

Nonattainment Area Designations for Georgia Under the 2008 Revised 8-Hour Ozone National Ambient Air Quality Standard UPDATED 2011 Technical Analysis

This document contains the Georgia Environmental Protection Division's (EPD) technical analysis for designating nonattainment areas in Georgia under the 2008 revised primary and secondary ozone National Ambient Air Quality Standards (NAAQS). This analysis has been conducted in accordance with U.S. EPA's December 4, 2008, memorandum "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards" and U.S. EPA's September 22, 2011, memorandum "Implementation of the Ozone National Ambient Air Quality Standard." The 159 counties in Georgia have been evaluated and identified as attainment, nonattainment, or unclassifiable on the basis of available information.

Air Quality Data and Potential Nonattainment Areas

Federal Reference Method (FRM) measurements of ozone concentrations in Georgia, during the most recent three consecutive years (2009-2011), were analyzed and used to identify sites currently violating the revised 2008 ozone NAAQS. The 2009 and 2010 ozone measurements have been quality-assured and certified and are stored in EPA's Air Quality System (AQS) database. These 2011 ozone measurements will be quality-assured and certified by February 29, 2012 at which time they will be stored in EPA's Air Quality System (AQS) database. Design values (DV) were calculated for each monitor (Table 1 and Figure 1) by averaging the fourth-highest daily maximum 8-hour average ozone concentrations for three consecutive years. If the 2009-2011 DV for a monitor is greater than 0.075 ppm, the monitor is violating the NAAQS. Among the 20 ozone monitors in Georgia, there are 4 violating monitors, which are located within the Atlanta-Sandy Springs-Gainesville, GA-AL Combined Statistical Area (CSA).

The U.S. EPA's December 4, 2008 memorandum "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards" recommends that:

--- "...the Core Based Statistical Area (CBSA) or Combined Statistical Area (which includes 2 or more adjacent CBSA's) associated with the violating monitor(s) serve as the starting point or "presumptive" boundary for evaluating the geographic boundaries of an ozone nonattainment area. CBSA is a collective term that refers to both metropolitan and micropolitan statistical areas, which are distinguished based on population size. Each CBSA consists of a county or counties containing at least one urban core plus adjacent counties that have a high degree of social and economic integration with the urban core as measured by commuting ties. EPA recommends starting with this presumption because the factors used to establish the CBSAs and CSAs are similar to the factors EPA plans to consider in determining whether a nearby area is contributing to the violation(s) of the standard."

Table 1. 2008-2010 DVs and 2009-2011 DVs of 8-hour ozone at FRM monitors.

AIRS_ID	County	Station Name	2008-2010 DV	2009-2011 DV
Atlanta-Sandy Springs-Gainesville, GA-AL				
13-067-0003	Cobb, GA	Kennesaw	0.076	0.078
13-077-0002	Coweta, GA	Newnan	0.068	0.067
13-085-0001	Dawson, GA	Dawsonville	0.071	0.068
13-089-0002	DeKalb, GA	South DeKalb	0.079	0.077
13-097-0004	Douglas, GA	Douglasville	0.075	0.074
13-121-0055	Fulton, GA	Confederate Ave.	0.080	0.080
13-135-0002	Gwinnett, GA	Gwinnett	0.074	0.075
13-151-0002	Henry, GA	McDonough	0.079	0.077
13-223-0003	Paulding, GA	Dallas / Yorkville	0.070	0.071
13-247-0001	Rockdale, GA	Conyers	0.078	0.075
Athens-Clarke County, GA				
13-059-0002	Clarke, GA	Athens	0.072	0.071
Augusta-Richmond County, GA-SC				
13-245-0091	Richmond, GA	Augusta	0.071	0.070
13-073-0001	Columbia, GA	Evans	0.069	0.068
45-003-0003	Aiken, SC	SC Aiken - Jackson	0.069	0.067
45-037-0001	Edgefield, SC	SC Edgefield - Trenton	0.065	0.063
Chattanooga-Cleveland-Athens, TN-GA				
47-065-4003	Hamilton, TN	TN-Chatt VAAP	0.075	0.072
47-065-1011	Hamilton, TN	TN-Sequoyah	0.072	0.071
Columbus-Auburn-Opelika, GA-AL				
13-215-0008	Muscogee, GA	Columbus Airport	0.068	0.066
01-113-0001	Russell, AL	AL - Russell Co	0.067	0.066
Macon-Warner Robins-Fort Valley, GA				
13-021-0013	Bibb, GA	Macon West	0.073	0.073
Dalton, GA				
13-213-0003	Murray, GA	Fort Mountain	0.073	0.071
Other area				
13-055-0001	Chattooga, GA	Summerville	0.066	0.067
13-261-1001	Sumter, GA	Leslie	0.065	0.065
13-127-0006	Glynn, GA	Brunswick	0.063	0.062
13-051-0021	Chatham, GA	Savannah	0.064	0.063

