |
| Brazoria, TX             | 241,767   | 11 | 0 | 0 | 94 | 7  |

## Appendix C. Metropolitan Areas Ranked by Smog Days in 2010 Within Each State, Continued

### Texas

| Metropolitan Area                    | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard |
|--------------------------------------|------------|-------------------|----------------|-------------------|-----------------------------|--|
| Galveston-Texas City, TX             | 250,158    | 8                 | 0              | 0                 | 91                          | 6  |
| Longview-Marshall, TX                | 208,780    | 6                 | 0              | 0                 | 80                          | 12   |
| San Antonio, TX                      | 1,592,383  | 4                 | 0              | 0                 | 87                          | 7  |
| Austin-San Marcos, TX                | 1,249,763  | 3                 | 0              | 0                 | 80                          | 7  |
| El Paso, TX                          | 679,622    | 3                 | 0              | 0                 | 87                          | 5  |
| Corpus Christi, TX                   | 380,783    | 2                 | 0              | 0                 | 78                          | 6  |
| Brownsville-Harlingen-San Benito, TX | 335,227    | 0                 | 0              | 0                 | 72                          | 2  |
| Killeen-Temple, TX                   | 312,952    | 0                 | 0              | 0                 | 75                          | 6  |
| Laredo, TX                           | 193,117    | 0                 | 0              | 0                 | 70                          | 0  |
| McAllen-Edinburg-Mission, TX         | 569,463    | 0                 | 0              | 0                 | 66                          | 0  |
| Tyler, TX                            | 174,706    | 0                 | 0              | 0                 | 75                          | 6  |
| Victoria, TX                         | 84,088     | 0                 | 0              | 0                 | 73                          | 1  |
| Waco, TX                             | 213,517    | 0                 | 0              | 0                 | 75                          | 2  |

### Utah

|                          |           |   |   |   |    |   |
|--------------------------|-----------|---|---|---|----|---|
| Salt Lake City-Ogden, UT | 1,333,914 | 4 | 0 | 0 | 91 | 7 |
| Flagstaff, AZ-UT         | 122,366   | 1 | 0 | 0 | 81 | 3 |
| Provo-Orem, UT           | 368,536   | 1 | 0 | 0 | 84 | 6 |

### Virginia

|  |           |    |   |   |     |    |
|--|-----------|----|---|---|-----|----|
| Washington, DC-MD-VA-WV                    | 4,923,153 | 33 | 3 | 0 | 100 | 17 |
| Richmond-Petersburg, VA                    | 996,512   | 10 | 2 | 0 | 98  | 15 |
| Norfolk-Virginia Beach-Newport News, VA-NC | 1,569,541 | 6  | 1 | 0 | 97  | 9  |
| Charlottesville, VA                        | 159,576   | 3  | 0 | 0 | 79  | 1  |
| Johnson City-Kingsport-Bristol, TN-VA      | 480,091   | 2  | 0 | 0 | 80  | 4  |
| Roanoke, VA                                | 235,932   | 1  | 0 | 0 | 76  | 5  |

### Washington

|                              |           |   |   |   |    |   |
|------------------------------|-----------|---|---|---|----|---|
| Portland-Vancouver, OR-WA    | 1,918,009 | 1 | 0 | 0 | 94 | 1 |
| Seattle-Bellevue-Everett, WA | 2,414,616 | 1 | 0 | 0 | 77 | 2 |
| Bellingham, WA               | 166,814   | 0 | 0 | 0 | 52 | 0 |
| Olympia, WA                  | 207,355   | 0 | 0 | 0 | 60 | 0 |
| Spokane, WA                  | 417,939   | 0 | 0 | 0 | 67 | 0 |
| Tacoma, WA                   | 700,820   | 0 | 0 | 0 | 69 | 0 |

### West Virginia

|                              |           |    |   |   |     |    |
|------------------------------|-----------|----|---|---|-----|----|
| Washington, DC-MD-VA-WV      | 4,923,153 | 33 | 3 | 0 | 100 | 17 |
| Parkersburg-Marietta, WV-OH  | 151,237   | 5  | 0 | 0 | 79  | 7  |
| Huntington-Ashland, WV-KY-OH | 315,538   | 4  | 0 | 0 | 79  | 8  |

