Georgia Department of Natural Resources
Environmental Protection Division • Air Protection Branch
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Mark Williams, Commissioner
Judson H. Turner, Director

February 29, 2012

Gwendolyn Keyes Fleming
Regional Administrator
U.S. EPA, Region 4
61 Forsyth Street, S.W.
Atlanta, Georgia 30303-3104

Re: GA EPD's Response to EPA's December 8, 2011 Preliminary Ozone Nonattainment Area Boundaries

Dear Ms. Fleming:

This letter and attached enhanced technical analysis is in response to EPA's December 8, 2011 letter and Technical Support Document (TSD) titled "Georgia - Area Designations for the 2008 Ozone National Ambient Air Quality Standards" in which EPA recommended that 18 counties in the Atlanta-Sandy Springs-Gainesville, GA-AL Combined Statistical Area (CSA) be designated nonattainment for the 2008 ozone NAAQS. This letter and attachment supplement our previously submitted recommendations dated October 25, 2011.

A list of 2009-2011 8-hour ozone design values for all monitors in Georgia is attached in Table 1 and a spatial plot of the 2009-2011 8-hour ozone design values is attached in Figure 1. This data shows that all areas in Georgia, except for Atlanta, are complying with the 2008 ozone standard of 0.075 ppm.

A nonattainment area is defined in Clean Air Act (CAA) section 107(d)(1)(A)(i) as "any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant". Of the 18 counties recommended for nonattainment by EPA in its December 8, 2011 letter, only four have monitored air quality that "does not meet" the 2008 ozone National Ambient Air Quality Standard (NAAQS). In fact, five of them (Coweta, Douglas, Gwinnett, Paulding, and Rockdale) have monitored air quality that meets the 2008 ozone NAAQS. As a result, the determination of which, if any, additional counties without violating monitors should be included in the nonattainment area comes down to a determination of which ones "contribute to ambient air quality" in the four counties that have monitored air quality exceeding the standard.

The Clean Air Act makes "air pollution prevention . . . and air pollution control...the primary responsibility of States and local governments[1]." Even though the Clean Air Act gives EPA the authority to set NAAQS and to make nonattainment designations, the Clean Air Act gives states the responsibility to make recommendations on which areas are designated

[1] CAA section 101(a)(3). See also CAA section 107(a).

nonattainment and to develop and implement the SIPs that bring areas into compliance with the NAAQS. In addition, the states know their local emission sources, meteorology, and air quality situation much better than EPA does. Therefore, EPA should grant deference to the states' boundary recommendations as long as those recommendations are consistent with the Clean Air Act because the states are better situated to know what it takes to bring an area into compliance with a NAAQS than EPA. The Clean Air Act limits EPA's authority to revise a state's recommended designation (including boundaries) to situations where it is "necessary[2]" to do so. As discussed in more detail below and in the attachment, we continue to believe that our October 25, 2011 recommendation provides for timely compliance with the NAAQS, minimizes the regulatory burden on the state, is less costly to affected sources, and fully complies with the Clean Air Act. We do not believe that the inclusion of the additional counties that EPA intends to include in the nonattainment area are necessary or appropriate because it imposes significantly more regulatory burden and higher compliance costs without having a material impact on the nonattaining area's ability to comply with the standard in a timely manner.

The current ozone design value in Atlanta is 80 ppb. This is only 5 ppb above the standard. And as described above, more than half of the Atlanta area ozone monitors are already in compliance with the 2008 ozone NAAQS. EPA recently proposed a classifications rule[3] in the Federal Register that would designate the area as "Marginal," meaning that the area should come into compliance soon with minimal, if any, additional measures beyond what are already in process of being implemented. In the Preamble to the classifications rule, EPA said the following about Marginal areas:

> "Many Marginal areas are expected to attain the 2008 NAAQS within 3 years of designation (e.g., in 2015) due to reductions of ozone precursors resulting from a number of federal and state emission reduction programs that have already been adopted. Such programs include more stringent emission standards for onroad and nonroad vehicles and equipment (with associated fleet turnover), regional reductions in power plant emissions to address interstate transport, and potential future programs such as the boiler maximum achievable control technology standards. The EPA estimates that in about half of the Marginal areas, these reductions in conjunction with other ongoing state and federal controls should be sufficient to bring about attainment."

In support of the above statements, EPA published information[4] in the docket for the classifications rule that predicts that the entire Atlanta area could achieve the 75 ppb ozone

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[2] CAA section 107(d)(1)(B)(ii)
[3] 77 FR 8197, "Implementation of the 2008 National Ambient Air Quality Standards for Ozone: Nonattainment Area Classifications Approach, Attainment Deadlines and Revocation of the 1997 Ozone Standards for Transportation Conformity Purposes."
[4] Document ID: EPA-HQ-OAR-2010-0885-0011, "Spreadsheet estimates 2015 design values for hypothetical 8-hour ozone nonattainment areas for the 75 ppb NAAQS for the purpose of estimating the number of marginal nonattainment areas that are expected to attain the NAAQS by their attainment date (2015)." The 2008-2010 observed ambient ozone design values are projected to the future using the modeled average percent per year change in ozone from the 2014 CSAPR final rule modeling (CSAPR remedy case). See pg. 82.

NAAQS by 2015 without any additional pollution control measures and regardless of the size of the nonattainment boundary.

In the September 22, 2011 memorandum from Assistant Administrator Gina McCarthy titled, "Implementation of the Ozone National Ambient Air Quality Standard," EPA stated that they will be "mindful of the President's and Administrator's direction that in these challenging economic times EPA should reduce uncertainty and minimize the regulatory burdens on state and local governments." In general, a smaller area is consistent with the President's directive to reduce uncertainty and minimize the regulatory burdens on state governments, while a larger area is not consistent with this directive. A reasonable interpretation of "contributes to" in Clean Air Act section 107(d)(1)(A)(i) would be that inclusion of an area that currently is in compliance[5] with the standard as part of the nonattainment area is necessary because it would have a material impact on the nonattaining area's ability to comply with the standard. Otherwise, the only thing that is accomplished by including the compliant area within the nonattainment boundary is to increase the cost of compliance, increase the scope of government control and bureaucracy, and to potentially harm the economic fortunes of the compliant area.

One specific Clean Air Act requirement that is influenced by the size of a nonattainment area is the Clean Air Act section 172(c)(2)[6] requirement for Reasonable Further Progress (RFP). Incorporating counties that have minimal potential for emissions reductions may make it very difficult for Georgia to meet RFP requirements. For example, in the past, emission reductions associated with the turnover of Atlanta's mobile source fleet provided a reliable mechanism for meeting RFP (i.e., newer cars have lower emissions). However, the emissions benefit from fleet turnover continues to decline and could eventually result in emissions increases if vehicle miles traveled continues to increase and vehicle emission standards do not improve. This potential RFP problem extends to counties with minimal point source emissions and counties where the point sources are already very well controlled. As a result, including counties where EPD has little or no ability to obtain further emission reductions may make it very difficult to meet the Clean Air Act RFP requirement.

EPD urges EPA to reconsider each of the fourteen counties without violating monitors from inclusion in a nonattainment area.

EPA's December 4, 2008, memorandum "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards" contains the factors that EPA indicated it would consider in determining nonattainment boundaries for this ozone standard[7]. The attached technical analysis, performed by EPD, followed EPA's weight-of-evidence approach documented in their December 8, 2011 TSD with the following important updates:

1. GA EPD used 2009-2011 ozone measurements instead of 2008-2010 ozone measurements since they are the most recent quality-assured and certified ozone monitoring data.

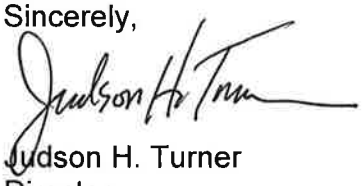
[5] Or has no monitoring data.
[6] Or Clean Air Act section 182(b)(1) if EPA uses Subpart 2 for ozone designations.
[7] It should be noted that this guidance did not go through public notice and comment rulemaking, was not subject to any judicial review, and explicitly states that it is nonbinding.

2. GA EPD used the distance from a county centroid to the violating monitor in addition to using the criteria of "next to counties with violating monitors".
3. GA EPD used NOx and VOC emission density (tons/mile^2) in addition to county total emissions (tons).
4. GA EPD included data regarding reduced NOx emissions from the two coal-fired power plants in Bartow and Coweta Counties.
5. GA EPD used the county percent contribution to the total CSA value (county value/CSA total value) and/or percent above/below the CSA average ([county value/CSA average value] – 1.0) for each factor when evaluating whether or not that factor indicates if county is likely to contribute to one of the four violating monitors.
6. GA EPD used site-specific wind speed and wind direction data for the most recent four years to correlate ozone exceedance days at individual monitors with upwind counties instead of using National Weather Service (NWS) data from the Atlanta International Airport station to determine predominant wind direction regardless of measured ozone concentrations.

GA EPD has used this weight-of-evidence analysis to provide information regarding why each of the fourteen counties without violating monitors should not be included in a nonattainment area for the 2008 ozone standard. As a result, the following four Georgia counties are recommended to be designated nonattainment under the revised 2008 ozone NAAQS: Cobb, DeKalb, Fulton, and Henry. A map with the location of these four counties is contained in Figure 2. As shown in Table 2, Georgia EPD recommends that all other counties be designated as unclassifiable/attainment for the 2008 ozone standard.

If you have any questions or need more information, please contact Jac Capp at (404) 363-7016 or Jimmy Johnston at (404) 363-7014.

Sincerely,



Judson H. Turner
Director

JHT:JJ:jwb

Attachments

c: Scott Davis, U.S. EPA Region 4
Jac Capp, Branch Chief, Air Protection Branch
Jimmy Johnston, Program Manager, Planning & Support

Table 1. 2009-2011 DVs of 8-hour ozone at FRM monitors (data taken from AMP480, Preliminary Design Value Report on February 9, 2012).

AIRS_ID	County	Station Name	2009-2011 DV
Atlanta-Sandy Springs-Gainesville, GA-AL			
13-067-0003	Cobb, GA	Kennesaw	**0.078**
13-077-0002	Coweta, GA	Newnan	0.067
13-085-0001	Dawson, GA	Dawsonville	0.068
13-089-0002	DeKalb, GA	South DeKalb	**0.077**
13-097-0004	Douglas, GA	Douglasville	0.074
13-121-0055	Fulton, GA	Confederate Ave.	**0.080**
13-135-0002	Gwinnett, GA	Gwinnett	0.075
13-151-0002	Henry, GA	McDonough	**0.078**
13-223-0003	Paulding, GA	Dallas / Yorkville	0.071
13-247-0001	Rockdale, GA	Conyers	0.075
Athens-Clarke County, GA			
13-059-0002	Clarke, GA	Athens	0.071
Augusta-Richmond County, GA-SC			
13-245-0091	Richmond, GA	Augusta	0.069
13-073-0001	Columbia, GA	Evans	0.068
45-003-0003	Aiken, SC	SC Aiken - Jackson	0.067
45-037-0001	Edgefield, SC	SC Edgefield - Trenton	0.063
Chattanooga-Cleveland-Athens, TN-GA			
47-065-4003	Hamilton, TN	TN-Chatt VAAP	0.073
47-065-1011	Hamilton, TN	TN-Sequoyah	0.072
Columbus-Auburn-Opelika, GA-AL			
13-215-0008	Muscogee, GA	Columbus Airport	0.067
01-113-0002	Russell, AL	AL - Russell Co	0.066
Macon-Warner Robins-Fort Valley, GA			
13-021-0012	Bibb, GA	Macon SE	0.073
Dalton, GA			
13-213-0003	Murray, GA	Fort Mountain	0.071
Other area			
13-055-0001	Chattooga, GA	Summerville	0.067
13-261-1001	Sumter, GA	Leslie	0.065
13-127-0006	Glynn, GA	Brunswick	0.061
13-051-0021	Chatham, GA	Savannah	0.064

