

Evaluating Ozone Control Programs in the Eastern United States: Focus on the NO_x Budget Trading Program, 2004

State and Local Information for EPA Region 4

Alabama
Florida
Georgia
Kentucky
Mississippi
North Carolina
South Carolina
Tennessee

U.S. Environmental Protection Agency
Office of Air and Radiation
Office of Air Quality Planning and Standards

October 2005

Alabama

Emissions

State total emissions of NO_x and VOCs have decreased from 1997 to 2004. After 2002 the largest emission reductions were NO_x emissions from power generating sources.

Ozone Season (May-September) Emission Totals by Major Source Categories (tons)

Source Category	1997	2002	2004
NO_x Emissions			
Power Industry	97,789	76,942	54,368
Mobile On-Road	77,822	61,297	54,968
Other	88,226	75,013	77,040
VOC Emissions			
Mobile On-Road	56,914	41,651	37,307
Solvent Usage	41,888	39,570	39,014
Other	76,937	62,327	60,344

The emissions data used in the report are measured or estimated values from EPA's National Emissions Inventory (NEI). Starting in 1997, the NEI incorporated power industry data measured by the Continuous Emissions Monitoring System (CEMS). For 2002, the preliminary version of the NEI was used, which includes the 2002 CEMS data, but does not include 2002 data for other sources submitted by state, local, and tribal air agencies.

EPA used CEMS data for the power industry for 2003 and 2004. Emissions for other sources for that period were estimated by interpolating between the 2002 preliminary NEI data and a projected 2010 emission inventory developed to support the Clean Air Interstate Rule.

For additional information use the following online resources:

National Emissions Inventory (NEI): www.epa.gov/ttn/chief/net .

Emissions data for the power industry: <http://cfpub.epa.gov/gdm> .

Information on mobile sources: www.epa.gov/otaq .

Ozone

On average, ozone has declined between 1997 and 2004. These improvements in ozone are in response to both state and regional reductions in NO_x and VOC emissions. The level of ozone improvement varies from site to site.

Highest Fourth Daily Maximum 8-hour Ozone Concentration by Metropolitan Statistical Area, 1997, 2002 and 2004

Metropolitan Statistical Area	1997 O ₃ 8-hr (ppm)	2002 O ₃ 8-hr (ppm)	2004 O ₃ 8-hr (ppm)
Birmingham, AL MSA	0.09	0.09	0.08
Columbus, GA--AL MSA	0.08	0.08	0.07
Decatur, AL MSA	0.08	0.09	0.07
Florence, AL MSA		0.08	0.07
Gadsden, AL MSA		0.08	0.07
Huntsville, AL MSA	0.09	0.08	0.08
Mobile, AL MSA	0.08	0.08	0.08
Montgomery, AL MSA	0.07	0.08	0.07
Tuscaloosa, AL MSA		0.08	0.07

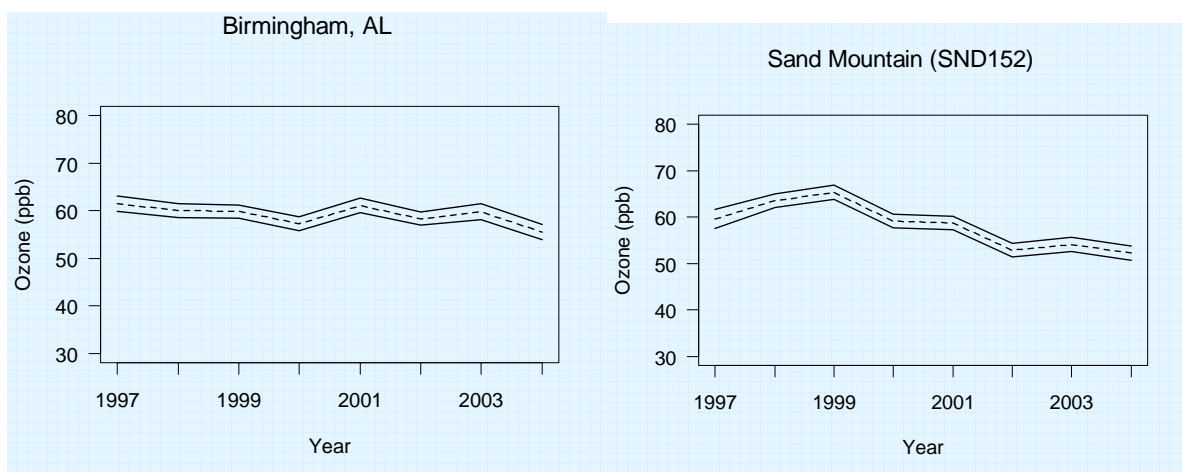
Level of the NAAQS is .08 ppm. Units are parts per million (ppm).