Since the Atlanta-Sandy Springs-Gainesville, GA-AL CSA¹ contains violating monitors, all counties in this CSA will be evaluated as potential nonattainment areas. Counties with violating monitors are identified separately from other counties in the CSA.

Atlanta-Sandy Springs-Gainesville, GA-AL (CSA, includes 33 counties)

Counties with violating monitors: *Cobb, DeKalb, Fulton, Henry*

Other Counties: *Barrow, Bartow, Butts, Carroll, Chambers (AL), Cherokee, Clayton, Coweta, Dawson, Douglas, Fayette, Forsyth, Gwinnett, Hall, Haralson, Heard, Jasper, Lamar, Meriwether, Newton, Paulding, Pickens, Pike, Polk, Rockdale, Spalding, Troup, Upson, Walton*

Nine-Factor Analysis for Nonattainment Area Boundaries

The nonattainment area boundaries are evaluated using nine factors, as described in U.S. EPA's December 4, 2008 memorandum "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards."

- 1) Air quality data;
- 2) Emissions data (location of sources and contribution to ozone concentrations);
- 3) Population density and degree of urbanization (including commercial development);
- 4) Traffic and commuting patterns;
- 5) Growth rates and patterns;
- 6) Meteorology (weather/transport patterns);
- 7) Geography/topography (mountain ranges or other air basin boundaries);
- 8) Jurisdictional boundaries [e.g., counties, air districts, existing nonattainment areas, reservations, metropolitan planning organizations (MPOs)]; and
- 9) Level of control of emission sources,

The following quantitative data were used to evaluate Factors 1, 2, 3, 4, and 5.

- 1) Ambient Ozone Measurements: The most recent three year 8-hour ozone design values were calculated based on 2009-2011 ozone measurements at each monitor.
- 2) Emission data: 2008 National Emissions Inventory (NEI) data for counties in Georgia. NO_x emissions for large EGU point source were updated with the 2009 NEI data to reflect recent controls.
- 3) Population Density: Population density for 2000 from U.S. Census Bureau. Downloaded from http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_submenuld=people_1&_lang=en&_ts=
- 4) Percent Urbanization: Percent urbanization for 2000 from U.S. Census Bureau. Downloaded from http://factfinder.census.gov/servlet/DatasetTableListServlet?_ds_name=DEC_2000_SF2_U&_type=table&_program=DEC&_lang=en&_ts=247507573134
- 5) Percent Population Growth: Estimated population growth (absolute) from 2000 to 2007.

¹ CSAs and CBSAs were obtained from the most recent update on statistical area definitions issued by the federal Office of Management and Budget, OMB Bulletin No. 08-01 issued November 20, 2007.

Population estimates for 2000 and 2007 are from the U.S. Census Bureau. Downloaded from http://www.census.gov/popest/counties/CO-EST2007-popchg2000_2007.html.

- 6) Traffic: 2007 Daily Vehicular Miles Traveled (VMT) by county based on HPMS data are provided by states.

A screening threshold value was assigned to each factor (Table 2). Detailed data for each county in the potential nonattainment area is listed in Table 3.

Table 2: Factors that were considered as part of the quantitative analysis and their associated screening thresholds.