2008 Ozone NAAQS NAA Designation Reference Map

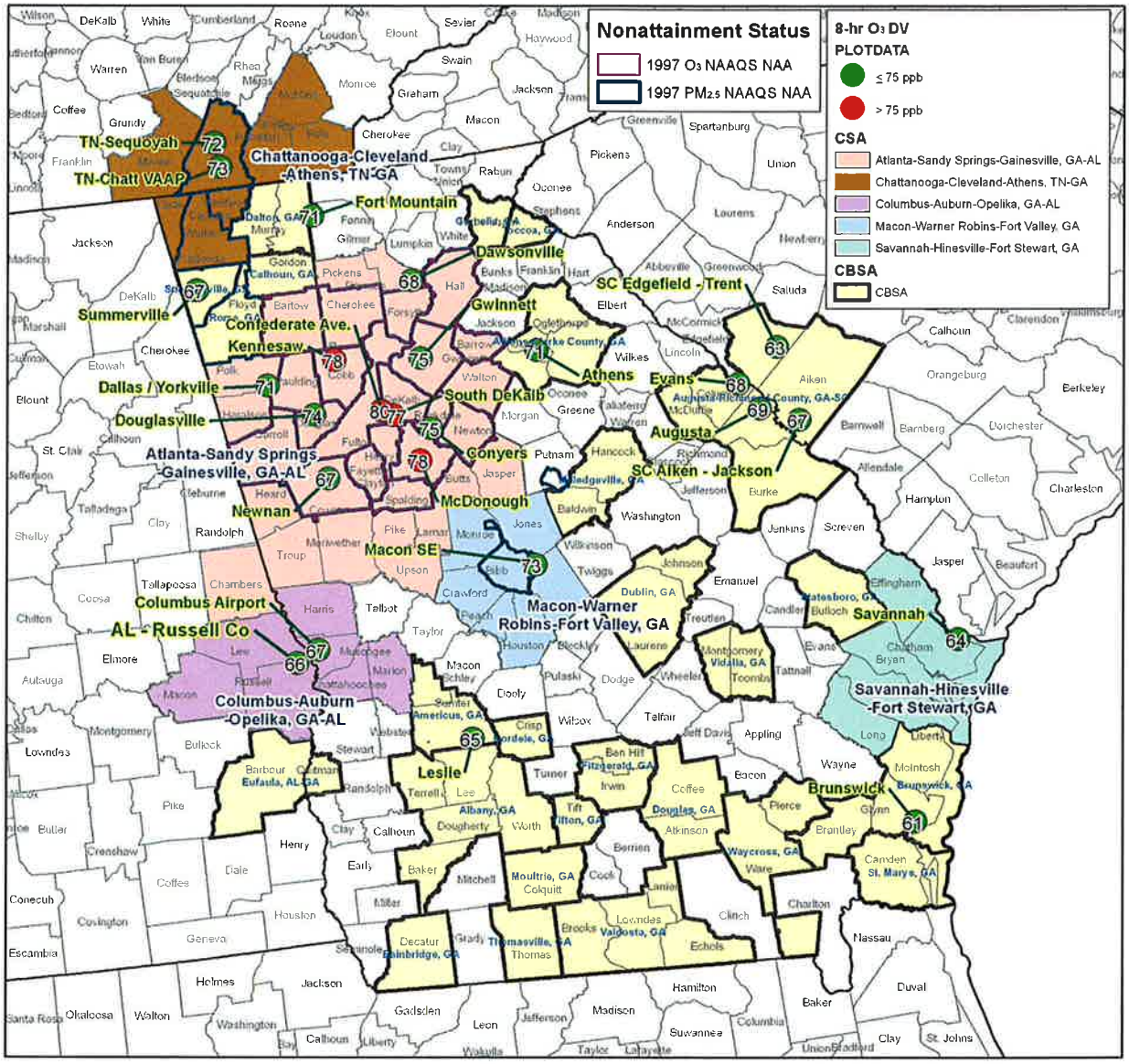


Figure 1. Ozone monitors and CSA/CBSA boundaries associated with potential nonattainment areas in Georgia under the 2008 ozone NAAQS. Ozone design values are based on 2009-2011 ozone data. Nonattainment area boundaries under the 1997 ozone NAAQS are outlined in red, and nonattainment area boundaries under the 1997 PM2.5 NAAQS are outlined in blue.

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

Table 2. RECOMMENDED DESIGNATION STATUS FOR GEORGIA COUNTIES

County Name	Designation Recommendation
Appling	Attainment/Unclassifiable
Atkinson	Attainment/Unclassifiable
Bacon	Attainment/Unclassifiable
Baker	Attainment/Unclassifiable
Baldwin	Attainment/Unclassifiable
Banks	Attainment/Unclassifiable
Barrow	Attainment/Unclassifiable
Bartow	Attainment/Unclassifiable
Ben Hill	Attainment/Unclassifiable
Berrien	Attainment/Unclassifiable
Bibb	Attainment/Unclassifiable
Bleckley	Attainment/Unclassifiable
Brantley	Attainment/Unclassifiable
Brooks	Attainment/Unclassifiable
Bryan	Attainment/Unclassifiable
Bulloch	Attainment/Unclassifiable
Burke	Attainment/Unclassifiable
Butts	Attainment/Unclassifiable
Calhoun	Attainment/Unclassifiable
Camden	Attainment/Unclassifiable
Candler	Attainment/Unclassifiable
Carroll	Attainment/Unclassifiable
Catoosa	Attainment/Unclassifiable
Charlton	Attainment/Unclassifiable
Chatham	Attainment/Unclassifiable
Chattahoochee	Attainment/Unclassifiable
Chattooga	Attainment/Unclassifiable
Cherokee	Attainment/Unclassifiable
Clarke	Attainment/Unclassifiable
Clay	Attainment/Unclassifiable
Clayton	Attainment/Unclassifiable
Clinch	Attainment/Unclassifiable
Cobb	**Nonattainment**
Coffee	Attainment/Unclassifiable
Colquitt	Attainment/Unclassifiable
Columbia	Attainment/Unclassifiable
Cook	Attainment/Unclassifiable
Coweta	Attainment/Unclassifiable
Crawford	Attainment/Unclassifiable
Crisp	Attainment/Unclassifiable
Dade	Attainment/Unclassifiable
Dawson	Attainment/Unclassifiable

Table 2. RECOMMENDED DESIGNATION STATUS FOR GEORGIA COUNTIES

County Name	Designation Recommendation
Decatur	Attainment/Unclassifiable
DeKalb	**Nonattainment**
Dodge	Attainment/Unclassifiable
Dooly	Attainment/Unclassifiable
Doughtery	Attainment/Unclassifiable
Douglas	Attainment/Unclassifiable
Early	Attainment/Unclassifiable
Echols	Attainment/Unclassifiable
Effingham	Attainment/Unclassifiable
Elbert	Attainment/Unclassifiable
Emanuel	Attainment/Unclassifiable
Evans	Attainment/Unclassifiable
Fannin	Attainment/Unclassifiable
Fayette	Attainment/Unclassifiable
Floyd	Attainment/Unclassifiable
Forsyth	Attainment/Unclassifiable
Franklin	Attainment/Unclassifiable
Fulton	**Nonattainment**
Gilmer	Attainment/Unclassifiable
Glascock	Attainment/Unclassifiable
Glynn	Attainment/Unclassifiable
Gordon	Attainment/Unclassifiable
Grady	Attainment/Unclassifiable
Greene	Attainment/Unclassifiable
Gwinnett	Attainment/Unclassifiable
Habersham	Attainment/Unclassifiable
Hall	Attainment/Unclassifiable
Hancock	Attainment/Unclassifiable
Haralson	Attainment/Unclassifiable
Harris	Attainment/Unclassifiable
Hart	Attainment/Unclassifiable
Heard	Attainment/Unclassifiable
Henry	**Nonattainment**
Houston	Attainment/Unclassifiable
Irwin	Attainment/Unclassifiable
Jackson	Attainment/Unclassifiable
Jasper	Attainment/Unclassifiable
Jeff Davis	Attainment/Unclassifiable
Jefferson	Attainment/Unclassifiable
Jenkins	Attainment/Unclassifiable
Johnson	Attainment/Unclassifiable
Jones	Attainment/Unclassifiable

Table 2. RECOMMENDED DESIGNATION STATUS FOR GEORGIA COUNTIES

County Name	Designation Recommendation
Lamar	Attainment/Unclassifiable
Lanier	Attainment/Unclassifiable
Laurens	Attainment/Unclassifiable
Lee	Attainment/Unclassifiable
Liberty	Attainment/Unclassifiable
Lincoln	Attainment/Unclassifiable
Long	Attainment/Unclassifiable
Lowndes	Attainment/Unclassifiable
Lumpkin	Attainment/Unclassifiable
McDuffie	Attainment/Unclassifiable
McIntosh	Attainment/Unclassifiable
Macon	Attainment/Unclassifiable
Madison	Attainment/Unclassifiable
Marion	Attainment/Unclassifiable
Meriwether	Attainment/Unclassifiable
Miller	Attainment/Unclassifiable
Mitchell	Attainment/Unclassifiable
Monroe	Attainment/Unclassifiable
Montgomery	Attainment/Unclassifiable
Morgan	Attainment/Unclassifiable
Murray	Attainment/Unclassifiable
Muscogee	Attainment/Unclassifiable
Newton	Attainment/Unclassifiable
Oconee	Attainment/Unclassifiable
Oglethorpe	Attainment/Unclassifiable
Paulding	Attainment/Unclassifiable
Peach	Attainment/Unclassifiable
Pickens	Attainment/Unclassifiable
Pierce	Attainment/Unclassifiable
Pike	Attainment/Unclassifiable
Polk	Attainment/Unclassifiable
Pulaski	Attainment/Unclassifiable
Putnam	Attainment/Unclassifiable
Quitman	Attainment/Unclassifiable
Rabun	Attainment/Unclassifiable
Randolph	Attainment/Unclassifiable
Richmond	Attainment/Unclassifiable
Rockdale	Attainment/Unclassifiable
Schley	Attainment/Unclassifiable
Screven	Attainment/Unclassifiable
Seminole	Attainment/Unclassifiable
Spalding	Attainment/Unclassifiable

Table 2. RECOMMENDED DESIGNATION STATUS FOR GEORGIA COUNTIES

County Name	Designation Recommendation
Stephens	Attainment/Unclassifiable
Stewart	Attainment/Unclassifiable
Sumter	Attainment/Unclassifiable
Talbot	Attainment/Unclassifiable
Taliaferro	Attainment/Unclassifiable
Tattnall	Attainment/Unclassifiable
Taylor	Attainment/Unclassifiable
Telfair	Attainment/Unclassifiable
Terrell	Attainment/Unclassifiable
Thomas	Attainment/Unclassifiable
Tift	Attainment/Unclassifiable
Toombs	Attainment/Unclassifiable
Towns	Attainment/Unclassifiable
Treutlen	Attainment/Unclassifiable
Troup	Attainment/Unclassifiable
Turner	Attainment/Unclassifiable
Twiggs	Attainment/Unclassifiable
Union	Attainment/Unclassifiable
Upson	Attainment/Unclassifiable
Walker	Attainment/Unclassifiable
Walton	Attainment/Unclassifiable
Ware	Attainment/Unclassifiable
Warren	Attainment/Unclassifiable
Washington	Attainment/Unclassifiable
Wayne	Attainment/Unclassifiable
Webster	Attainment/Unclassifiable
Wheeler	Attainment/Unclassifiable
White	Attainment/Unclassifiable
Whitfield	Attainment/Unclassifiable
Wilcox	Attainment/Unclassifiable
Wilkes	Attainment/Unclassifiable
Wilkinson	Attainment/Unclassifiable
Worth	Attainment/Unclassifiable

Nonattainment Area Designations for Georgia Under the 2008 Revised 8-Hour Ozone NAAQS

Technical Analysis in Response to EPA's December 8, 2011 Preliminary Nonattainment Area Boundaries

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 supplements our analysis submitted October 25, 2011. 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." This additional technical analysis is in response to EPA's December 8, 2011 letter and Technical Support Document (TSD) titled "Georgia - Area Designations for the 2008 Ozone National Ambient Air Quality Standards". 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, 2010, and 2011 ozone measurements have been quality-assured and certified and are stored in EPA's Air Quality System (AQS) database. Design values (DVs) were calculated for each monitor (Table 1 and Figure 1[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). Counties with violating monitors include: Cobb, DeKalb, Fulton, and Henry.

[1] Figure 1 is on page 22. All figures in this document appear at the end of the text of the document.

Table 1. 2009-2011 DVs of 8-hour ozone at FRM monitors (data taken from AMP480, Preliminary Design Value Report on February 9, 2012).

AIRS_ID	County	Station Name	2009-2011 DV
Atlanta-Sandy Springs-Gainesville, GA-AL			
13-067-0003	Cobb, GA	Kennesaw	**0.078**
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13-089-0002	DeKalb, GA	South DeKalb	**0.077**
13-097-0004	Douglas, GA	Douglasville	0.074
13-121-0055	Fulton, GA	Confederate Ave.	**0.080**
13-135-0002	Gwinnett, GA	Gwinnett	0.075
13-151-0002	Henry, GA	McDonough	**0.078**
13-223-0003	Paulding, GA	Dallas / Yorkville	0.071
13-247-0001	Rockdale, GA	Conyers	0.075
Athens-Clarke County, GA			
13-059-0002	Clarke, GA	Athens	0.071
Augusta-Richmond County, GA-SC			
13-245-0091	Richmond, GA	Augusta	0.069
13-073-0001	Columbia, GA	Evans	0.068
45-003-0003	Aiken, SC	SC Aiken - Jackson	0.067
45-037-0001	Edgefield, SC	SC Edgefield - Trenton	0.063
Chattanooga-Cleveland-Athens, TN-GA			
47-065-4003	Hamilton, TN	TN-Chatt VAAP	0.073
47-065-1011	Hamilton, TN	TN-Sequoyah	0.072
Columbus-Auburn-Opelika, GA-AL			
13-215-0008	Muscogee, GA	Columbus Airport	0.067
01-113-0002	Russell, AL	AL - Russell Co	0.066
Macon-Warner Robins-Fort Valley, GA			
13-021-0012	Bibb, GA	Macon SE	0.073
Dalton, GA			
13-213-0003	Murray, GA	Fort Mountain	0.071
Other area			
13-055-0001	Chattooga, GA	Summerville	0.067
13-261-1001	Sumter, GA	Leslie	0.065
13-127-0006	Glynn, GA	Brunswick	0.061
13-051-0021	Chatham, GA	Savannah	0.064

Approach for Evaluating Nonattainment Area Boundaries

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

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,

In EPA's December 8, 2011 letter and TSD describing their initial recommendations for the Atlanta nonattainment area boundary, they have grouped the emissions-related factors together under the heading of "Emissions and Emissions-Related Data," which results in five factors instead of nine. These five factors are:

1. Air quality data (including the design value calculated for each Federal Reference Method (FRM) or Federal Equivalent Method (FEM) monitors in the area); *See* 40 CFR part 58
2. Emissions and emissions-related data (including location of sources and population, amount of emissions and emissions controls, and urban growth patterns);
3. Meteorology (weather/transport patterns);
4. Geography and topography (mountain ranges or other basin boundaries);
5. Jurisdictional boundaries (e.g., counties, air districts, existing nonattainment areas, Indian country, metropolitan planning organizations (MPOs))

EPA evaluated contributions from nearby areas based on a weight of evidence analysis considering the factors identified above. EPA chose to examine the five factors with respect to the larger of the Combined Statistical Area (CSA) or Core Based Statistical Area (CBSA) associated with the violating monitor(s). GA EPD has followed a similar weight of evidence approach as EPA with the following important updates:

1. In factor 1, GA EPD used 2009-2011 ozone measurements instead of 2008-2010 ozone measurements since they are the most recent quality-assured and certified ozone monitoring data.

2. In factor 2, GA EPD used the distance from a county centroid to the violating monitor in addition to using the criteria of "next to counties with violating monitors".