Notes:

- Data from exceptional events are not included.
- The reader is cautioned that this summary is not adequate in itself to numerically rank MSAs according to their air quality.
- The monitoring data represent the quality of air in the vicinity of the monitoring site and, for some pollutants, may not necessarily represent urban-wide air quality.

Trends for 1997-2004 with 95 percent confidence limits are presented below. Ozone season averages of daily maximum 8-hour ozone were adjusted to remove the influence of year-to-year variability in meteorology.

Seasonal Average 8-hour Ozone Trends



Florida

Emissions

State total emissions of NO_x and VOCs have decreased from 1997 to 2004.

Ozone Season (May-September) Emission Totals by Major Source Categories (tons)

Source Category	1997	2002	2004
NO_x Emissions			
Power Industry	143,725	121,085	103,151
Mobile On-Road	184,011	175,885	156,086
Other	102,333	106,284	106,332
VOC Emissions			
Mobile On-Road	145,625	131,200	115,882
Solvent Usage	103,321	80,488	82,415
Other	154,373	158,681	152,432

The emissions data used in the report are measured or estimated values from EPA's National Emissions Inventory (NEI). Starting in 1997, the NEI incorporated power industry data measured by the Continuous Emissions Monitoring System (CEMS). For 2002, the preliminary version of the NEI was used, which includes the 2002 CEMS data, but does not include 2002 data for other sources submitted by state, local, and tribal air agencies.

EPA used CEMS data for the power industry for 2003 and 2004. Emissions for other sources for that period were estimated by interpolating between the 2002 preliminary NEI data and a projected 2010 emission inventory developed to support the Clean Air Interstate Rule.

For additional information use the following online resources:

National Emissions Inventory (NEI): www.epa.gov/ttn/chief/net .

Emissions data for the power industry: <http://cfpub.epa.gov/gdm> .

Information on mobile sources: www.epa.gov/otaq .

Ozone

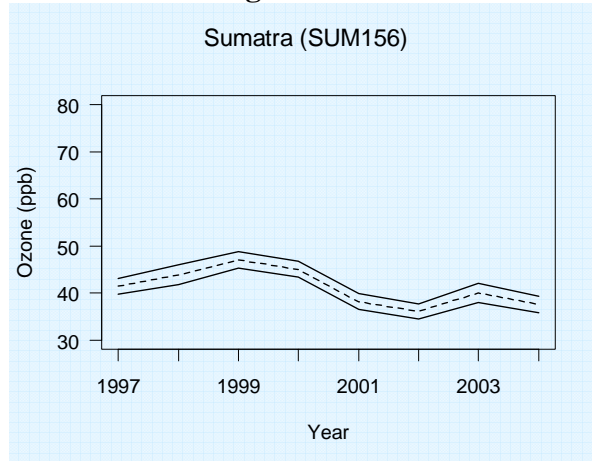
On average, ozone has declined between 1997 and 2004. These improvements in ozone are in response to both state and regional reductions in NO_x and VOC emissions. The level of ozone improvement varies from site to site.

Highest Fourth Daily Maximum 8-hour Ozone Concentration by Metropolitan Statistical Area, 1997, 2002 and 2004

Metropolitan Statistical Area	1997 O₃ 8-hr (ppm)	2002 O₃ 8-hr (ppm)	2004 O₃ 8-hr (ppm)
Fort Lauderdale, FL PMSA	0.07	0.07	0.06
Miami, FL PMSA	0.08	0.07	0.07
Daytona Beach, FL MSA	0.07	0.07	0.07
Fort Myers--Cape Coral, FL MSA	0.07	0.06	0.07
Fort Pierce--Port St. Lucie, FL MSA	0.07	0.06	0.07
Gainesville, FL MSA	0.08	0.07	0.08
Jacksonville, FL MSA	0.09	0.07	0.08
Lakeland--Winter Haven, FL MSA	0.08	0.07	0.07
Melbourne--Titusville--Palm Bay, FL MSA	0.08	0.07	0.07
Naples, FL MSA		0.06	0.07
Ocala, FL MSA		0.08	0.08
Orlando, FL MSA	0.08	0.08	0.08
Panama City, FL MSA		0.07	0.08
Pensacola, FL MSA	0.09	0.08	0.08
Sarasota--Bradenton, FL MSA	0.08	0.08	0.08
Tallahassee, FL MSA	0.05	0.07	0.07
Tampa--St. Petersburg--Clearwater, FL MSA	0.09	0.07	0.08
West Palm Beach--Boca Raton, FL MSA	0.07	0.06	0.07
<p>Level of the NAAQS is .08 ppm. Units are parts per million (ppm).</p> <p>Notes:</p> <ul style="list-style-type: none"> • Data from exceptional events are not included. • The reader is cautioned that this summary is not adequate in itself to numerically rank MSAs according to their air quality. • The monitoring data represent the quality of air in the vicinity of the monitoring site and, for some pollutants, may not necessarily represent urban-wide air quality. 			