## Appendix C. Metropolitan Areas Ranked by Smog Days in 2010 Within Each State, Continued

### West Virginia

| Metropolitan Area           | Population | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Highest Concentration (ppb) | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard |
|-----------------------------|------------|-------------------|----------------|-------------------|-----------------------------|--|
| Steubenville-Weirton, OH-WV | 132,008    | 4                 | 0              | 0                 | 83                          | 7  |
| Wheeling, WV-OH             | 153,172    | 4                 | 0              | 0                 | 82                          | 3  |
| Charleston, WV              | 251,662    | 1                 | 0              | 0                 | 87                          | 2  |

### Wisconsin

|                             |           |   |   |   |    |   |
|-----------------------------|-----------|---|---|---|----|---|
| Kenosha, WI                 | 149,577   | 7 | 0 | 0 | 89 | 5 |
| Sheboygan, WI               | 112,646   | 7 | 0 | 0 | 92 | 5 |
| Milwaukee-Waukesha, WI      | 1,500,741 | 6 | 0 | 0 | 92 | 5 |
| Racine, WI                  | 188,831   | 6 | 0 | 0 | 84 | 0 |
| Appleton-Oshkosh-Neehan, WI | 358,365   | 0 | 0 | 0 | 72 | 1 |
| Duluth-Superior, MN-WI      | 243,815   | 0 | 0 | 0 | 71 | 1 |
| Green Bay, WI               | 226,778   | 0 | 0 | 0 | 73 | 1 |
| Janesville-Beloit, WI       | 152,307   | 0 | 0 | 0 | 71 | 1 |
| La Crosse, WI-MN            | 126,838   | 0 | 0 | 0 | 69 | 0 |
| Madison, WI                 | 426,526   | 0 | 0 | 0 | 70 | 0 |
| Minneapolis-St. Paul, MN-WI | 2,968,806 | 0 | 0 | 0 | 75 | 3 |
| Wausau, WI                  | 125,834   | 0 | 0 | 0 | 64 | 0 |

## Appendix D. Smog Days in 2011 by Combined Statistical Areas, through August 21, 2011

| Combined Statistical Area                  | Smog Days in 2011 | Red-Alert Days | Purple-Alert Days | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard | Highest Concentration (ppb) |
|--|-------------------|----------------|-------------------|--|-----------------------------|
| Albany-Schenectady-Amsterdam, NY           | 1                 |                |                   | 1  | 82                          |
| Ames-Boone, IA                             | 0                 |                |                   | 0  | 66                          |
| Appleton-Oshkosh-Neenah, WI                | 1                 |                |                   | 3  | 76                          |
| Asheville-Brevard, NC                      | 2                 |                |                   | 2  | 77                          |
| Atlanta-Sandy Springs-Gainesville, GA-AL   | 34                |                |                   | 18   | 94                          |
| Baton Rouge-Pierre Part, LA                | 12                |                |                   | 13   | 90                          |
| Bend-Prineville, OR                        | 0                 |                |                   | 0  | 56                          |
| Birmingham-Hoover-Cullman, AL              | 15                | 1              |                   | 13   | 98                          |
| Boston-Worcester-Manchester, MA-RI-NH      | 8                 |                |                   | 7  | 91                          |
| Brownsville-Harlingen-Raymondville, TX     | 0                 |                |                   | 0  | 66                          |
| Buffalo-Niagara-Cattaraugus, NY            | 6                 |                |                   | 3  | 92                          |
| Charlotte-Gastonia-Salisbury, NC-SC        | 21                |                |                   | 19   | 91                          |
| Chattanooga-Cleveland-Athens, TN-GA        | 4                 |                |                   | 2  | 79                          |
| Chicago-Naperville-Michigan City, IL-IN-WI | 15                |                |                   | 7  | 93                          |
| Cincinnati-Middletown-Wilmington, OH-KY-IN | 20                | 1              |                   | 10   | 97                          |
| Claremont-Lebanon, NH-VT                   | 0                 |                |                   | 0  | 63                          |
| Cleveland-Akron-Elyria, OH                 | 11                |                |                   | 9  | 90                          |
| Columbia-Newberry, SC                      | 7                 |                |                   | 10   | 85                          |
| Columbus-Auburn-Opelika, GA-AL             | 0                 |                |                   | 1  | 71                          |
| Columbus-Marion-Chillicothe, OH            | 7                 |                |                   | 10   | 88                          |
| Corpus Christi-Kingsville, TX              | 0                 |                |                   | 1  | 75                          |
| Dallas-Fort Worth, TX                      | 19                |                |                   | 17   | 95                          |
| Dayton-Springfield-Greenville, OH          | 8                 |                |                   | 10   | 85                          |
| Denver-Aurora-Boulder, CO                  | 17                | 1              |                   | 18   | 106                         |
| Des Moines-Newton-Pella, IA                | 0                 |                |                   | 0  | 68                          |
| Detroit-Warren-Flint, MI                   | 10                |                |                   | 3  | 88                          |
| Dothan-Enterprise-Ozark, AL                | 0                 |                |                   | 0  | 70                          |
| Fargo-Wahpeton, ND-MN                      | 0                 |                |                   | 0  | 61                          |
| Fond du Lac-Beaver Dam, WI                 | 2                 |                |                   | 3  | 82                          |
| Fort Wayne-Huntington-Auburn, IN           | 2                 |                |                   | 3  | 77                          |
| Fresno-Madera, CA                          | 28                | 1              |                   | 17   | 104                         |
| Grand Rapids-Muskegon-Holland, MI          | 6                 | 3              |                   | 2  | 104                         |
| Greensboro--Winston-Salem--High Point, NC  | 7                 |                |                   | 8  | 85                          |
| Greenville-Spartanburg-Anderson, SC        | 6                 |                |                   | 9  | 89                          |
| Gulfport-Biloxi-Pascagoula, MS             | 0                 |                |                   | 6  | 75                          |
| Harrisburg-Carlisle-Lebanon, PA            | 4                 |                |                   | 6  | 85                          |
| Hartford-West Hartford-Willimantic, CT     | 6                 |                |                   | 0  | 92                          |
| Houston-Baytown-Huntsville, TX             | 15                | 2              |                   | 11   | 112                         |
| Huntsville-Decatur, AL                     | 2                 |                |                   | 3  | 78                          |
| Indianapolis-Anderson-Columbus, IN         | 5                 |                |                   | 11   | 89                          |
| Jackson-Yazoo City, MS                     | 3                 |                |                   | 0  | 85                          |