Category	Threshold
Emission NOx (tpy)	5,000
Emission VOC (tpy)	5,000
Population Density (Person/miles ²)	1,000
Urbanization (%)	90%
Absolute Population Growth	50,000
VMT (miles/day)	5,000,000
Ozone > 75 ppb	Yes/No

If county values are equal to or higher than the screening criteria, a score of one is assigned to that factor. The “Ozone > 75 ppb” category was treated differently due to the importance of this category. If the 2009-2011 ozone DV is greater than 75 ppb (violation of NAAQS), it was assigned a score of 2.0. If the 2009-2011 ozone DV is less than or equal to 75 ppb (no violation of NAAQS), it was assigned a score of -2.0. If the country did not have an ozone monitor, it was assigned a score of 0.0. If the total score of these factors for a county is greater than 5.0, the county may be recommended as a nonattainment county after consideration of other factors, such as meteorology, geography, jurisdictional boundaries, and level of control of emissions, on a qualitative basis.

Atlanta-Sandy Springs-Gainesville, GA-AL

Quantitative Criteria – Scores of quantitative factors by county are listed in Table 4. Scores are calculated for 33 counties in this area. The scores for these counties range from -2 to +8. Four counties had a score above 5.0: Cobb, DeKalb, Fulton, and Henry.

Meteorology – There are no meteorology factors identified that affect the area.

Geography/topography – There are no geographical factors identified that affect the area.

Jurisdictional – All counties in Atlanta-Sandy Springs-Gainesville, GA-AL CSA except Chambers County, Alabama, are within Georgia and fall within the jurisdiction of Georgia EPD.

Level of Control of Emissions – With the exception Chambers County, Alabama, all of the counties listed are either part of the Atlanta nonattainment area for the 1997 ozone standard or have been designated as part of an area that contributes to the level of ozone in the Atlanta nonattainment area for the 1997 ozone standard in accordance with Georgia Air Quality Control Rule 391-3-1-.03(8)(e). Therefore, NOx and VOC emissions controls have already been established in these counties. Table 5 is a list of specific NOx and VOC control measures currently implemented in the Georgia counties that make up Atlanta CSA. These control

measures were specifically developed to reduce ozone levels in the metro Atlanta area. In addition, VOC and NO_x RACT are required in the 20 counties that make up the Atlanta nonattainment area for the 1997 ozone standard. Other than the measures indicated in Table 5, VOC control measures were not extended beyond what is required by section 182(b)(2) of the Clean Air Act because EPD has demonstrated that the Atlanta area is strongly NO_x limited as presented in the Atlanta 8-hr Ozone Attainment Demonstration submitted to EPA on October 21, 2009. Because NO_x and VOC control measures have already been adopted throughout the entire Georgia portion of the CSA, a designation of nonattainment for the 2008 ozone standard would result in little to no additional controls effective at reducing ozone levels. In addition Georgia Power's Plants Bowen, Branch, Hammond, McDonough, Scherer, Wansley, and Yates contain affected units under the Cross State Air Pollution Rule (CSAPR) and the Georgia Multipollutant Rule.

Conclusion – Based on both quantitative and qualitative factor analysis conducted by Georgia EPD, the following four Georgia counties are recommended to be designated nonattainment under the revised 2008 ozone NAAQS: Cobb, DeKalb, Fulton, and Henry.

RECOMMENDATIONS

Georgia EPD recommends the following areas in Georgia be designated nonattainment under the revised 2008 ozone standard:

- Atlanta Ozone Nonattainment Area (4 counties): Cobb, DeKalb, Fulton, and Henry.

References

U.S. EPA (2008), “Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards”, December 4, 2008 memorandum.

U.S. EPA (2011), “Implementation of the Ozone National Ambient Air Quality Standard”, September 22, 2011, memorandum.