Trends for 1997-2004 with 95 percent confidence limits are presented below. Ozone season averages of daily maximum 8-hour ozone were adjusted to remove the influence of year-to-year variability in meteorology.

Seasonal Average 8-hour Ozone Trends



Georgia

Emissions

State total emissions of NO_x and VOCs have decreased from 1997 to 2004. After 2002 the largest emission reductions were NO_x emissions from power generating sources.

Ozone Season (May-September) Emission Totals by Major Source Categories (tons)

Source Category	1997	2002	2004
NO_x Emissions			
Power Industry	84,096	60,165	30,422
Mobile On-Road	135,879	125,649	112,712
Other	82,260	105,837	101,087
VOC Emissions			
Mobile On-Road	95,463	75,187	68,109
Solvent Usage	54,566	54,479	54,364
Other	74,802	81,302	79,132

The emissions data used in the report are measured or estimated values from EPA's National Emissions Inventory (NEI). Starting in 1997, the NEI incorporated power industry data measured by the Continuous Emissions Monitoring System (CEMS). For 2002, the preliminary version of the NEI was used, which includes the 2002 CEMS data, but does not include 2002 data for other sources submitted by state, local, and tribal air agencies.

EPA used CEMS data for the power industry for 2003 and 2004. Emissions for other sources for that period were estimated by interpolating between the 2002 preliminary NEI data and a projected 2010 emission inventory developed to support the Clean Air Interstate Rule.

For additional information use the following online resources:

National Emissions Inventory (NEI): www.epa.gov/ttn/chief/net .
Emissions data for the power industry: <http://cfpub.epa.gov/gdm> .
Information on mobile sources: www.epa.gov/otaq .

Ozone

On average, ozone has declined between 1997 and 2004. These improvements in ozone are in response to both state and regional reductions in NO_x and VOC emissions. The level of ozone improvement varies from site to site.

Highest Fourth Daily Maximum 8-hour Ozone Concentration by Metropolitan Statistical Area, 1997, 2002 and 2004

Metropolitan Statistical Area	1997 O ₃ 8-hr (ppm)	2002 O ₃ 8-hr (ppm)	2004 O ₃ 8-hr (ppm)
Athens, GA MSA		0.08	0.08
Atlanta, GA MSA	0.11	0.1	0.09
Augusta--Aiken, GA--SC MSA	0.09	0.09	0.08
Chattanooga, TN--GA MSA	0.09	0.1	0.08
Columbus, GA--AL MSA	0.08	0.08	0.07
Macon, GA MSA	0.1	0.09	0.09
Savannah, GA MSA	0.07	0.07	0.07

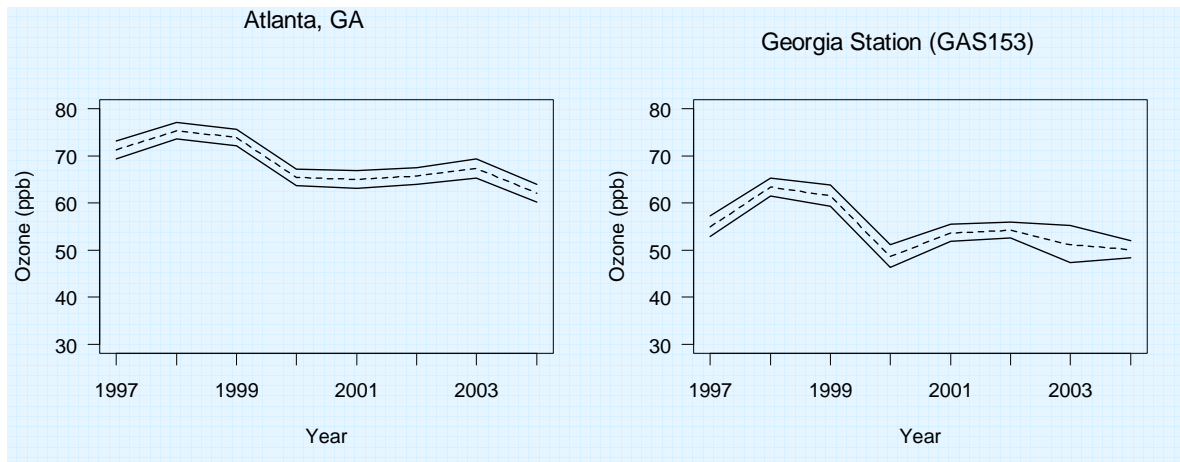
Level of the NAAQS is .08 ppm. Units are parts per million (ppm).