3. In factor 2, GA EPD used NOx and VOC emission density (tons/mile^2) in addition to county total emissions (tons)

4. In factor 2, EPD has included data regarding reduced NOx emissions from the two coal-fired power plants in Bartow and Coweta Counties.

5. In factor 2, GA EPD used the county percent contribution to the total CSA value (county value/CSA total value) and/or percent above/below the CSA average ([county value/CSA average value] – 1.0) for each factor when evaluating whether or not that factor indicates if a county is likely to contribute to one of the four violating monitors.

6. In factor 3, GA EPD used site-specific (when available) wind speed and wind direction data for the most recent four years to correlate high (>75ppb) 8-hour ozone hours at individual monitors with upwind counties instead of EPA's approach of using National Weather Service (NWS) data from the Hartsfield-Jackson Atlanta International Airport station to determine predominant wind direction regardless of measured ozone concentrations.

Except where noted above, GA EPD used the data and information provided by EPA in their December 8, 2011 letter and TSD.

Technical Analysis for Atlanta-Sandy Springs-Gainesville, GA-AL

Figure 2 is a map of the Atlanta-Sandy Springs-Gainesville, GA area. The map identifies GA EPD recommended nonattainment area, EPA recommended nonattainment area, the locations and design values of air quality monitors, county and other jurisdictional boundaries, the nonattainment boundary for the 1997 8-hour ozone NAAQS, and major highways.

In preparing a response to EPA's December 8, 2011 letter and TSD, EPD conducted a weight of evidence analysis for all 33 counties included in the Atlanta-Sandy Springs-Gainesville CSA. These are Barrow, Bartow, Butts, Carroll, Chambers (AL), Cherokee, Clayton, Cobb, Coweta, Dawson, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Haralson, Heard, Henry, Jasper, Lamar, Meriwether, Newton, Paulding, Pickens, Pike, Polk, Rockdale, Spalding, Troup, Upson, and Walton. However, in the following analyses, EPD presents information only for the 18 counties included in EPA's December 8, 2011 letter.

Based on GA EPD's technical analysis described below, GA EPD recommends four counties in Georgia (identified in Table 2 below) as "nonattainment" for the 2008 ozone NAAQS as part of the Atlanta-Sandy Springs-Gainesville nonattainment area. All other counties in Georgia are recommended as "unclassifiable/attainment" for the 2008 ozone NAAQS.

Table 2. GA EPD's Recommended and EPA's Intended Designated Nonattainment Counties for Atlanta- Sandy Springs-Gainesville, GA.

Atlanta-Sandy Springs-Gainesville, GA	GA EPD Recommended Nonattainment Counties	EPA Intended Nonattainment Counties
Georgia	Cobb DeKalb Fulton Henry	Barrow Bartow Cherokee Clayton Cobb Coweta DeKalb Douglas Fayette Forsyth Fulton Gwinnett Henry Newton Paulding Rockdale Spalding Walton

Factor 1: Air Quality Data

For this factor, GA EPD considered 8-hour ozone design values (in ppb) for air quality monitors in counties in the Atlanta-Sandy Springs-Gainesville, GA area based on data for the 2009-2011 period (i.e., the 2011 design value, or DV), which are the most recent years with fully-certified air quality data. The 2008 ozone NAAQS are met at a monitor when the annual fourth-highest daily maximum 8-hour average concentration, averaged over 3 years is 75 ppb or less.

The 18 counties included in EPA's December 8, 2011 letter, along with the 2011 DVs for the ozone NAAQS for counties with monitors in the Atlanta-Sandy Springs- Gainesville, GA area are shown in Table 3. In addition, the distance from the centroid of each county to the nearest violating monitor is included.

Cobb, DeKalb, Fulton, and Henry Counties show a violation of the 2008 ozone NAAQS, therefore these counties are recommended to be included in the nonattainment area. A county (or partial county) must also be designated nonattainment if it contributes[2] to a violation in a nearby area. Each county without a violating monitor that is located in the CSA with a violating monitor has been evaluated, as discussed below, based on the five factors and other relevant information to determine whether it contributes to the nearby violation.

In EPA's December 8, 2011 letter, EPA identified 12 counties (Bartow, Clayton, Cherokee, Coweta, Douglas, Fayette, Forsyth, Gwinnett, Newton, Paulding, Spalding and Walton) that

[2] Clean Air Act section 107(d)(1)(A)(i)

were "next to" counties with violating monitors[3]. However, this determination was based on 2008 – 2010 ozone design values, which included a violating monitor in Rockdale County. Since that time, EPD has certified the 2009-2011 ozone monitoring data. As a result, the monitor in Rockdale County is no longer in violation. This means that only 11 counties (Bartow, Clayton, Cherokee, Coweta, Douglas, Fayette, Forsyth, Gwinnett, Paulding, Rockdale, and Spalding) are currently "next to" counties with violating monitors.

Because Georgia's counties are of varying size and shape, EPD determined the distance from the centroid of each county to a violating monitor. We believe this may be a better factor than "next to". This is particularly important due to the fact that Fulton County, which has a violating monitor at its center, is much longer (approximately 60 miles) than any of the other counties in the CSA, and, as a result, is "next to" 10 counties. The average distance from the county centroid to the nearest violating monitor is 28.4 miles. Of the fourteen counties without violating monitors, four of them are greater than the average distance to the nearest violating monitor – Forsyth (31.1 miles), Walton (32.6 miles), Coweta (34.5 miles), and Barrow (39.2 miles).

Table 3. 2011 ozone design values (DVs) and distance to the nearest violating monitor.

County*	2011 DV (ppb)	Distance to DV>75 (miles)
Henry	**78**	1.4
Cobb	**78**	5.4
DeKalb	**77**	6.8
Fulton	**80**	7.9
Clayton		10.8
Spalding		13.9
Rockdale	75	15.3
Paulding	71	16.2
Cherokee		17.5
Fayette		19.2
Newton		19.8
Bartow		20.3
Douglas	74	23.6
Gwinnett	75	24.3
Forsyth		31.1
Walton		32.6
Coweta	67	34.5
Barrow		39.2
AVERAGE (includes all counties in CSA)		28.4

*Counties in **red bold** are recommended nonattainment by GA EPD.

[3] EPA also noted that a small portion of Carroll County connects to a county with a violating monitor, however, Carroll County is adjacent to three other counties with attaining monitors of closer proximity.

Factor 2: Emissions and Emissions-Related Data

GA EPD evaluated emissions of ozone precursors (NOx and VOCs) and other emissions-related data that provide information on areas contributing to violating monitors.

Emissions Data

GA EPD evaluated county-level emission data for NOx and VOC derived from the 2008 National Emissions Inventory (NEI), version 1.5. This is the most recently available NEI. The precursor emission source-category percentages used below and throughout the document were derived from emissions data from the 2008 NEI version 1.5 referenced above.

NOx Emissions: Table 4 shows emissions of NOx (tpy and tpy/mile[2]) for the eighteen counties included in EPA's December 8, 2011 letter. Table 5 shows the breakdown of NOx into various source categories: on-road mobile; NONROAD; marine, aircraft, and rail (MAR); area; fires; and point.

Walton, Spalding, and Barrow each have 1% percent or less of the total NOx in the CSA and are more than 50% lower than the CSA county average. Because all counties are not the same size geographically, EPD also calculated the NOx emissions density in terms of tons per square mile. Paulding, Walton, and Spalding County each have a NOx emission density that is more than 50% lower than the CSA county average. Cherokee, Newton, and Barrow County each have a NOx emissions density between 40% and 50% lower than the CSA county average.

Bartow, Gwinnett, Clayton, Coweta, and Cherokee each have over 2% percent of the total NOx in the CSA. Of these, only Bartow and Coweta Counties have greater than 1% of their NOx emissions coming from point sources. (EPA's December 8, 2011 letter identified Clayton County as having over 60% of NOx emissions coming from point sources since EPA counted the airport emissions as point sources. However, GA EPD separated airport emissions from point emissions and placed them in the MAR category.) In Bartow County, approximately 94% of the 2008 point source NOx emissions came from a single facility, Georgia Power's Plant Bowen. NOx emissions from this facility are almost exclusively from four coal-fired Electric Generating Units (EGUs). Each of these utility EGUs are equipped with selective catalytic reduction (SCR) units installed between 2001 and 2003. Georgia's Multipollutant Rule required operation of these SCRs year-round starting December 31, 2008. As a result, NOx emissions from Plant Bowen were approximately 65% lower in 2011[4] than the 2008 emissions used in this analysis. In Coweta County, most, if not all, of point source emissions came from Georgia Power's Plant Yates. NOx emissions from this facility have were approximately 43% lower[2] in 2011 than in 2008.

Douglas, Spalding, Walton, Newton, Barrow, Paulding, Gwinnett, Cherokee, Rockdale, Fayette, and Forsyth Counties have greater than 55% (CSA county average) of their NOx emissions coming from on-road mobile sources. EPD has limited authority in regulating emissions from on-road mobile sources. EPD already requires the sale of lower emitting gasoline in each of these counties and enhanced motor vehicle emissions inspection and maintenance in seven of them (Douglas, Paulding, Gwinnett, Cherokee, Rockdale, Fayette, and Forsyth).

[4] Based on information in EPA's Clean Air Markets website at http://www.epa.gov/airmarkets/

Clayton County has 63.2% of its NOx emissions coming from Marine, Aircraft, and Rail (MAR) sources. Of this 99% is from aircraft emissions at Hartsfield-Jackson Atlanta International Airport. EPD has no authority to regulate emissions from aircraft.

Table 4. 2008 NOx Emissions

County*	NOx (tpy)	NOx % CSA Total	NOx % CSA Average**	NOx Density (tpy/sq mi)	NOx Density % CSA Average**
Bartow	31,560	14.09%	364.9%	67.1	218.5%
Fulton	28,630	12.78%	321.7%	53.5	154.0%
Cobb	20,874	9.32%	207.5%	60.6	187.4%
Gwinnett	18,569	8.29%	173.5%	42.5	101.8%
DeKalb	17,356	7.75%	155.6%	63.9	203.1%
Clayton	16,105	7.19%	137.2%	111.6	429.4%
Coweta	15,852	7.08%	133.5%	35.5	68.4%
Henry	7,584	3.39%	11.7%	23.3	10.7%
Cherokee	4,908	2.19%	-27.7%	11.3	-46.4%
Forsyth	3,823	1.71%	-43.7%	15.4	-26.7%
Douglas	3,368	1.50%	-50.4%	16.8	-20.2%
Newton	3,307	1.48%	-51.3%	11.8	-43.8%
Paulding	2,780	1.24%	-59.1%	8.8	-58.1%
Fayette	2,732	1.22%	-59.8%	13.7	-34.8%
Rockdale	2,483	1.11%	-63.4%	18.8	-10.8%
Walton	2,245	1.00%	-66.9%	6.8	-67.7%
Spalding	1,828	0.82%	-73.1%	9.1	-56.7%
Barrow	1,765	0.79%	-74.0%	10.8	-48.6%
AVERAGE (all counties in CSA)	**6,789**			**21.1**	
Total (all counties in CSA)	**224,040**	**100%**			

*Counties in **red bold** are recommended nonattainment by GA EPD.

**This column represents the percent above or below the CSA average. Positive values are percent above the CSA average and negative values are percent below the CSA average.

Table 5. 2008 NOx Emission Sources

County*	On-road	NONROAD	MAR	Area	Fires	Point
Douglas	74.6%	12.4%	3.3%	8.0%	1.7%	0.0%
DeKalb	71.3%	15.2%	2.2%	11.1%	0.0%	0.1%
Spalding	70.4%	13.1%	0.3%	14.0%	2.2%	0.0%
Walton	67.9%	19.8%	1.2%	5.7%	5.3%	0.0%
Fulton	67.5%	16.4%	5.7%	10.2%	0.1%	0.1%
Newton	66.7%	16.1%	1.9%	13.4%	1.9%	0.0%
Barrow	65.8%	14.7%	8.2%	9.0%	2.4%	0.0%
Paulding	65.4%	16.3%	10.8%	5.9%	1.5%	0.0%
Henry	64.6%	18.4%	6.9%	9.1%	0.9%	0.1%
Gwinnett	64.2%	23.5%	1.8%	10.3%	0.0%	0.1%
Cherokee	64.0%	22.3%	0.5%	10.0%	3.2%	0.0%
Rockdale	63.9%	16.4%	1.2%	17.0%	0.5%	1.0%
Fayette	63.6%	20.4%	4.6%	9.5%	2.0%	0.0%
Forsyth	59.5%	25.4%	0.0%	12.4%	2.7%	0.0%
Cobb	53.0%	14.4%	5.0%	9.6%	0.0%	17.9%
Clayton	26.9%	6.6%	63.2%	3.3%	0.0%	0.0%
Coweta	12.8%	3.6%	1.7%	2.9%	1.1%	77.9%
Bartow	11.3%	1.8%	2.1%	3.6%	0.3%	80.8%
Average (all counties in CSA)	55.3%	13.6%	7.1%	9.2%	6.3%	8.6%

*Counties in **red bold** are recommended nonattainment by GA EPD.

VOC Emissions: Table 6 shows emissions of VOC (tpy and tpy/mile^2) for all counties in the Atlanta-Sandy Springs-Gainesville, GA-AL CSA. Table 7 shows the breakdown of VOCs into various source categories: on-road mobile, NONROAD, marine, aircraft, and rail (MAR), area, fires, and point.

It should be noted that modeling studies have demonstrated that emission reductions of anthropogenic VOCs has an insignificant impact on daily 8-hour ozone concentrations in the Southeastern U.S. (Odman M.T., Hu Y., Russell A.G., Hanedar A., Boylan J.W., and Brewer P.F., 2009, *Quantifying the sources of ozone, fine particulate matter, and regional haze in the Southeastern United States*, Journal of Environmental Management, 90, 3155–3168). In addition, GA EPD has demonstrated that the Atlanta area is strongly NOx limited as presented in the Atlanta 8-hr Ozone Attainment Demonstration submitted to EPA on October 21, 2009. In fact, there are many instances where anthropogenic VOC reductions can lead to increased ozone production. For this reason, the VOC emission factor should be given less weight in the final weight-of-evidence conclusions. Nevertheless, since EPA included VOC emissions in its December 8, 2011 analysis, EPD has done the same.