**Appendix D. Smog Days in 2011 by Combined Statistical Areas, through August 21, 2011, Continued**

| Combined Statistical Area                                   | Smog Days in 2011 | Red-Alert Days | Purple-Alert Days | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard | Highest Concentration (ppb) |
|---|-------------------|----------------|-------------------|--|-----------------------------|
| Johnson City-Kingsport-Bristol (Tri-Cities), TN-VA          | 2                 |                |                   | 3  | 80                          |
| Kansas City-Overland Park-Kansas City, MO-KS                | 12                |                |                   | 13   | 90                          |
| Knoxville-Sevierville-La Follette, TN                       | 15                | 1              |                   | 19   | 98                          |
| Lafayette-Acadiana, LA                                      | 1                 |                |                   | 0  | 76                          |
| Lafayette-Frankfort, IN                                     | 1                 |                |                   | 0  | 77                          |
| Lake Charles-Jennings, LA                                   | 0                 |                |                   | 1  | 72                          |
| Lansing-East Lansing-Owosso, MI                             | 0                 |                |                   | 0  | 52                          |
| Las Vegas-Paradise-Pahrump, NV                              | 9                 |                |                   | 15   | 90                          |
| Lexington-Fayette--Frankfort--Richmond, KY                  | 5                 |                |                   | 1  | 82                          |
| Lima-Van Wert-Wapakoneta, OH                                | 2                 |                |                   | 6  | 76                          |
| Little Rock-North Little Rock-Pine Bluff, AR                | 10                |                |                   | 4  | 84                          |
| Longview-Marshall, TX                                       | 4                 |                |                   | 6  | 89                          |
| Los Angeles-Long Beach-Riverside, CA                        | 85                | 21             | 3                 | 20   | 136                         |
| Louisville/Jefferson County-Elizabethtown-Scottsburg, KY-IN | 15                | 2              |                   | 13   | 100                         |
| Macon-Warner Robins-Fort Valley, GA                         | 6                 |                |                   | 6  | 86                          |
| Madison-Baraboo, WI   | 0                 |                |                   | 0  | 70                          |
| Milwaukee-Racine-Waukesha, WI                               | 4                 |                |                   | 4  | 87                          |
| Minneapolis-St. Paul-St. Cloud, MN-WI                       | 1                 |                |                   | 0  | 80                          |
| Mobile-Daphne-Fairhope, AL                                  | 2                 |                |                   | 3  | 78                          |
| Monroe-Bastrop, LA  | 0                 |                |                   | 0  | 70                          |
| Montgomery-Alexander City, AL                               | 0                 |                |                   | 2  | 73                          |
| Nashville-Davidson--Murfreesboro--Columbia, TN              | 9                 |                |                   | 4  | 86                          |
| New Orleans-Metairie-Bogalusa, LA                           | 5                 |                |                   | 8  | 83                          |
| New York-Newark-Bridgeport, NY-NJ-CT-PA                     | 27                | 7              |                   | 5  | 114                         |
| Oklahoma City-Shawnee, OK                                   | 17                |                |                   | 8  | 86                          |
| Omaha-Council Bluffs-Fremont, NE-IA                         | 0                 |                |                   | 0  | 70                          |
| Orlando-Deltona-Daytona Beach, FL                           | 7                 |                |                   | 4  | 81                          |
| Paducah-Mayfield, KY-IL                                     | 2                 |                |                   | 3  | 89                          |
| Peoria-Canton, IL   | 1                 |                |                   | 0  | 89                          |
| Philadelphia-Camden-Vineland, PA-NJ-DE-MD                   | 18                | 3              |                   | 9  | 101                         |
| Pittsburgh-New Castle, PA                                   | 11                |                |                   | 10   | 84                          |
| Portland-Lewiston-South Portland, ME                        | 2                 |                |                   | 3  | 90                          |
| Raleigh-Durham-Cary, NC                                     | 6                 |                |                   | 17   | 88                          |
| Reno-Sparks-Fernley, NV                                     | 2                 |                |                   | 0  | 81                          |
| Rochester-Batavia-Seneca Falls, NY                          | 0                 |                |                   | 1  | 74                          |
| Rockford-Freeport-Rochelle, IL                              | 0                 |                |                   | 1  | 75                          |
| Sacramento--Arden-Arcade--Yuba City, CA-NV                  | 23                | 1              |                   | 10   | 97                          |
| Salt Lake City-Ogden-Clearfield, UT                         | 7                 |                |                   | 8  | 83                          |
| San Jose-San Francisco-Oakland, CA                          | 2                 |                |                   | 2  | 84                          |
| San Juan-Caguas-Fajardo, PR                                 | 0                 |                |                   | 0  | 51                          |