Notes:

- Data from exceptional events are not included.
- The reader is cautioned that this summary is not adequate in itself to numerically rank MSAs according to their air quality.
- The monitoring data represent the quality of air in the vicinity of the monitoring site and, for some pollutants, may not necessarily represent urban-wide air quality.

Trends for 1997-2004 with 95 percent confidence limits are presented below. Ozone season averages of daily maximum 8-hour ozone were adjusted to remove the influence of year-to-year variability in meteorology.

Seasonal Average 8-hour Ozone Trends



Kentucky

Emissions

State total emissions of NO_x and VOCs have decreased from 1997 to 2004. After 2002 the largest emission reductions were NO_x emissions from power generating sources.

Ozone Season (May-September) Emission Totals by Major Source Categories (tons)

Source Category	1997	2002	2004
NO_x Emissions			
Power Industry	144,736	77,444	40,392
Mobile On-Road	69,896	58,513	52,745
Other	84,953	92,741	90,547
VOC Emissions			
Mobile On-Road	44,159	33,302	29,827
Solvent Usage	39,478	31,835	32,078
Other	59,573	55,376	54,814

The emissions data used in the report are measured or estimated values from EPA's National Emissions Inventory (NEI). Starting in 1997, the NEI incorporated power industry data measured by the Continuous Emissions Monitoring System (CEMS). For 2002, the preliminary version of the NEI was used, which includes the 2002 CEMS data, but does not include 2002 data for other sources submitted by state, local, and tribal air agencies.

EPA used CEMS data for the power industry for 2003 and 2004. Emissions for other sources for that period were estimated by interpolating between the 2002 preliminary NEI data and a projected 2010 emission inventory developed to support the Clean Air Interstate Rule.

For additional information use the following online resources:

National Emissions Inventory (NEI): www.epa.gov/ttn/chief/net .
Emissions data for the power industry: <http://cfpub.epa.gov/gdm> .
Information on mobile sources: www.epa.gov/otaq .

Ozone

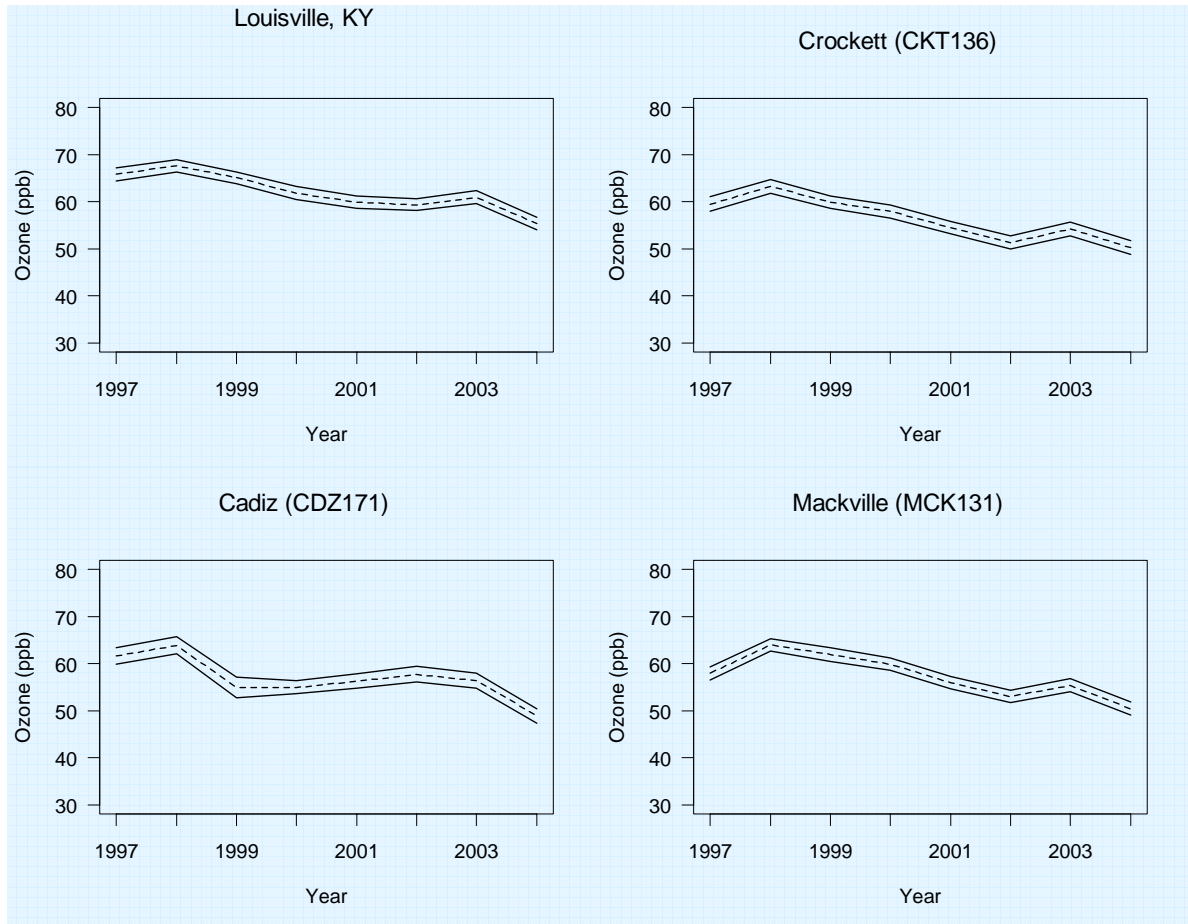
On average, ozone has declined between 1997 and 2004. These improvements in ozone are in response to both state and regional reductions in NO_x and VOC emissions. The level of ozone improvement varies from site to site.