Gwinnett, Clayton, Cherokee, Bartow, Forsyth, and Newton each have over 2% percent of the total VOCs in the CSA. Douglas, Coweta, Fayette, Walton, Paulding, Rockdale, Spalding, and Barrow each have less than 2% percent of the total VOCs in the CSA and are 35% - 65% lower than the CSA county average.

Coweta and Walton County each have a VOCs emission density that is equal to or more than 50% lower than the CSA county average.

EPD has little authority in regulating VOC emissions from on-road mobile and area sources. Thus inclusion of a county with a high percent of VOC emissions from these source categories will be of little benefit if included in a nonattainment area. And, as explained earlier, VOC reductions have little to no benefit in reducing ozone levels in Georgia. Newton, Douglas, Bartow, Paulding, Rockdale, Barrow, Fayette, Spalding, Gwinnett, Walton, Clayton, and Cherokee have greater than 30% (CSA county average) of their VOC emissions coming from on-road mobile sources. Newton, Douglas, Bartow, Paulding, Rockdale, Barrow, Fayette, Spalding, Gwinnett, Clayton, Cherokee, and Forsyth have greater than or equal to 34% (CSA county average) of their VOC emissions coming from area sources.

Table 6. 2008 VOC Emissions

County*	VOC (tpy)	VOC % CSA Total	VOC % CSA Average**	VOC Density (tpy/sq mi)	VOC Density % CSA Average**
Fulton	31,707	15.92%	425.2%	59.3	211.8%
Gwinnett	24,506	12.30%	305.9%	56.1	195.1%
DeKalb	22,937	11.51%	279.9%	84.4	343.9%
Cobb	22,494	11.29%	272.6%	65.3	243.2%
Clayton	9,528	4.78%	57.8%	66.0	247.1%
Cherokee	6,189	3.11%	2.5%	14.2	-25.1%
Bartow	6,165	3.09%	2.1%	13.1	-31.0%
Henry	6,015	3.02%	-0.4%	18.5	-2.7%
Forsyth	5,753	2.89%	-4.7%	23.2	22.2%
Newton	4,248	2.13%	-29.6%	15.2	-20.0%
Douglas	3,968	1.99%	-34.3%	19.8	4.2%
Coweta	3,723	1.87%	-38.3%	8.3	-56.2%
Fayette	3,556	1.78%	-41.1%	17.9	-5.9%
Walton	3,137	1.57%	-48.0%	9.5	-50.0%
Paulding	3,037	1.52%	-49.7%	9.6	-49.3%
Rockdale	2,961	1.49%	-51.0%	22.4	17.9%
Spalding	2,862	1.44%	-52.6%	14.3	-24.8%
Barrow	2,291	1.15%	-62.1%	14.1	-26.0%
Average (all counties in CSA)	**6,037**			**19.0**	
Total (all counties in CSA)	**199,218**	**100%**			

*Counties in **red bold** are recommended nonattainment by GA EPD.

**This column represents the percent above or below the CSA average. Positive values are percent above the CSA average and negative values are percent below the CSA average.

Table 7. 2008 VOC Emission Sources

County*	On-road	NONROAD	MAR	Area	Fires	Point
Newton	45.3%	5.9%	0.1%	34.0%	14.6%	0.0%
Douglas	44.4%	6.3%	0.2%	44.8%	4.3%	0.0%
Bartow	42.0%	9.5%	0.6%	32.7%	9.7%	5.5%
Henry	40.8%	10.4%	0.4%	38.7%	8.5%	1.1%
Paulding	40.4%	7.9%	0.5%	37.3%	13.9%	0.0%
Fulton	39.7%	12.8%	0.3%	45.7%	1.3%	0.2%
Rockdale	38.7%	9.7%	0.1%	46.1%	4.0%	1.5%
Barrow	38.5%	5.7%	0.4%	41.6%	13.7%	0.0%
DeKalb	37.1%	15.4%	0.2%	46.1%	0.4%	0.8%
Fayette	36.7%	10.8%	0.4%	45.9%	6.2%	0.0%
Spalding	36.2%	10.4%	0.0%	39.4%	14.0%	0.0%
Cobb	35.3%	17.7%	0.6%	45.8%	0.1%	0.4%
Gwinnett	34.3%	18.7%	0.1%	46.5%	0.4%	0.0%
Walton	33.2%	7.1%	0.0%	31.5%	28.2%	0.0%
Clayton	33.0%	6.5%	24.4%	35.8%	0.3%	0.0%
Cherokee	32.0%	18.2%	0.0%	34.8%	14.9%	0.0%
Forsyth	29.2%	19.7%	0.0%	46.6%	4.6%	0.0%
Coweta	25.6%	8.7%	0.3%	29.5%	33.9%	2.0%
Average (all counties in CSA)	29.7%	10.1%	1.0%	33.7%	24.9%	0.6%

*Counties in **red bold** are recommended nonattainment by GA EPD.

Emissions Controls

Table 8 is a list of specific NOx and VOC control measures currently implemented in the Georgia counties that make up the Atlanta CSA. These control measures were specifically developed to reduce ozone levels in the metro Atlanta area. In addition, VOC and NOx 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 8, 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 NOx limited as presented in the Atlanta 8-hr Ozone Attainment Demonstration submitted to EPA on October 21, 2009. Because NOx 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 Clean Air Interstate Rule (CAIR), Cross State Air Pollution Rule (CSAPR), and the Georgia Multipollutant Rule.

Table 8. 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)
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
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
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
13151	Henry	X	X	X	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
13247	Rockdale	X	X	X	X	X	X	X	*	X	X
13255	Spalding	X	X	*	X	X	X	X	*	X	X
13297	Walton	X	X	*	X	X	X	X	*	X	X

* Rule is not applicable in this county. However, the rule applies only to coal-fired EGUs and this county has no coal-fired EGUs.

Population density and degree of urbanization

GA EPD evaluated the population and vehicle use characteristics and trends in the CSA. Table 9 shows the population, population density, and population growth information for each county included in EPA's December 8, 2011 response letter. Data is taken from EPA's December 8, 2011 TSD.

Gwinnett, Clayton, Cherokee, Hall, Forsyth, Paulding, Douglas, and Coweta each have over 2% percent of the total population in the CSA. Together, these counties, along with the four counties with violating monitors (Fulton, DeKalb, Cobb, and Henry), account for more than

80% of the population in the CSA. Fayette, Bartow, Newton, Rockdale, Walton, Barrow, and Spalding each have less than 2% percent of the total population in the CSA.

Barrow, Bartow, Newton, Spalding, Coweta, and Walton each have a population density below 430 people/mile^2, which is more than 20% lower than the CSA county average. Bartow, Barrow, Walton, Clayton, Rockdale, Fayette and Spalding each have a population growth (2000-2010) below 25,000 people which is more than 25% lower than the CSA county average. The percent change in population (2000-2010) is not relevant since small absolute changes in counties with low populations will show up as large percent changes and similar absolute changes in counties with large populations will show up as small percent changes.

Table 9. Population and Growth

County*	2010 Population	% Total CSA	2010 Density (pop/sq mi)	% CSA Average**	(2000-2010) Change	% CSA Average**	(2000-2010) % Change
Fulton	920,581	16.39%	1,721	220.8%	103,429	230.0%	13
Gwinnett	805,321	14.33%	1,844	243.8%	208,978	566.8%	35
DeKalb	691,893	12.31%	2,546	374.7%	23,078	-26.4%	3
Cobb	688,078	12.25%	1,996	272.1%	75,436	140.7%	12
Clayton	259,424	4.62%	1,797	235.0%	21,056	-32.8%	9
Cherokee	214,346	3.82%	493	-8.1%	70,603	125.3%	49
Henry	203,922	3.63%	627	16.9%	82,342	162.7%	68
Forsyth	175,511	3.12%	709	32.2%	75,013	139.3%	75
Paulding	142,324	2.53%	452	-15.7%	59,329	89.3%	71
Douglas	132,403	2.36%	661	23.2%	39,700	26.7%	43
Coweta	127,317	2.27%	285	-46.9%	37,168	18.6%	41
Fayette	106,567	1.90%	536	-0.1%	14,494	-53.8%	16
Bartow	100,157	1.78%	213	-60.3%	23,456	-25.2%	31
Newton	99,958	1.78%	358	-33.3%	37,074	18.3%	59
Rockdale	85,215	1.52%	645	20.2%	14,657	-53.2%	21
Walton	83,768	1.49%	254	-52.6%	22,207	-29.1%	36
Barrow	69,367	1.23%	426	-20.6%	22,806	-27.2%	49
Spalding	64,073	1.14%	320	-40.3%	5,591	-82.2%	10
Average	**170,255**		**536**		**31,343**		**26**
Total (all counties in CSA)	**5,618,431**	**100%**					

*Counties in **red bold** are recommended nonattainment by GA EPD.
**This column represents the percent above or below the CSA average. Positive values are percent above the CSA average and negative values are percent below the CSA average.

Traffic VMT data and commuting patterns

GA EPD evaluated the total VMT for each county. Table 10 shows total 2008 VMT. Data is taken from EPA's December 8, 2011 TSD.

Gwinnett, Clayton, Cherokee, Bartow, Douglas, Hall, Forsyth, and Coweta each have over 2% percent of the total VMT in the CSA. These counties, together with the four counties with violating monitors (Fulton, DeKalb, Cobb, and Henry) account for more than 80% of the VMT in the CSA. Paulding, Fayette, Newton, Rockdale, Walton, Spalding and Barrow each have less than 2% of the total CSA VMT. Walton, Spalding, and Barrow each have VMT that is more than 50% lower than the CSA county average.

Table 10. VMT Data

County*	VMT (10^6)	% Total CSA	% CSA Average**
Fulton	11,414	19.89%	556.3%
DeKalb	7,410	12.91%	326.1%
Gwinnett	7,064	12.31%	306.2%
Cobb	6,601	11.50%	279.5%
Clayton	2,600	4.53%	49.5%
Henry	2,153	3.75%	23.8%
Cherokee	1,813	3.16%	4.2%
Bartow	1,663	2.90%	-4.4%
Douglas	1,520	2.65%	-12.6%
Forsyth	1,310	2.28%	-24.7%
Coweta	1,297	2.26%	-25.4%
Paulding	1,112	1.94%	-36.1%
Fayette	1,028	1.79%	-40.9%
Newton	1,021	1.78%	-41.3%
Rockdale	960	1.67%	-44.8%
Walton	720	1.25%	-58.6%
Spalding	588	1.02%	-66.2%
Barrow	552	0.96%	-68.3%
Average (all counties in CSA)	1,739		
Total (all counties in CSA)	57,394	100.00%	

*Counties in **red bold** are recommended nonattainment by GA EPD.

**This column represents the percent above or below the CSA average. Positive values are percent above the CSA average and negative values are percent below the CSA average.

Factor 3: Meteorology (weather/transport patterns)

GA EPD performed a meteorological analysis to correlate wind speed and wind direction with ozone exceedance days at five ozone monitors in the Atlanta-Sandy Springs-Gainesville CSA. The four violating monitors (Kennesaw, South DeKalb, Confederate Ave., and McDonough) were included as well as the Conyers monitor.

For the five monitors listed in Table 11, 1-hour ozone concentrations and wind speed/direction data from 2008 to 2011 were obtained from EPA's AQS Raw Data Report (AMP501). Two monitors, Kennesaw and McDonough, do not have co-located wind monitors. For these monitors, the National Weather Service (NWS) wind data at Hartsfield International Airport were used as 'proxy' wind data. Since NWS hourly data have some missing hours, 2-minute Automatic Sensing and Observing Station (ASOS) wind data at the Hartsfield International Airport were processed with AERMINUTE for the purpose of gap-filling. Output from AERMINUTE and NWS hourly data were further processed with AERMET to produce more complete hourly wind data than the hourly NWS data alone.

Table 11. Data Sources for wind-ozone frequency analysis

MONITORS	AIRSID	County	Ozone Data Source	Wind Data Source
Kennesaw	13-067-0003	COBB	AQS	NWS
South DeKalb	13-089-0002	DEKALB	AQS	AQS
Confederate Ave.	13-121-0055	FULTON	AQS	AQS
McDonough	13-151-0002	HENRY	AQS	NWS
Conyers	13-247-0001	ROCKDALE	AQS	AQS

The 1-hour ozone concentrations were used to calculate 8-hour average ozone concentrations if six or more hours of data are available. The 1-hour wind data were used to calculate 8-hour average wind data if six or more hours of data are available. If there are not enough ozone/wind data available to compute 8-hr ozone/wind data for a specific hour, the hour is marked as 'incomplete' and was not included in the analysis.

For all complete hourly records during the ozone season (March-October), scatter plots were created showing the wind speed/direction and if the measured ozone concentration was above or below 75 ppb (Figures 3-7).

For all complete hourly records with 8-hour average ozone concentrations over 75 ppb during the ozone season (March-October), frequency histograms (Figures 8-12) were produced with 16 wind direction bins (N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NSW). Next, these frequency histograms were overlaid on a GIS county map of the Atlanta-Sandy Springs-Gainesville CSA (Figures 13-18) to identify counties that are upwind and may be contributing to the ozone exceedances.

Based on these plots, the following conclusions are made:

- Kennesaw – The predominant wind direction on days with ozone exceedance at this monitor are from the SE, S, and SW.

- South DeKalb – The predominant wind direction on days with ozone exceedance at this monitor are from the W, SW, and S.

- Confederate Ave. – The predominant wind direction on days with ozone exceedance at this monitor are from the NW, W, SW, SE, E, and NE.

- McDonough – The predominant wind direction on days with ozone exceedance at this monitor are from the NW.

- Conyers – The predominant wind direction on days with ozone exceedance at this monitor are from the NW.