**Appendix D. Smog Days in 2011 by Combined Statistical Areas, through August 21, 2011, Continued**

| Combined Statistical Area                           | Smog Days in 2011 | Red-Alert Days | Purple-Alert Days | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard | Highest Concentration (ppb) |
|---|-------------------|----------------|-------------------|--|-----------------------------|
| Santa Fe-Espanola, NM                               | 0                 |                |                   | 0  | 65                          |
| Sarasota-Bradenton-Punta Gorda, FL                  | 3                 |                |                   | 2  | 83                          |
| Savannah-Hinesville-Fort Stewart, GA                | 0                 |                |                   | 0  | 67                          |
| Seattle-Tacoma-Olympia, WA                          | 0                 |                |                   | 0  | 70                          |
| Shreveport-Bossier City-Minden, LA                  | 2                 |                |                   | 7  | 78                          |
| Sioux City-Vermillion, IA-NE-SD                     | 0                 |                |                   | 0  | 51                          |
| South Bend-Elkhart-Mishawaka, IN-MI                 | 5                 |                |                   | 5  | 85                          |
| St. Louis-St. Charles-Farmington, MO-IL             | 23                | 2              |                   | 13   | 102                         |
| Syracuse-Auburn, NY                                 | 2                 |                |                   | 0  | 78                          |
| Toledo-Fremont, OH                                  | 4                 |                |                   | 5  | 84                          |
| Tulsa-Bartlesville, OK                              | 15                |                |                   | 13   | 95                          |
| Tyler-Jacksonville, TX                              | 0                 |                |                   | 5  | 73                          |
| Washington-Baltimore-Northern Virginia, DC-MD-VA-WV | 28                | 7              |                   | 15   | 114                         |
| Wausau-Merrill, WI                                  | 0                 |                |                   | 0  | 70                          |
| Wichita-Winfield, KS                                | 4                 |                |                   | 7  | 83                          |
| Williamsport-Lock Haven, PA                         | 0                 |                |                   | 1  | 71                          |
| York-Hanover-Gettysburg, PA                         | 5                 |                |                   | 4  | 84                          |
| Youngstown-Warren-East Liverpool, OH-PA             | 4                 |                |                   | 4  | 85                          |