Highest Fourth Daily Maximum 8-hour Ozone Concentration by Metropolitan Statistical Area, 1997, 2002 and 2004

Metropolitan Statistical Area	1997 O ₃ 8-hr (ppm)	2002 O ₃ 8-hr (ppm)	2004 O ₃ 8-hr (ppm)
Cincinnati, OH--KY--IN PMSA	0.09	0.1	0.08
Clarksville--Hopkinsville, TN--KY MSA	0.08	0.09	0.07
Evansville--Henderson, IN--KY MSA	0.1	0.1	0.07
Huntington--Ashland, WV--KY--OH MSA	0.09	0.1	0.07
Lexington, KY MSA	0.08	0.09	0.07
Louisville, KY--IN MSA	0.1	0.1	0.08
Owensboro, KY MSA	0.09	0.09	0.07
Level of the NAAQS is .08 ppm. Units are parts per million (ppm).			
Notes:			
<ul style="list-style-type: none">• Data from exceptional events are not included.• The reader is cautioned that this summary is not adequate in itself to numerically rank MSAs according to their air quality.• The monitoring data represent the quality of air in the vicinity of the monitoring site and, for some pollutants, may not necessarily represent urban-wide air quality.			

Trends for 1997-2004 with 95 percent confidence limits are presented below. Ozone season averages of daily maximum 8-hour ozone were adjusted to remove the influence of year-to-year variability in meteorology.

Seasonal Average 8-hour Ozone Trends



Mississippi

Emissions

State total emissions of NO_x and VOCs have decreased from 1997 to 2004.

Ozone Season (May-September) Emission Totals by Major Source Categories (tons)

Source Category	1997	2002	2004
NO_x Emissions			
Power Industry	24,474	23,103	21,951
Mobile On-Road	52,232	47,493	41,696
Other	88,325	76,476	77,750
VOC Emissions			
Mobile On-Road	33,541	25,060	21,956
Solvent Usage	40,820	34,786	34,666
Other	51,479	55,334	54,303

The emissions data used in the report are measured or estimated values from EPA's National Emissions Inventory (NEI). Starting in 1997, the NEI incorporated power industry data measured by the Continuous Emissions Monitoring System (CEMS). For 2002, the preliminary version of the NEI was used, which includes the 2002 CEMS data, but does not include 2002 data for other sources submitted by state, local, and tribal air agencies.

EPA used CEMS data for the power industry for 2003 and 2004. Emissions for other sources for that period were estimated by interpolating between the 2002 preliminary NEI data and a projected 2010 emission inventory developed to support the Clean Air Interstate Rule.

For additional information use the following online resources:

National Emissions Inventory (NEI): www.epa.gov/ttn/chief/net .

Emissions data for the power industry: <http://cfpub.epa.gov/gdm> .

Information on mobile sources: www.epa.gov/otaq .

Ozone

On average, ozone has declined between 1997 and 2004. These improvements in ozone are in response to both state and regional reductions in NO_x and VOC emissions. The level of ozone improvement varies from site to site.

Highest Fourth Daily Maximum 8-hour Ozone Concentration by Metropolitan Statistical Area, 1997, 2002 and 2004

Metropolitan Statistical Area	1997 O ₃ 8-hr (ppm)	2002 O ₃ 8-hr (ppm)	2004 O ₃ 8-hr (ppm)
Biloxi--Gulfport--Pascagoula, MS MSA	0.1	0.08	0.08
Jackson, MS MSA	0.08	0.08	0.07
Memphis, TN--AR--MS MSA	0.09	0.1	0.08
Level of the NAAQS is .08 ppm. Units are parts per million (ppm).			
Notes:			
<ul style="list-style-type: none">• Data from exceptional events are not included.• The reader is cautioned that this summary is not adequate in itself to numerically rank MSAs according to their air quality.• The monitoring data represent the quality of air in the vicinity of the monitoring site and, for some pollutants, may not necessarily represent urban-wide air quality.			