Factor 4: Geography/topography

This factor did not play a significant role in this evaluation of the Atlanta-Sandy Springs-Gainesville, GA area since it does not have any geographical or topographical barriers significantly limiting air pollution transport within its air shed.

Factor 5: Jurisdictional boundaries

All counties listed in EPA's December 8, 2011 response are within Georgia and fall within the jurisdiction of Georgia EPD. The Atlanta-Sandy Springs-Gainesville, GA area has previously established nonattainment boundaries associated with both the 1-hour and the 1997 8-hour ozone NAAQS. The Atlanta nonattainment boundary for the 1-hour ozone NAAQS included 13 counties in Georgia in their entireties: Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Paulding, and Rockdale. The Atlanta nonattainment boundary for the 1997 8-hour ozone NAAQS included 20 counties in Georgia in their entireties: Barrow, Bartow, Carroll, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Henry, Newton, Paulding, Rockdale, Spalding, and Walton. The EPA recommended Atlanta-Sandy Springs- Gainesville, GA nonattainment boundary for the 2008 ozone NAAQS differs from the previous nonattainment boundary for the 1997 ozone NAAQS by the exclusion of Carroll and Hall Counties.

Recommendations

Based on the assessment of factors described above, GA EPD has concluded that the following counties should be included as part of the Atlanta-Sandy Springs-Gainesville, GA nonattainment area because they are violating the 2008 ozone NAAQS: Cobb, DeKalb, Fulton, and Henry.

GA EPD does not believe that any other counties in the CSA are contributing to violations of the 2008 ozone NAAQS. GA EPD is in agreement with EPA that the following counties should not be designated nonattainment under the revised 2008 ozone NAAQS: Butts, Carroll, Chambers (AL), Dawson, Hall, Haralson, Heard, Jasper, Lamar, Meriwether, Pickens, Pike, Polk, Troup, and Upson. However, GA EPD does not agree with EPA that the following counties should be designated nonattainment under the revised 2008 ozone NAAQS: Walton, Barrow, Spalding, Newton, Paulding, Forsyth, Fayette, Cherokee, Bartow, Coweta, Rockdale, Douglas, Clayton, and Gwinnett.

The following will make a weight of evidence argument as to why each of these counties should not be included as part of the Atlanta-Sandy Springs-Gainesville, GA nonattainment area.

Walton County

- is not adjacent to a county with a violating ozone monitor
- is 32.6 miles away from the nearest violating monitor which is 14.8% above the CSA average
- has only 1.00% of the total CSA NOx emissions
- has 66.9% less NOx than the CSA average county emissions
- has a NOx emission density that is 67.7% less than the CSA average
- has no NOx emissions from point sources
- has 67.9% of its NOx emissions coming from on-road mobile sources of which EPD has little authority to regulate
- has only 1.57% of the total CSA VOC emissions and 48.0% less VOC than the CSA average county emissions
- has a VOC emission density that is 50.0% less than the CSA average
- has no VOC emissions from point sources
- has all applicable sources subject to the NOx controls listed in Table 8
- has only 1.49% of the total CSA population
- has 52.6% less population density than the CSA average county
- has 29.1% less population growth than the CSA average county
- has only 1.25% of the total CSA VMT
- has 58.6% less VMT than the CSA average county
- is not in-line with the prevailing wind direction on ozone exceedance days.

Barrow County:

- is not adjacent to a county with a violating ozone monitor
- is 39.2 miles away from the nearest violating monitor which is 38.2% above the CSA average
- has only 0.79% of the total CSA NOx emissions
- has 74.0% less NOx than the CSA average county emissions
- has a NOx emission density that is 48.6% less than the CSA average
- has no NOx emissions from point sources

- has 65.8% of its NOx emissions coming from on-road mobile sources of which EPD has little authority to regulate
- has only 1.15% of the total CSA VOC emissions and 62.1% less VOC than the CSA average county emissions
- has no VOC emissions from point sources
- has all applicable sources subject to the NOx controls listed in Table 8
- has only 1.23% of the total CSA population
- has 20.6% less population density than the CSA average county
- has 27.2% less population growth than the CSA average county
- has only 0.96% of the total CSA VMT
- has 68.3% less VMT than the CSA average county
- is not in-line with the prevailing wind direction on ozone exceedance days

Spalding County:

- has only 0.82% of the total CSA NOx emissions
- has 73.1% less NOx than the CSA average county emissions
- has a NOx emission density that is 56.7% less than the CSA average
- has no NOx emissions from point sources
- has 70.4% of its NOx emissions coming from on-road mobile sources of which EPD has little authority to regulate
- has only 1.44% of the total CSA VOC emissions and 52.6% less VOC than the CSA average county emissions
- has no VOC emissions from point sources
- has all applicable sources subject to the NOx controls listed in Table 8
- has only 1.14% of the total CSA population
- has 40.3% less population density than the CSA average county
- has 82.2% less population growth than the CSA average county
- has only 1.02% of the total CSA VMT
- has 66.2% less VMT than the CSA average county
- is not in-line with the prevailing wind direction on ozone exceedance days.

Newton County:

- has a NOx emission density that is 43.8% less than the CSA average
- has no NOx emissions from point sources
- has 66.7% of its NOx emissions coming from on-road mobile sources of which EPD has little authority to regulate
- has no VOC emissions from point sources
- has all applicable sources subject to the NOx controls listed in Table 8
- has only 1.78% of the total CSA population
- has 33.3% less population density than the CSA average county
- has only 1.78% of the total CSA VMT
- is not in-line with the prevailing wind direction on ozone exceedance days

Paulding County:

- has an attaining ozone monitor
- has a NOx emission density that is 58.1% less than the CSA average
- has no NOx emissions from point sources

- has 65.4% of its NOx emissions coming from on-road mobile sources of which EPD has little authority to regulate
- has only 1.52% of the total CSA VOC emissions and 49.7% less VOC than the CSA average county emissions
- has no VOC emissions from point sources
- has all applicable sources subject to the NOx controls listed in Table 8
- has only 1.94% of the total CSA VMT
- is not in-line with the prevailing wind direction on ozone exceedance days

Forsyth County:

- is 31.1 miles away from the nearest violating monitor which is 9.6% above the CSA average
- has no NOx emissions from point sources
- has 59.5% of its NOx emissions coming from on-road mobile sources of which EPD has little authority to regulate
- has no VOC emissions from point sources
- has all applicable sources subject to the NOx controls listed in Table 8
- is not in-line with the prevailing wind direction on ozone exceedance days
- is located between Dawson and Gwinnett counties, both of which have attaining ozone monitors

Fayette County:

- has no NOx emissions from point sources
- has 63.6% of its NOx emissions coming from on-road mobile sources of which EPD has little authority to regulate
- has no VOC emissions from point sources
- has all applicable sources subject to the NOx controls listed in Table 8
- has only 1.90% of the total CSA population
- has 53.8% less population growth than the CSA average county
- has only 1.79% of the total CSA VMT

Cherokee County:

- has a NOx emission density that is 46.4% less than the CSA average
- has no NOx emissions from point sources
- has 64.0% of its NOx emissions coming from on-road mobile sources of which EPD has little authority to regulate
- has no VOC emissions from point sources
- has all applicable sources subject to the NOx controls listed in Table 8
- has 8.1% less population density than the CSA average county
- is not in-line with the prevailing wind direction on ozone exceedance days

Bartow County:

- the single point source that contributed approximately 94% of the point source NOx emissions in 2008 is equipped with state-of-the-art NOx control equipment and has reduced its emissions by approximately 65% between 2008 and 2011
- has all applicable sources subject to the 10 NOx controls listed in Table 8
- has only 1.78% of the total CSA population
- has 60.3% less population density than the CSA average county

- has 25.2% less population growth than the CSA average county
- is not in-line with the prevailing wind direction on ozone exceedance days

Coweta County:
- has an attaining ozone monitor
- is 34.5 miles away from the nearest violating monitor which is 21.4% above the CSA average
- has only 1.87% of the total CSA VOC emissions and 38.3% less VOC than the CSA average county emissions
- has a VOC emission density that is 56.2% less than the CSA average
- has all applicable sources subject to the NOx controls listed in Table 8
- has 46.9% less population density than the CSA average county
- is not in-line with the prevailing wind direction on ozone exceedance days

Rockdale County:
- has an attaining ozone monitor
- has 63.9% of its NOx emissions coming from on-road mobile sources of which EPD has little authority to regulate
- has only 1.49% of the total CSA VOC emissions and 51.0% less VOC than the CSA average county emissions
- has all applicable sources subject to the NOx controls listed in Table 8
- has only 1.52% of the total CSA population
- has 53.2% less population growth than the CSA average county
- has only 1.67% of the total CSA VMT

Douglas County:
- has an attaining ozone monitor
- is 23.6 miles away from the nearest violating monitor which is 16.9% above the CSA average
- has no NOx emissions from point sources
- has 74.6% of its NOx emissions coming from on-road mobile sources of which EPD has little authority to regulate
- has no VOC emissions from point sources
- has all applicable sources subject to the NOx controls listed in Table 8

Clayton County:
- has no NOx emissions from point sources
- approximately 63% of NOx emissions come from aircraft emissions at Hartsfield-Jackson International, which EPD has no authority to regulate
- has no VOC emissions from point sources
- has all applicable sources subject to the NOx controls listed in Table 8
- has 32.8% less population growth than the CSA average county

Gwinnett County:
- has an attaining ozone monitor
- has 64.2% of its NOx emissions coming from on-road mobile sources of which EPD has little authority to regulate
- has no VOC emissions from point sources

- has all applicable sources subject to the NOx controls listed in Table 8
- is not in-line with the prevailing wind direction on ozone exceedance days

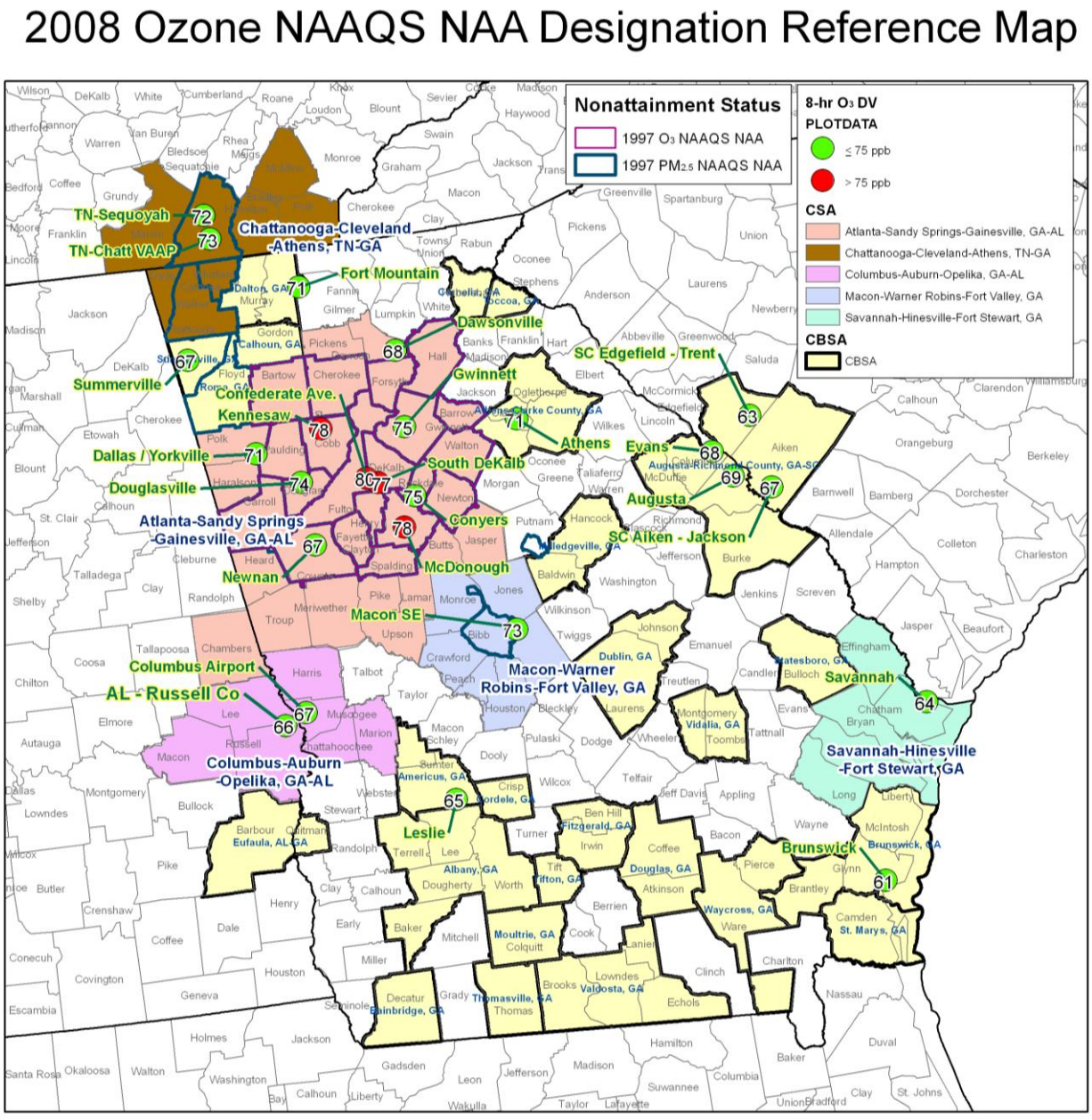

Figure 1. Ozone monitors and CSA/CBSA boundaries associated with potential nonattainment areas in Georgia under the 2008 ozone NAAQS. Ozone design values are based on 2009-2011 ozone data. Nonattainment area boundaries under the 1997 ozone NAAQS are outlined in red, and nonattainment area boundaries under the 1997 PM2.5 NAAQS are outlined in blue.