2008 Ozone NAAQS NAA Designation Reference Map

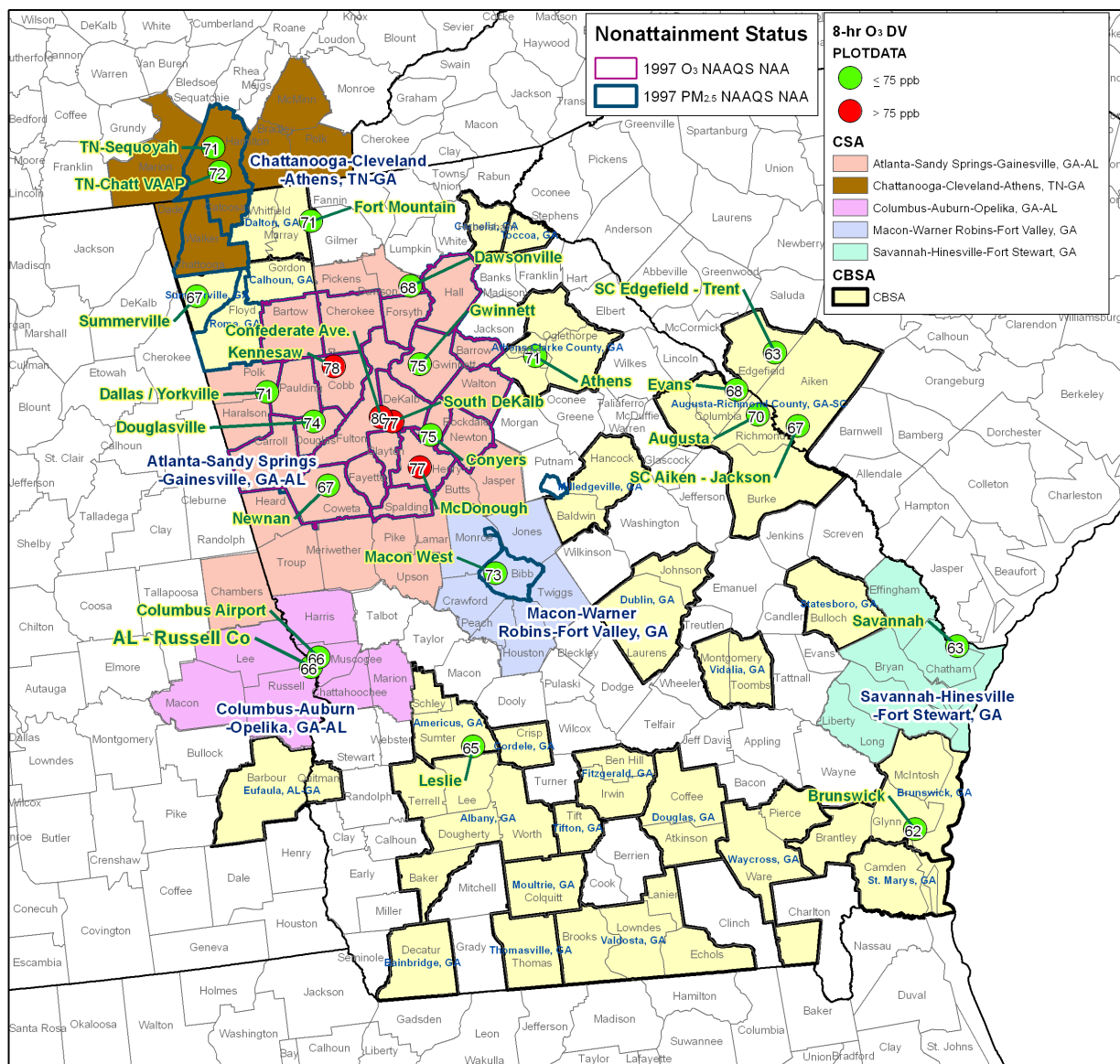


Figure 1. Ozone monitors and CSA/CBSA boundaries associated with potential nonattainment areas in Georgia under the 2008 ozone NAAQS. Ozone design values are based on 2009-2011 ozone data. Nonattainment area boundaries under the 1997 ozone NAAQS are outlined in red, and nonattainment area boundaries under the 1997 PM_{2.5} NAAQS are outlined in blue.

Table 3. Quantitative factors for all counties in the Atlanta-Sandy Springs-Gainesville CSA.