North Carolina

Emissions

State total emissions of NO_x and VOCs have decreased from 1997 to 2004. After 2002 the largest emission reductions were NO_x emissions from power generating sources.

Ozone Season (May-September) Emission Totals by Major Source Categories (tons)

Source Category	1997	2002	2004
NO_x Emissions			
Power Industry	123,459	68,345	39,821
Mobile On-Road	124,413	110,220	98,700
Other	68,429	63,206	62,875
VOC Emissions			
Mobile On-Road	83,618	68,681	61,793
Solvent Usage	105,208	77,021	77,101
Other	98,910	97,315	94,890

The emissions data used in the report are measured or estimated values from EPA's National Emissions Inventory (NEI). Starting in 1997, the NEI incorporated power industry data measured by the Continuous Emissions Monitoring System (CEMS). For 2002, the preliminary version of the NEI was used, which includes the 2002 CEMS data, but does not include 2002 data for other sources submitted by state, local, and tribal air agencies.

EPA used CEMS data for the power industry for 2003 and 2004. Emissions for other sources for that period were estimated by interpolating between the 2002 preliminary NEI data and a projected 2010 emission inventory developed to support the Clean Air Interstate Rule.

For additional information use the following online resources:

National Emissions Inventory (NEI): www.epa.gov/ttn/chief/net .
Emissions data for the power industry: <http://cfpub.epa.gov/gdm> .
Information on mobile sources: www.epa.gov/otaq .

Ozone

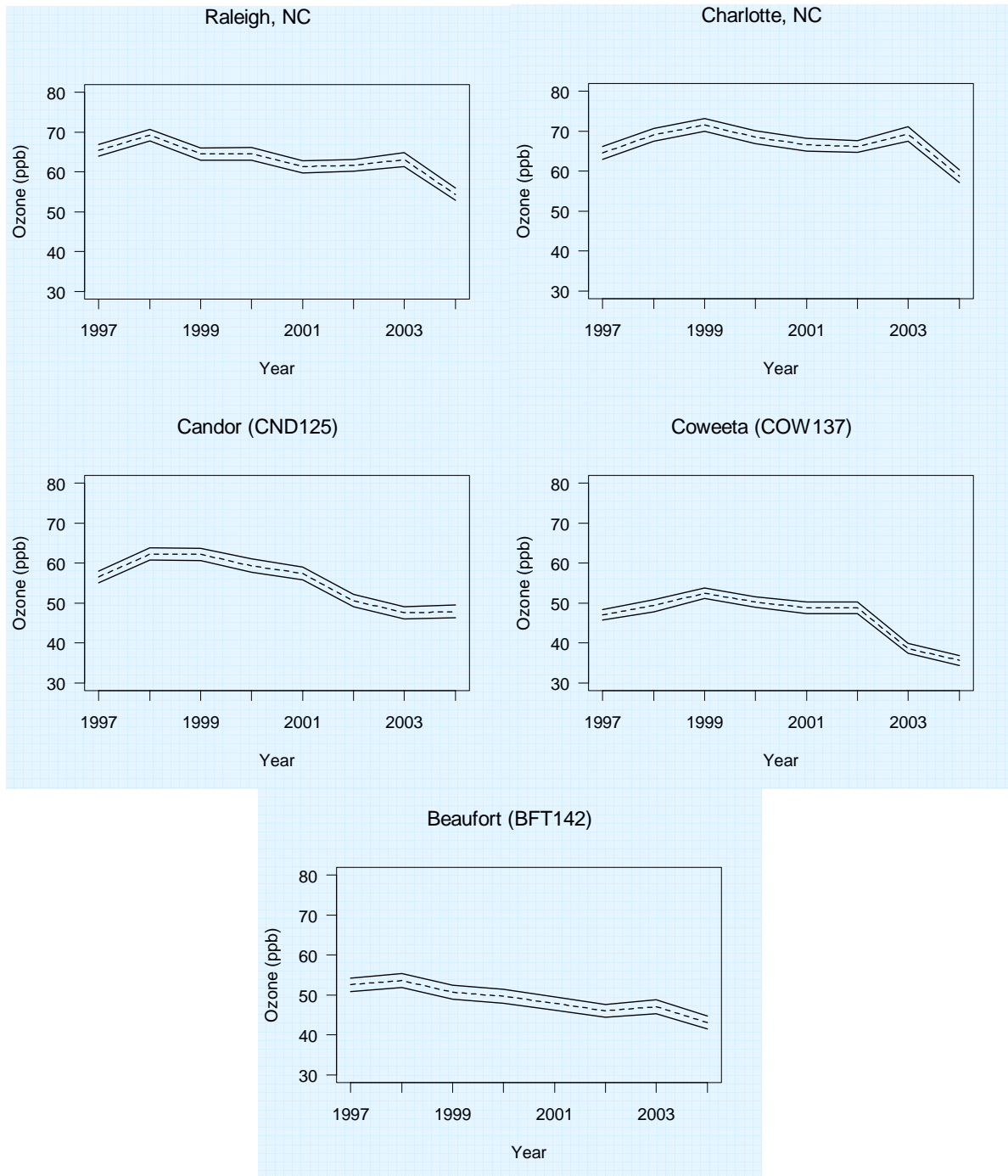
On average, ozone has declined between 1997 and 2004. These improvements in ozone are in response to both state and regional reductions in NO_x and VOC emissions. The level of ozone improvement varies from site to site.