## Appendix E. Smog Days in 2010 by State

| State          | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard | Highest Concentration (ppb) |
|----------------|-------------------|----------------|-------------------|--|-----------------------------|
| Alabama        | 15                |                |                   | 25   | 88                          |
| Alaska         | 0                 |                |                   | 0  | 53                          |
| Arizona        | 14                |                |                   | 23   | 85                          |
| Arkansas       | 8                 |                |                   | 17   | 91                          |
| California     | 135               | 37             | 2                 | 23   | 123                         |
| Colorado       | 19                |                |                   | 24   | 89                          |
| Connecticut    | 24                | 1              |                   | 13   | 101                         |
| DC             | 18                | 1              |                   | 16   | 100                         |
| Delaware       | 18                | 2              |                   | 20   | 98                          |
| Florida        | 9                 |                |                   | 17   | 88                          |
| Georgia        | 28                | 1              |                   | 21   | 98                          |
| Hawaii         | 0                 |                |                   | 0  | 52                          |
| Idaho          | 0                 |                |                   | 1  | 73                          |
| Illinois       | 25                |                |                   | 17   | 88                          |
| Indiana        | 18                |                |                   | 19   | 86                          |
| Iowa           | 1                 |                |                   | 4  | 77                          |
| Kansas         | 7                 |                |                   | 14   | 83                          |
| Kentucky       | 21                | 1              |                   | 26   | 96                          |
| Louisiana      | 23                |                |                   | 21   | 93                          |
| Maine          | 8                 | 1              |                   | 1  | 96                          |
| Maryland       | 43                | 7              |                   | 18   | 115                         |
| Massachusetts  | 14                | 1              |                   | 11   | 100                         |
| Michigan       | 14                |                |                   | 16   | 91                          |
| Minnesota      | 1                 |                |                   | 2  | 76                          |
| Mississippi    | 7                 |                |                   | 10   | 84                          |
| Missouri       | 25                |                |                   | 24   | 91                          |
| Montana        | 0                 |                |                   | 0  | 65                          |
| Nebraska       | 0                 |                |                   | 2  | 71                          |
| Nevada         | 10                |                |                   | 25   | 84                          |
| New Hampshire  | 8                 |                |                   | 5  | 82                          |
| New Jersey     | 35                | 2              |                   | 13   | 111                         |
| New Mexico     | 4                 |                |                   | 6  | 84                          |
| New York       | 30                | 1              |                   | 22   | 113                         |
| North Carolina | 26                | 1              |                   | 31   | 96                          |
| North Dakota   | 0                 |                |                   | 0  | 70                          |
| Ohio           | 33                |                |                   | 23   | 94                          |
| Oklahoma       | 8                 |                |                   | 14   | 86                          |
| Oregon         | 2                 |                |                   | 0  | 94                          |
| Pennsylvania   | 35                | 3              |                   | 18   | 105                         |
| Rhode Island   | 6                 |                |                   | 4  | 86                          |

### Appendix E. Smog Days in 2010 by State, Continued

| State          | Smog Days in 2010 | Red-Alert Days | Purple-Alert Days | Additional Days the Air Was Unhealthy to Breathe According to a More Protective Standard | Highest Concentration (ppb) |
|----------------|-------------------|----------------|-------------------|--|-----------------------------|
| South Carolina | 8                 |                |                   | 14   | 82                          |
| South Dakota   | 0                 |                |                   | 0  | 69                          |
| Tennessee      | 29                |                |                   | 35   | 88                          |
| Texas          | 48                | 1              |                   | 20   | 97                          |
| Utah*          | 45                | 15             | 5                 | 25   | 123                         |
| Vermont        | 0                 |                |                   | 3  | 71                          |
| Virginia       | 25                | 3              |                   | 27   | 98                          |
| Washington     | 8                 | 2              |                   | 2  | 110                         |
| West Virginia  | 10                |                |                   | 12   | 89                          |
| Wisconsin      | 11                |                |                   | 7  | 95                          |
| Wyoming        | 0                 |                |                   | 2  | 72                          |

\*In Utah, all but 5 of the smog days recorded occurred in Jan-Mar at monitoring stations in the desert, likely as a result of natural gas exploration, and not from the usual culprits of vehicles and power plants. Of the 25 additional days of unhealthy air, 19 are during summer months. Smog days are more likely during summer months because pollution from vehicles and power plants reacts with heat and sunlight to form smog.

## Endnotes

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<sup>xxiv</sup> EPA Air Quality Index: A Guide to Air Quality and Your Health, August 2009.

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