FIPS	County	Ozone > 75 ppb (Y/N)	Emission NOX (tpy)	Emission VOC (tpy)	Population Density (Person/miles²)	Urbanization (%)	Absolute Population Growth	VMT (miles/day)
13013	Barrow	N/A	1,724.5	2,232.7	284.5	47	20,572	1,851,387
13015	Bartow	N/A	13,669.1	5,922.9	165.5	58	16,133	4,901,274
13035	Butts	N/A	1,231.1	1,199.8	104.6	21	4,030	982,899
13045	Carroll	N/A	3,732.7	4,426.6	174.9	48	23,947	3,426,503
13057	Cherokee	N/A	4,801.9	5,749.8	334.9	75	60,608	5,235,049
13063	Clayton	N/A	15,992.6	9,112.6	1,658.40	99	33,825	7,294,490
13067	Cobb	YES	34,514.6	22,145.9	1,786.70	99	79,173	17,869,685
13077	Coweta	NO	57,654.0	3,633.2	201.6	54	28,781	3,895,843
13085	Dawson	NO	626.3	1,058.0	75.8	0	5,184	656,417
13089	DeKalb	YES	17,260.9	22,084.2	2,482.70	100	68,136	20,381,808
13097	Douglas	NO	3,316.1	3,847.7	462.5	80	31,796	4,191,150
13113	Fayette	N/A	2,676.0	3,382.6	463.1	78	14,058	2,848,500
13117	Forsyth	N/A	3,687.7	5,392.6	435.8	65	58,398	3,968,912
13121	Fulton	YES	28,338.5	31,581.8	1,543.50	98	174,887	31,292,202
13135	Gwinnett	NO	18,569.0	24,483.0	1,359.90	97	179,945	18,766,956
13139	Hall	N/A	5,619.8	8,393.3	353.8	67	39,262	4,868,071
13143	Haralson	N/A	1,117.5	1,688.6	91.1	17	2,882	1,126,045
13149	Heard	N/A	2,981.4	1,181.9	37.2	0	300	373,826
13151	Henry	YES	5,415.3	5,635.6	369.8	73	64,453	6,221,939
13159	Jasper	N/A	478.8	757.5	30.8	0	2,172	487,126
13171	Lamar	N/A	656.6	859.2	86.1	42	991	761,968
13199	Meriwether	N/A	1,388.7	1,301.2	44.8	16	219	930,936
13217	Newton	N/A	3,291.9	3,917.2	224.3	56	33,135	2,906,994
13223	Paulding	NO	2,782.1	3,040.0	260.6	60	44,900	3,081,957
13227	Pickens	N/A	888.3	1,365.8	99	22	7,128	1,021,360
13231	Pike	N/A	413.0	663.2	62.7	0	3,404	516,717
13233	Polk	N/A	1,432.5	1,975.8	122.5	48	3,211	1,157,612
13247	Rockdale	NO	2,481.0	2,887.2	536.7	85	11,485	2,759,090
13255	Spalding	N/A	1,813.6	2,832.2	295.1	59	4,337	1,874,590
13285	Troup	N/A	2,955.6	4,113.0	142	56	4,609	2,684,391
13293	Upson	N/A	794.1	1,738.4	84.8	56	-53	758,642
13297	Walton	N/A	2,214.8	3,042.4	184.4	41	21,584	2,178,455
1017	AL-Chambers	N/A	1,855	3,134	61.3	50	-1,799	1,277,477

Table 4. Evaluation of quantitative factors for Atlanta-Sandy Springs-Gainesville CSA.
Values in red have a total quantitative criteria score that exceeds 5.0.