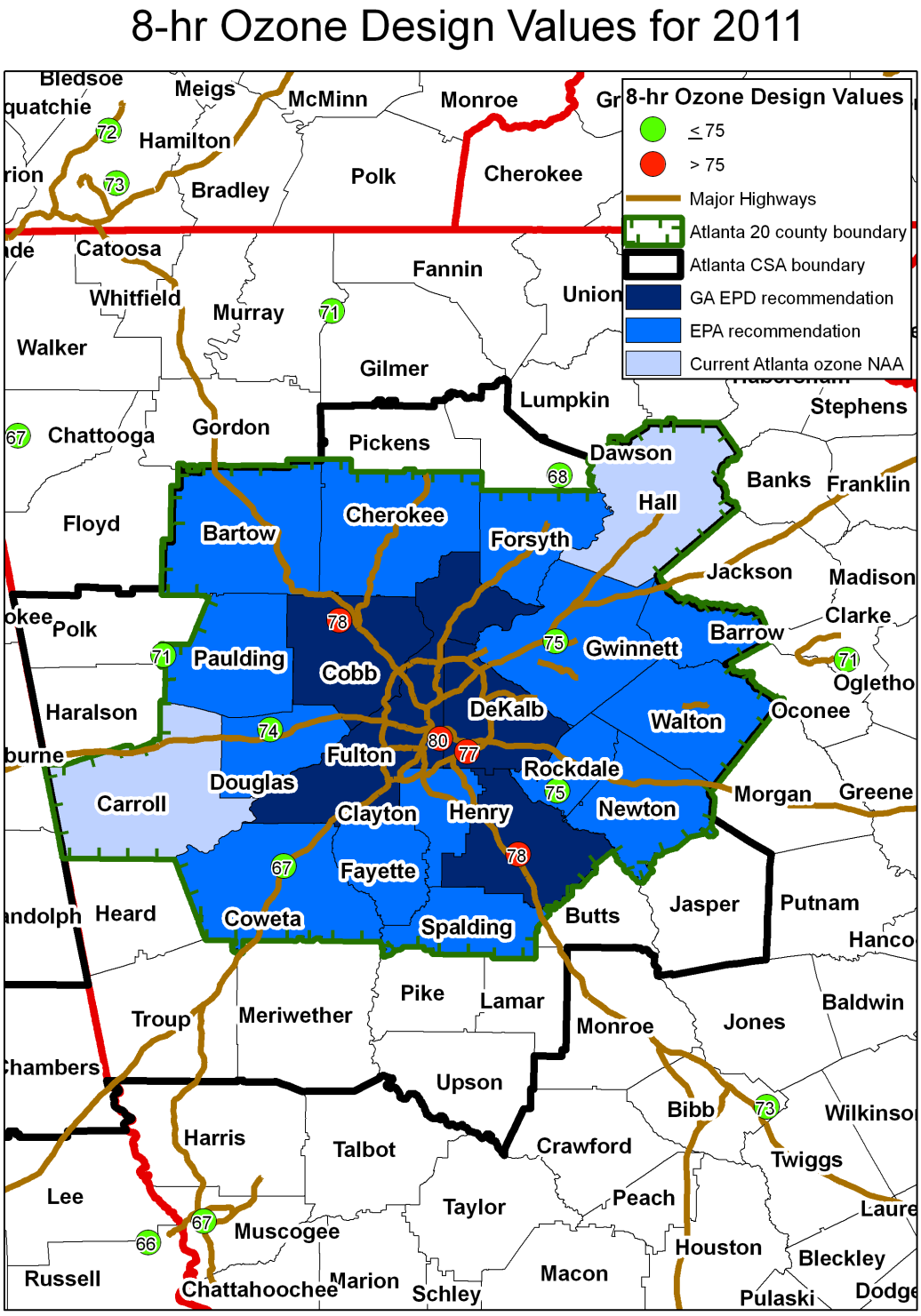

Figure 2: Map of GA EPD nonattainment area recommendations (Cobb, Fulton, DeKalb, and Henry) for the 2008 ozone NAAQS.

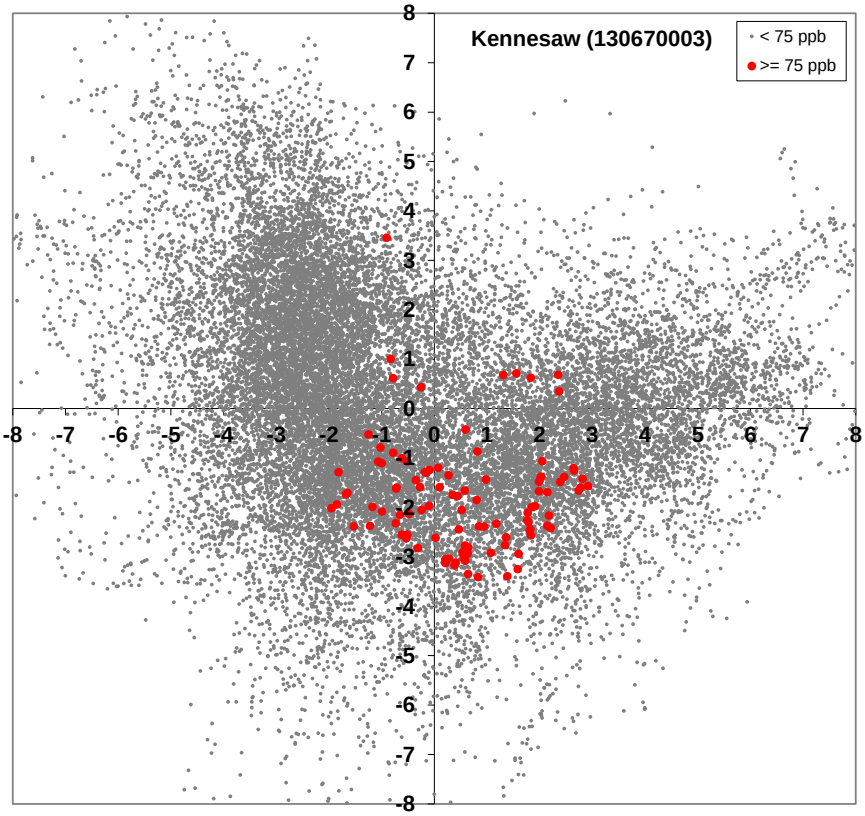

Figure 3: Scatter plot of 8-hour average wind speed (m/s) and wind direction on high (≥ 75 ppb) and low (< 75 ppb) ozone days at Kennesaw.

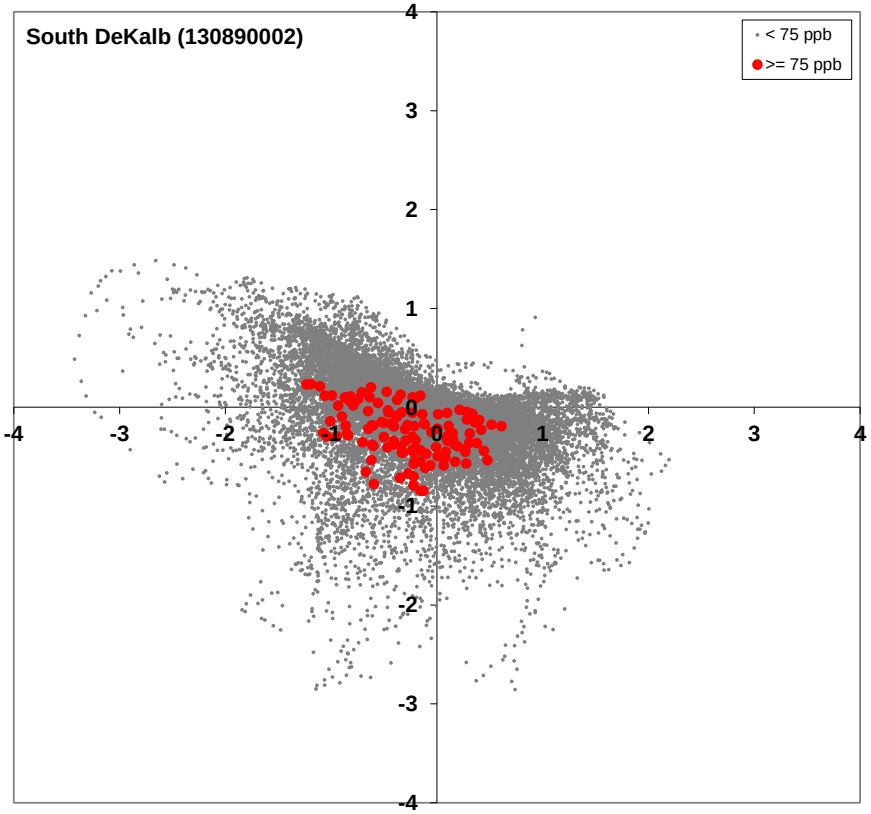

Figure 4: Scatter plot of 8-hour average wind speed (m/s) and wind direction on high (≥ 75 ppb) and low (< 75 ppb) ozone days at South Dekalb.

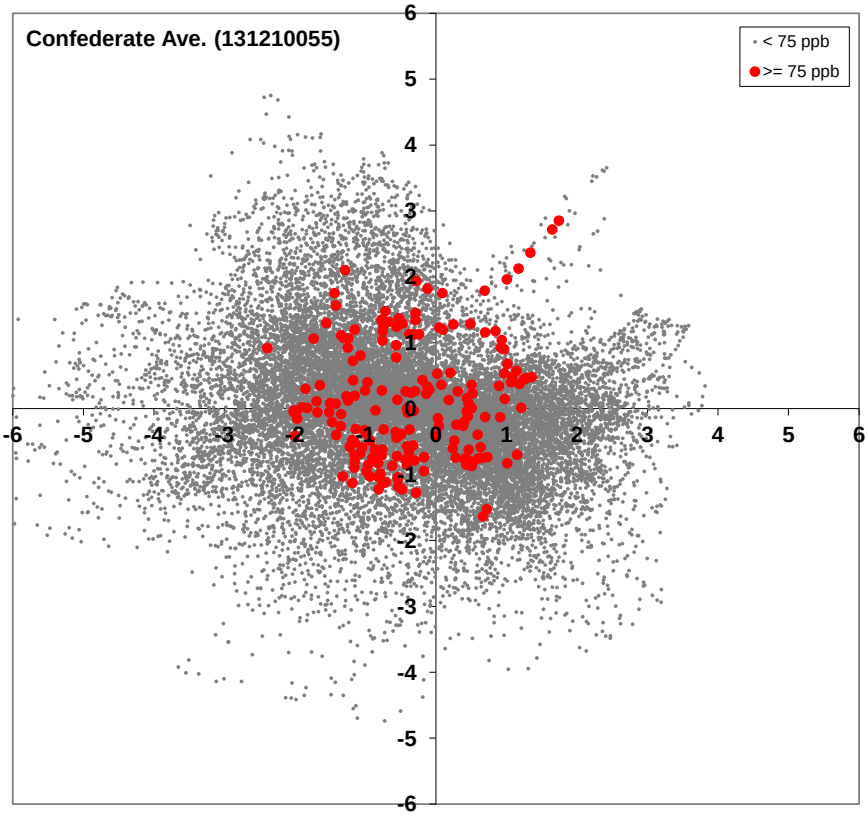

Figure 5: Scatter plot of 8-hour average wind speed (m/s) and wind direction on high (≥ 75 ppb) and low (< 75 ppb) ozone days at Confederate Ave.

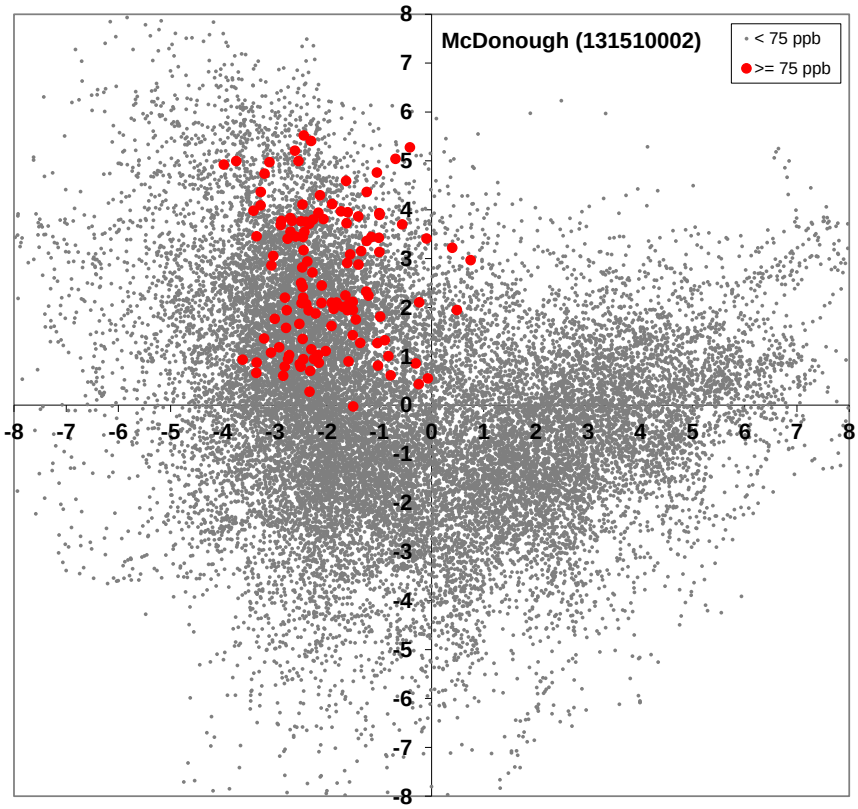

Figure 6: Scatter plot of 8-hour average wind speed (m/s) and wind direction on high (≥ 75 ppb) and low (< 75 ppb) ozone days at McDonough.