Highest Fourth Daily Maximum 8-hour Ozone Concentration by Metropolitan Statistical Area, 1997, 2002 and 2004

Metropolitan Statistical Area	1997 O ₃ 8-hr (ppm)	2002 O ₃ 8-hr (ppm)	2004 O ₃ 8-hr (ppm)
Asheville, NC MSA	0.08	0.09	0.07
Charlotte--Gastonia--Rock Hill, NC--SC MSA	0.11	0.11	0.09
Fayetteville, NC MSA	0.09	0.1	0.08
Greensboro--Winston-Salem--High Point, NC MSA	0.09	0.1	0.08
Greenville, NC MSA	0.1	0.09	0.07
Hickory--Morganton--Lenoir, NC MSA	0.08	0.1	0.07
Norfolk--Virginia Beach--Newport News, VA--NC MSA	0.1	0.1	0.08
Raleigh--Durham--Chapel Hill, NC MSA	0.1	0.11	0.08
Rocky Mount, NC MSA	0.09	0.1	0.07
Wilmington, NC MSA	0.08	0.08	0.07
Level of the NAAQS is .08 ppm. Units are parts per million (ppm).			
Notes:			
<ul style="list-style-type: none">• Data from exceptional events are not included.• The reader is cautioned that this summary is not adequate in itself to numerically rank MSAs according to their air quality.• The monitoring data represent the quality of air in the vicinity of the monitoring site and, for some pollutants, may not necessarily represent urban-wide air quality.			

Trends for 1997-2004 with 95 percent confidence limits are presented below. Ozone season averages of daily maximum 8-hour ozone were adjusted to remove the influence of year-to-year variability in meteorology.

Seasonal Average 8-hour Ozone Trends



South Carolina

Emissions

State total emissions of NO_x and VOCs have decreased from 1997 to 2004. After 2002 the largest emission reductions were NO_x emissions from power generating sources.

Ozone Season (May-September) Emission Totals by Major Source Categories (tons)

Source Category	1997	2002	2004
NO_x Emissions			
Power Industry	46,836	39,456	25,352
Mobile On-Road	66,258	59,871	53,454
Other	44,946	46,329	43,830
VOC Emissions			
Mobile On-Road	43,657	35,967	31,994
Solvent Usage	41,805	36,325	36,273
Other	59,344	55,613	54,015

The emissions data used in the report are measured or estimated values from EPA's National Emissions Inventory (NEI). Starting in 1997, the NEI incorporated power industry data measured by the Continuous Emissions Monitoring System (CEMS). For 2002, the preliminary version of the NEI was used, which includes the 2002 CEMS data, but does not include 2002 data for other sources submitted by state, local, and tribal air agencies.

EPA used CEMS data for the power industry for 2003 and 2004. Emissions for other sources for that period were estimated by interpolating between the 2002 preliminary NEI data and a projected 2010 emission inventory developed to support the Clean Air Interstate Rule.

For additional information use the following online resources:

National Emissions Inventory (NEI): www.epa.gov/ttn/chief/net .
Emissions data for the power industry: <http://cfpub.epa.gov/gdm> .
Information on mobile sources: www.epa.gov/otaq .

Ozone

On average, ozone has declined between 1997 and 2004. These improvements in ozone are in response to both state and regional reductions in NO_x and VOC emissions. The level of ozone improvement varies from site to site.