FIPS	County	Ozone > 75 ppb	Emission NOX (tpy)	Emission VOC (tpy)	Population Density (Person/miles ²)	Urbanization (%)	Absolute Population Growth	VMT (miles/day)	TOTAL
13013	Barrow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13015	Bartow	0.0	1.0	1.0	0.0	0.0	0.0	0.0	2.0
13035	Butts	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13045	Carroll	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13057	Cherokee	0.0	0.0	1.0	0.0	0.0	1.0	1.0	3.0
13063	Clayton	0.0	1.0	1.0	1.0	1.0	0.0	1.0	5.0
13067	Cobb	2.0	1.0	1.0	1.0	1.0	1.0	1.0	8.0
13077	Coweta	-2.0	1.0	0.0	0.0	0.0	0.0	0.0	-1.0
13085	Dawson	-2.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.0
13089	DeKalb	2.0	1.0	1.0	1.0	1.0	1.0	1.0	8.0
13097	Douglas	-2.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.0
13113	Fayette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13117	Forsyth	0.0	0.0	1.0	0.0	0.0	1.0	0.0	2.0
13121	Fulton	2.0	1.0	1.0	1.0	1.0	1.0	1.0	8.0
13135	Gwinnett	-2.0	1.0	1.0	1.0	1.0	1.0	1.0	4.0
13139	Hall	0.0	1.0	1.0	0.0	0.0	0.0	0.0	2.0
13143	Haralson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13149	Heard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13151	Henry	2.0	1.0	1.0	0.0	0.0	1.0	1.0	6.0
13159	Jasper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13171	Lamar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13199	Meriwether	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13217	Newton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13223	Paulding	-2.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.0
13227	Pickens	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13231	Pike	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13233	Polk	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13247	Rockdale	-2.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.0
13255	Spalding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13285	Troup	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13293	Upson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13297	Walton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1017	AL-Chambers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 5. NOx Control Measures

The following is a list of the NOx control measures that are required in the Georgia counties contained in this technical analysis and are not required state-wide.

FIPS	County	391-3-1-.02(2)(yy) – Emissions of Nitrogen Oxides from Major Sources	391-3-1-.02(2)(bbb) – Gasoline Marketing	391-3-1-.02(2)(jjj) – NOx Emissions from Electric Utility Steam Generating Units	391-3-1-.02(2)(lll) – NOx Emissions from Fuel-burning Equipment	391-3-1-.02(2)(mmm) – Nox Emissions from Stationary Gas Turbines and Stationary Engines used to Generate Electricity	391-3-1-.02(2)(nnn) – NOx Emissions from Large Stationary Gas Turbines	391-3-1-.02(2)(rrr) – NOx Emissions from Small Fuel-Burning Equipment	391-3-1-.02(2)(sss) – Multipollutant Control for Electric Utility Steam Generating Units	391-3-1-.02(5)(b)1 & 2 – Open Burning (May-Sept. restrictions)	391-3-1-.03(8) – Permit Requirements (Nonattainment NSR and additional – Additional Requirements for Electrical Generating Units ...)
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Atlanta-Sandy Springs-Gainesville, GA-AL CSA

13013	Barrow	X	X		X	X	X	X		X	X
13015	Bartow	X	X	X	X	X	X	X	X	X	X
13035	Butts		X		X	X	X			X	X
13045	Carroll	X	X		X	X	X	X		X	X
13057	Cherokee	X	X	X	X	X	X	X		X	X
13063	Clayton	X	X	X	X	X	X	X		X	X
13067	Cobb	X	X	X	X	X	X	X	X	X	X
13077	Coweta	X	X	X	X	X	X	X	X	X	X
13085	Dawson		X		X	X	X			X	X
13089	DeKalb	X	X	X	X	X	X	X		X	X
13097	Douglas	X	X	X	X	X	X	X		X	X
13113	Fayette	X	X	X	X	X	X	X		X	X
13117	Forsyth	X	X	X	X	X	X	X		X	X
13121	Fulton	X	X	X	X	X	X	X		X	X
13135	Gwinnett	X	X	X	X	X	X	X		X	X
13139	Hall	X	X		X	X	X	X		X	X
13143	Haralson		X		X	X	X			X	X
13149	Heard		X	X	X	X	X		X	X	X
13151	Henry	X	X	X	X	X	X	X		X	X
13159	Jasper		X		X	X	X			X	X
13171	Lamar		X		X	X	X			X	X
13199	Meriwether		X		X	X	X			X	X
13217	Newton	X	X		X	X	X	X		X	X
13223	Paulding	X	X	X	X	X	X	X		X	X
13227	Pickens		X		X	X	X			X	X
13231	Pike		X		X	X	X			X	X
13233	Polk		X		X	X	X			X	X
13247	Rockdale	X	X	X	X	X	X	X		X	X
13255	Spalding	X	X		X	X	X	X		X	X
13285	Troup		X		X	X	X			X	X
13293	Upson		X		X	X	X			X	X
13297	Walton	X	X		X	X	X	X		X	X



Figure 2: Map of Atlanta nonattainment area recommendations for the revised 2008 ozone NAAQS.