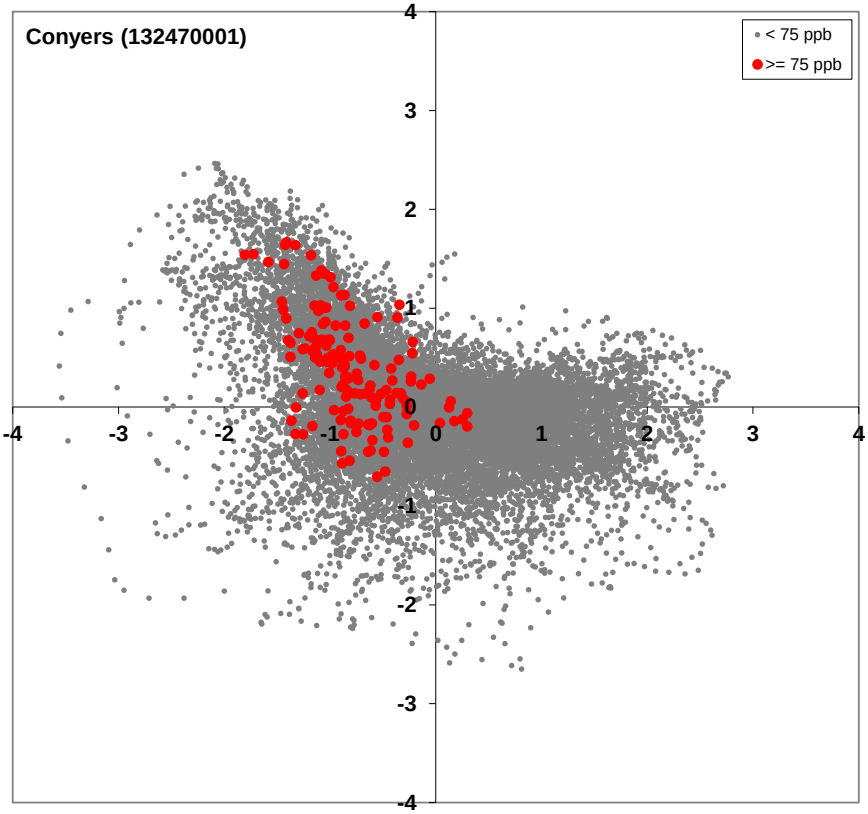

Figure 7: Scatter plot of 8-hour average wind speed (m/s) and wind direction on high (≥ 75 ppb) and low (< 75 ppb) ozone days at Conyers.

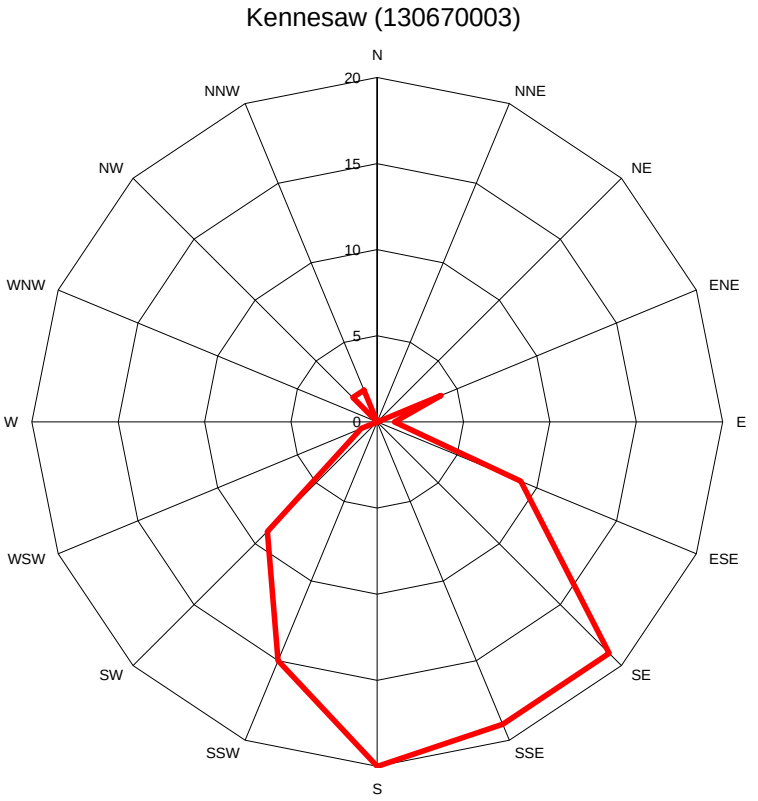

Figure 8: Wind direction frequency histogram based on the number of 8-hour average concentrations above 75 ppb at Kennesaw.

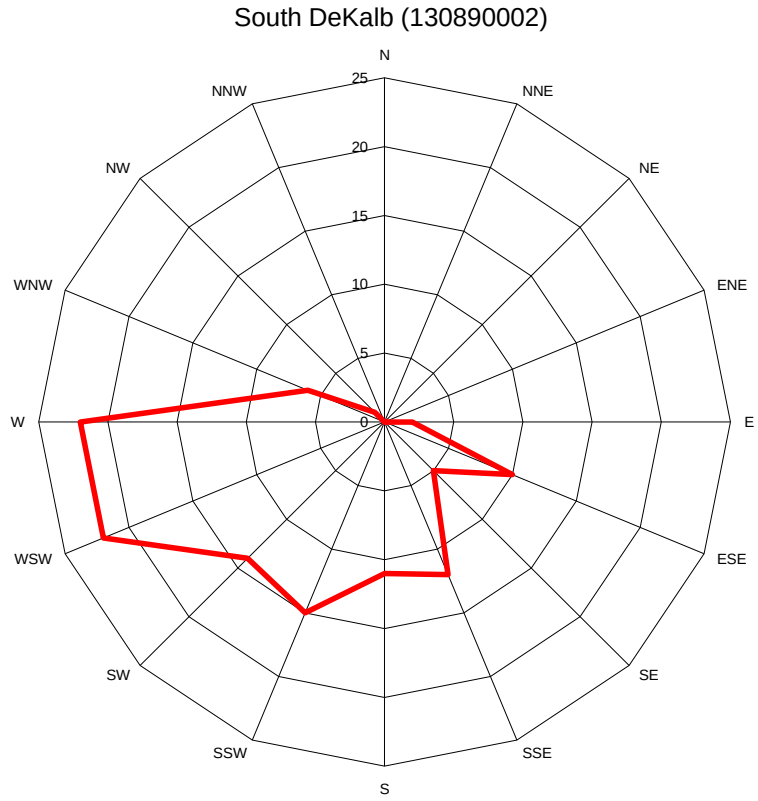

Figure 9: Wind direction frequency histogram based on the number of 8-hour average concentrations above 75 ppb at South Dekalb.

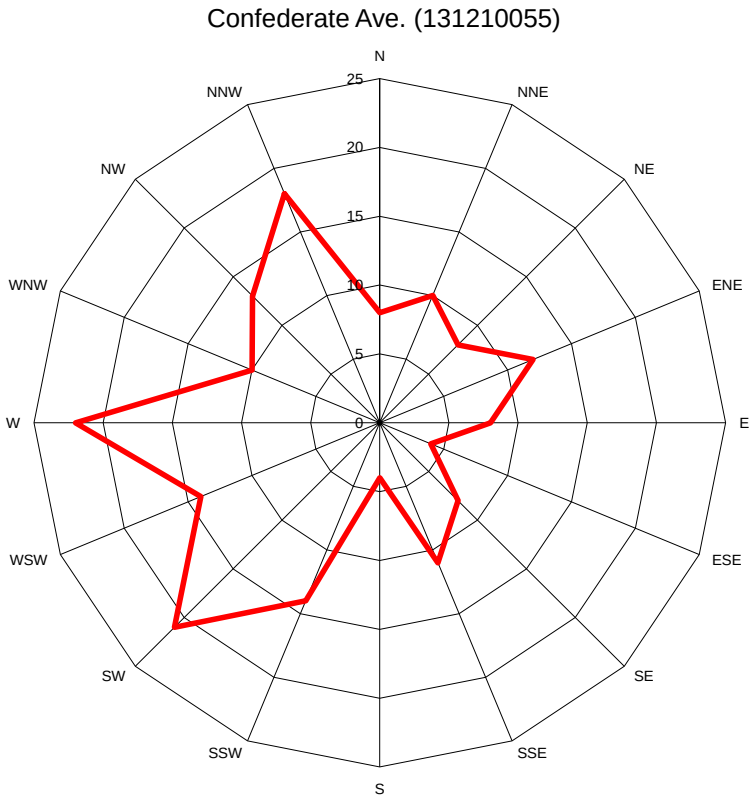

Figure 10: Wind direction frequency histogram based on the number of 8-hour average concentrations above 75 ppb at Confederate Avenue.

Figure 11: Wind direction frequency histogram based on the number of 8-hour average concentrations above 75 ppb at McDonough.

Figure 12: Wind direction frequency histogram based on the number of 8-hour average concentrations above 75 ppb at Conyers.

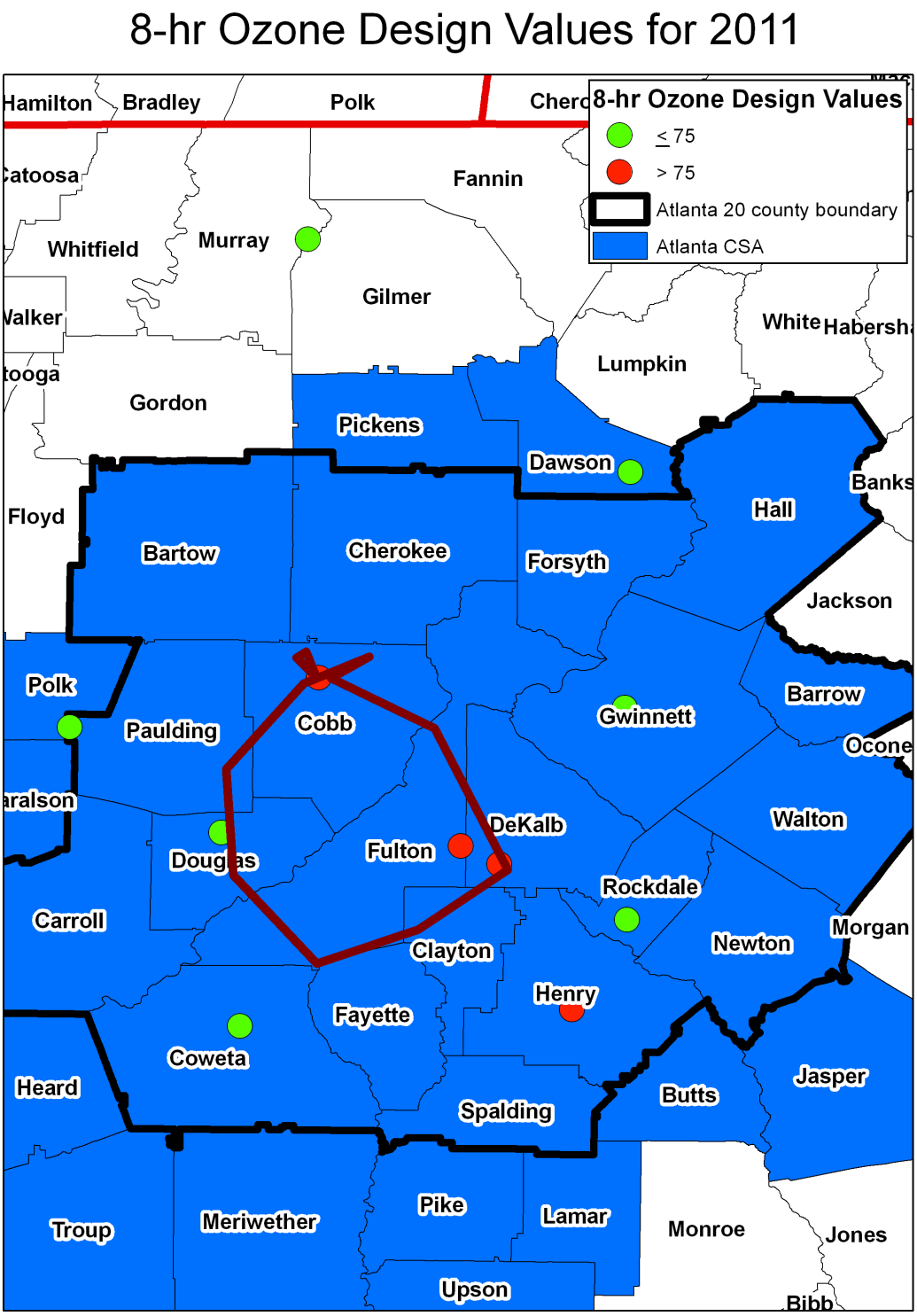

Figure 13: Wind direction frequency histogram for Kennesaw placed on GIS map of CSA.