Highest Fourth Daily Maximum 8-hour Ozone Concentration by Metropolitan Statistical Area, 1997, 2002 and 2004

Metropolitan Statistical Area	1997 O ₃ 8-hr (ppm)	2002 O ₃ 8-hr (ppm)	2004 O ₃ 8-hr (ppm)
Augusta--Aiken, GA--SC MSA	0.09	0.09	0.08
Charleston--North Charleston, SC MSA	0.08	0.07	0.07
Charlotte--Gastonia--Rock Hill, NC--SC MSA	0.11	0.11	0.09
Columbia, SC MSA	0.09	0.09	0.08
Greenville--Spartanburg--Anderson, SC MSA	0.09	0.09	0.08

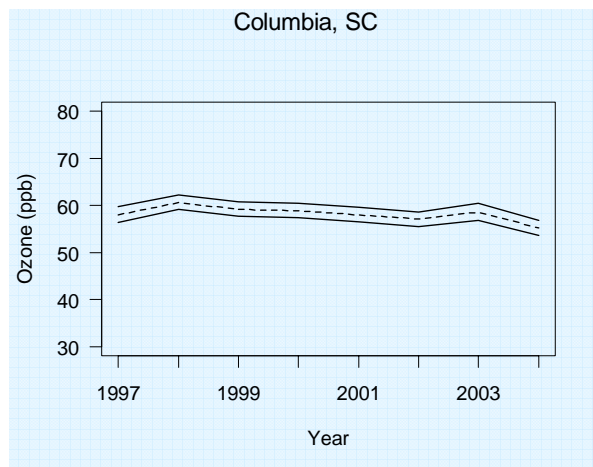
Level of the NAAQS is .08 ppm. Units are parts per million (ppm).

Notes:

- Data from exceptional events are not included.
- The reader is cautioned that this summary is not adequate in itself to numerically rank MSAs according to their air quality.
- The monitoring data represent the quality of air in the vicinity of the monitoring site and, for some pollutants, may not necessarily represent urban-wide air quality.

Trends for 1997-2004 with 95 percent confidence limits are presented below. Ozone season averages of daily maximum 8-hour ozone were adjusted to remove the influence of year-to-year variability in meteorology.

Seasonal Average 8-hour Ozone Trends



Tennessee

Emissions

State total emissions of NO_x and VOCs have decreased from 1997 to 2004. After 2002 the largest emission reductions were NO_x emissions from power generating sources.

Ozone Season (May-September) Emission Totals by Major Source Categories (tons)

Source Category	1997	2002	2004
NO_x Emissions			
Power Industry	119,739	70,867	31,489
Mobile On-Road	91,753	82,048	73,267
Other	91,878	82,715	78,131
VOC Emissions			
Mobile On-Road	61,858	50,008	44,700
Solvent Usage	77,252	54,545	55,711
Other	93,672	81,342	81,093

The emissions data used in the report are measured or estimated values from EPA's National Emissions Inventory (NEI). Starting in 1997, the NEI incorporated power industry data measured by the Continuous Emissions Monitoring System (CEMS). For 2002, the preliminary version of the NEI was used, which includes the 2002 CEMS data, but does not include 2002 data for other sources submitted by state, local, and tribal air agencies.

EPA used CEMS data for the power industry for 2003 and 2004. Emissions for other sources for that period were estimated by interpolating between the 2002 preliminary NEI data and a projected 2010 emission inventory developed to support the Clean Air Interstate Rule.

For additional information use the following online resources:

National Emissions Inventory (NEI): www.epa.gov/ttn/chief/net .
Emissions data for the power industry: <http://cfpub.epa.gov/gdm> .
Information on mobile sources: www.epa.gov/otaq .

Ozone

On average, ozone has declined between 1997 and 2004. These improvements in ozone are in response to both state and regional reductions in NO_x and VOC emissions. The level of ozone improvement varies from site to site.

Highest Fourth Daily Maximum 8-hour Ozone Concentration by Metropolitan Statistical Area, 1997, 2002 and 2004

Metropolitan Statistical Area	1997 O ₃ 8-hr (ppm)	2002 O ₃ 8-hr (ppm)	2004 O ₃ 8-hr (ppm)
Chattanooga, TN--GA MSA	0.09	0.1	0.08
Clarksville--Hopkinsville, TN--KY MSA	0.08	0.09	0.07
Johnson City--Kingsport--Bristol, TN--VA MSA	0.09	0.09	0.08
Knoxville, TN MSA	0.1	0.1	0.08
Memphis, TN--AR--MS MSA	0.09	0.1	0.08
Nashville, TN MSA	0.1	0.09	0.08
Level of the NAAQS is .08 ppm. Units are parts per million (ppm).			
Notes:			
<ul style="list-style-type: none">• Data from exceptional events are not included.• The reader is cautioned that this summary is not adequate in itself to numerically rank MSAs according to their air quality.• The monitoring data represent the quality of air in the vicinity of the monitoring site and, for some pollutants, may not necessarily represent urban-wide air quality.			

Trends for 1997-2004 with 95 percent confidence limits are presented below. Ozone season averages of daily maximum 8-hour ozone were adjusted to remove the influence of year-to-year variability in meteorology.

Seasonal Average 8-hour Ozone Trends