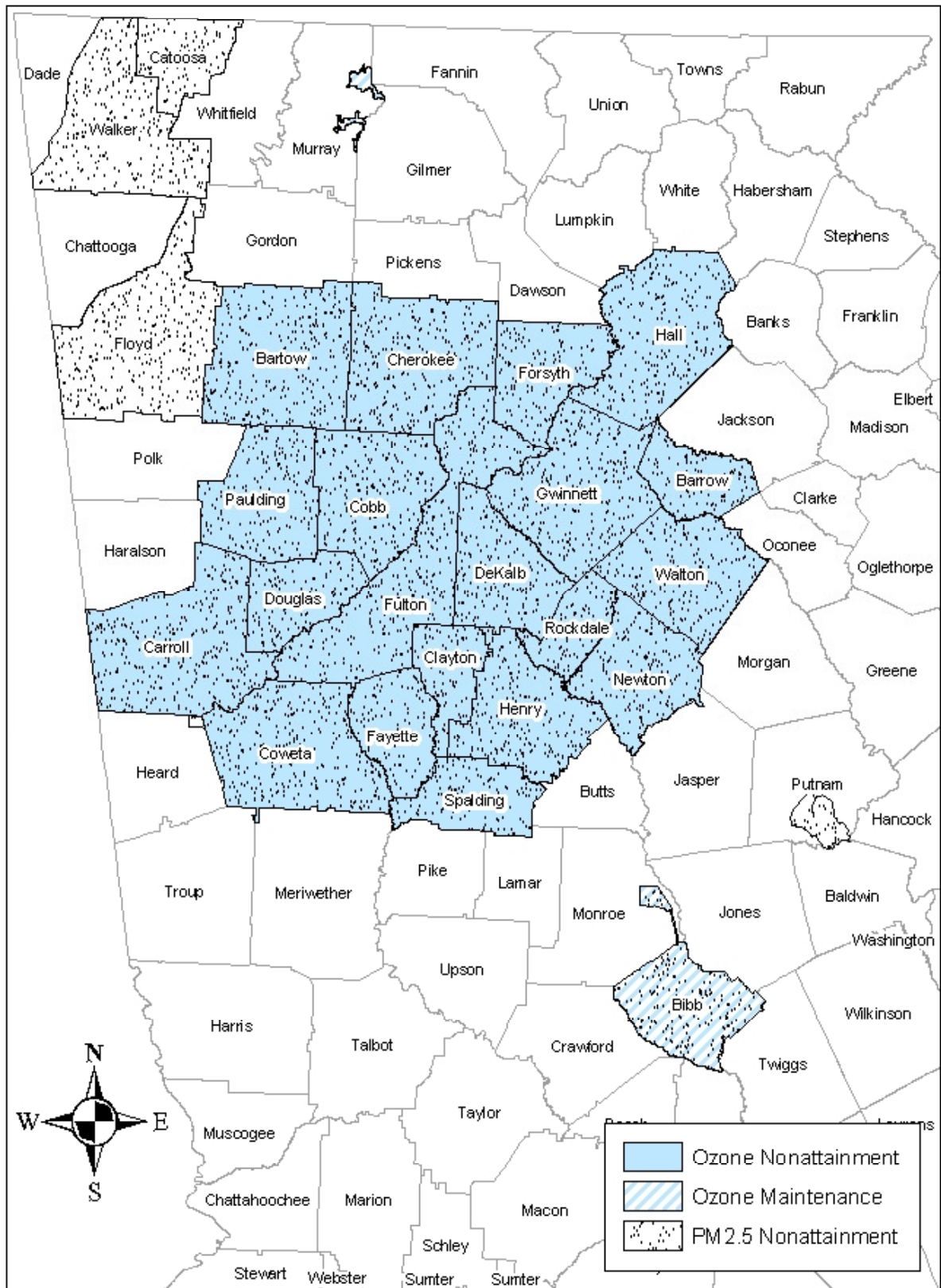


Figure 3: Map of Existing Nonattainment Boundaries.