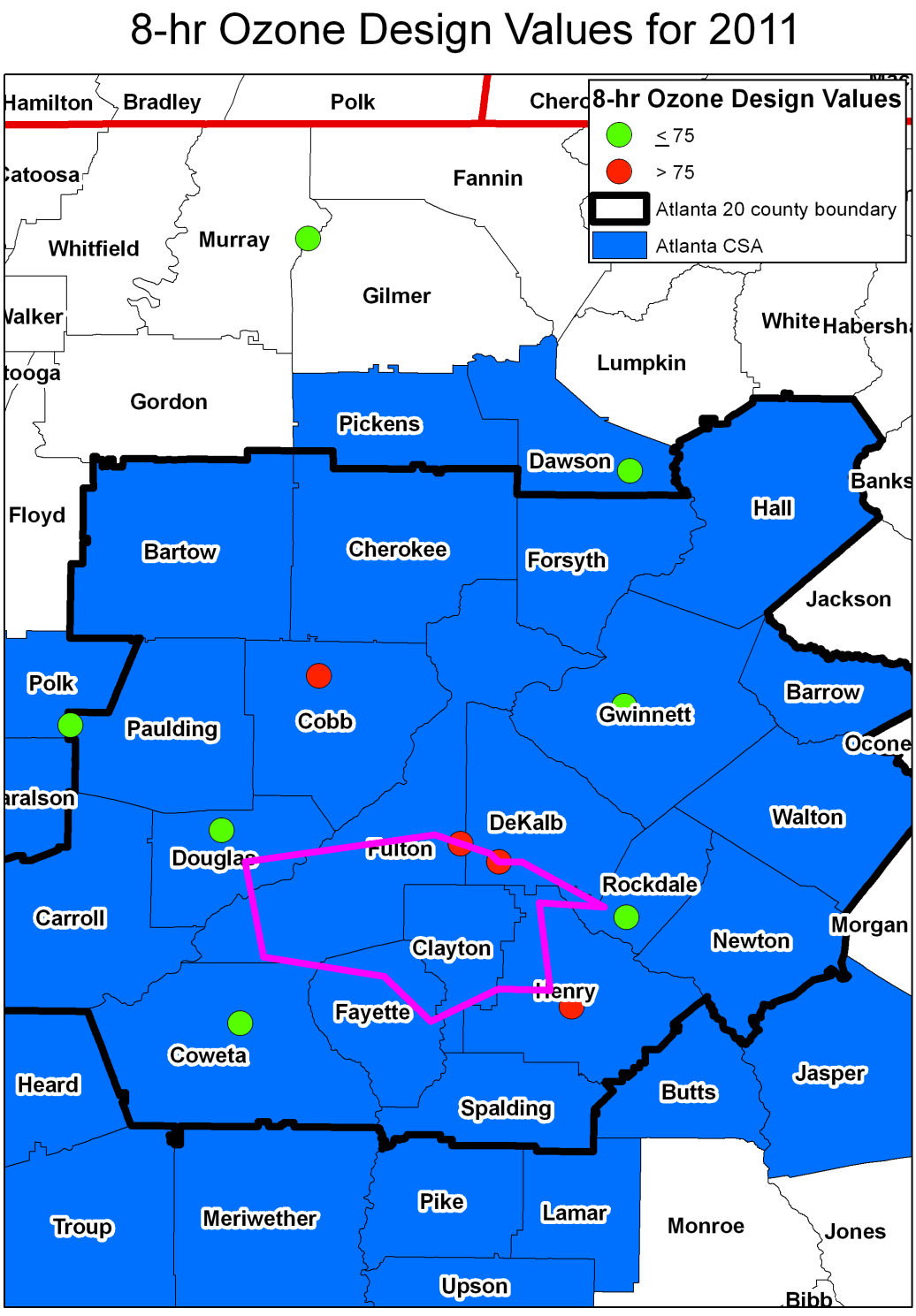

Figure 14: Wind direction frequency histogram for South Dekalb placed on GIS map of CSA.

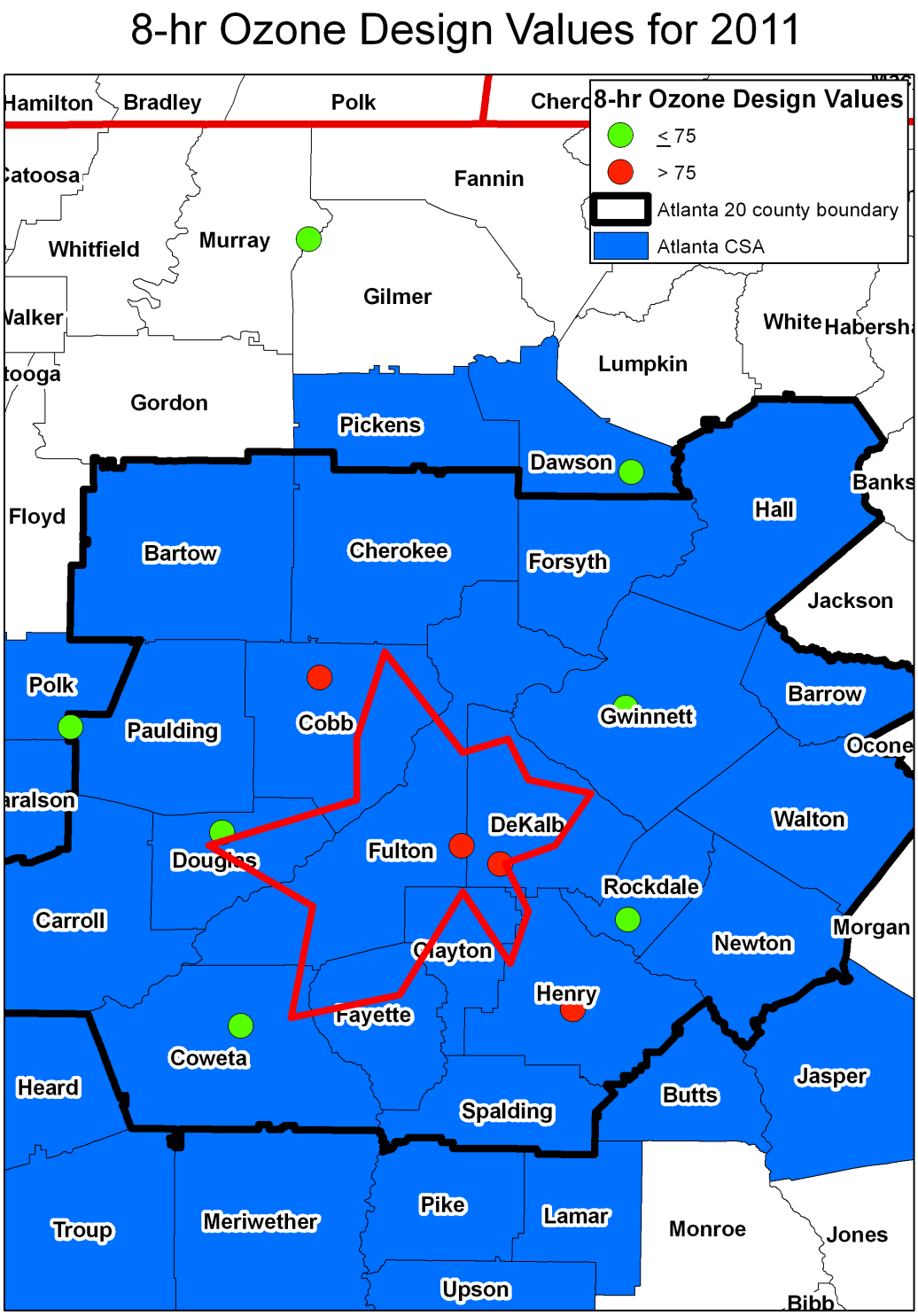

Figure 15: Wind direction frequency histogram for Confederate Ave. placed on GIS map of CSA.

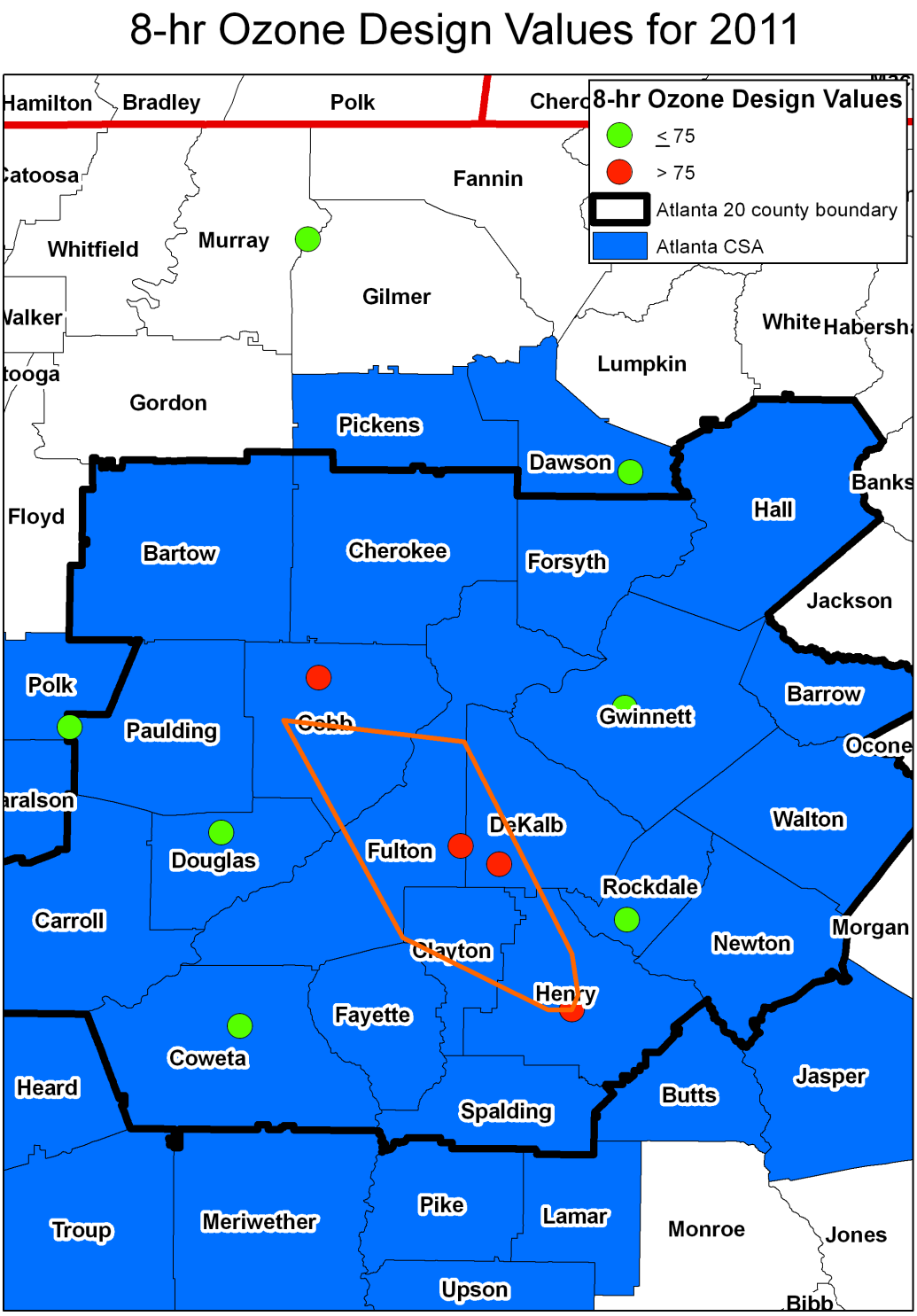

Figure 16: Wind direction frequency histogram for McDonough placed on GIS map of CSA.

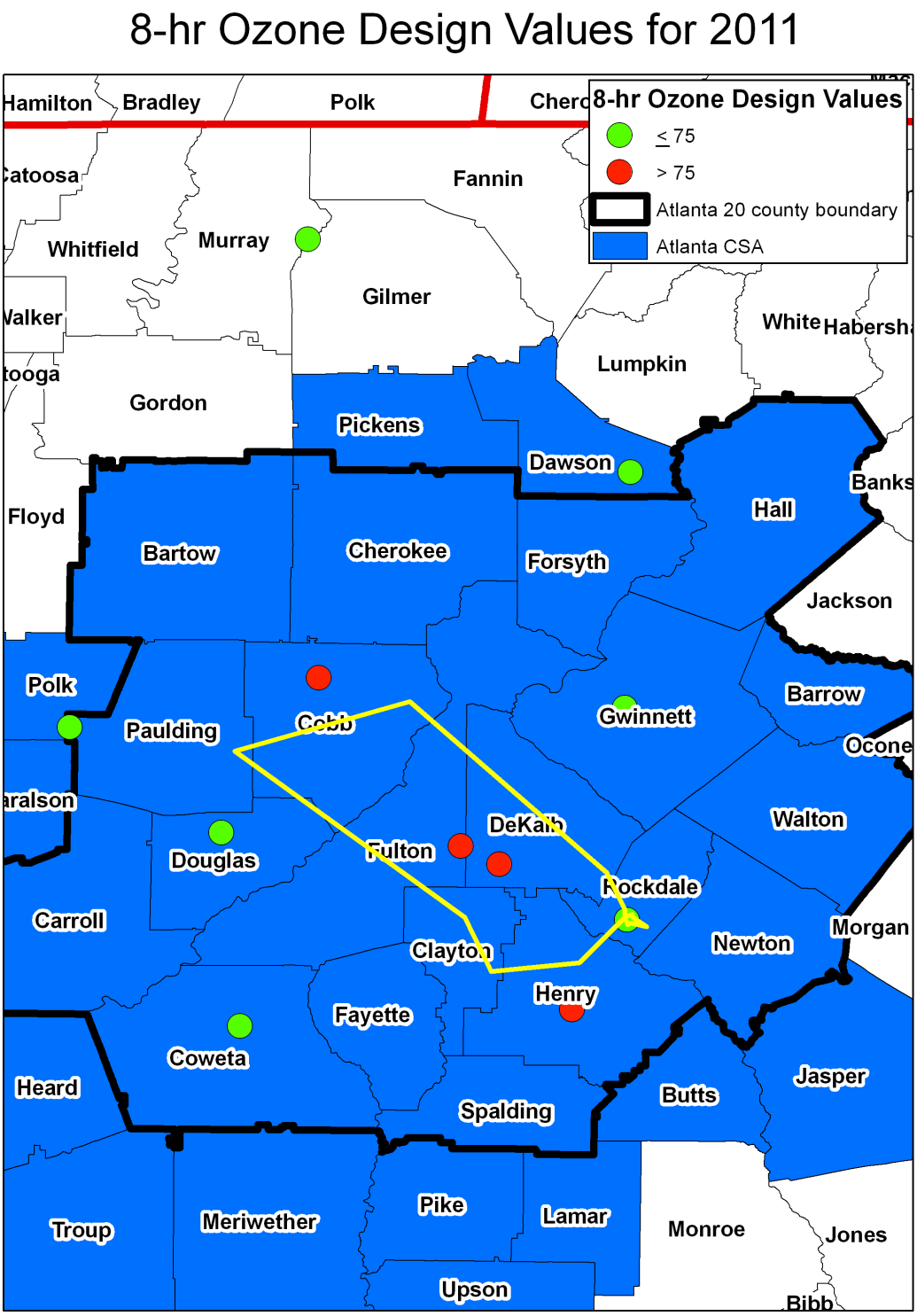

Figure 17: Wind direction frequency histogram for Conyers placed on GIS map of CSA.

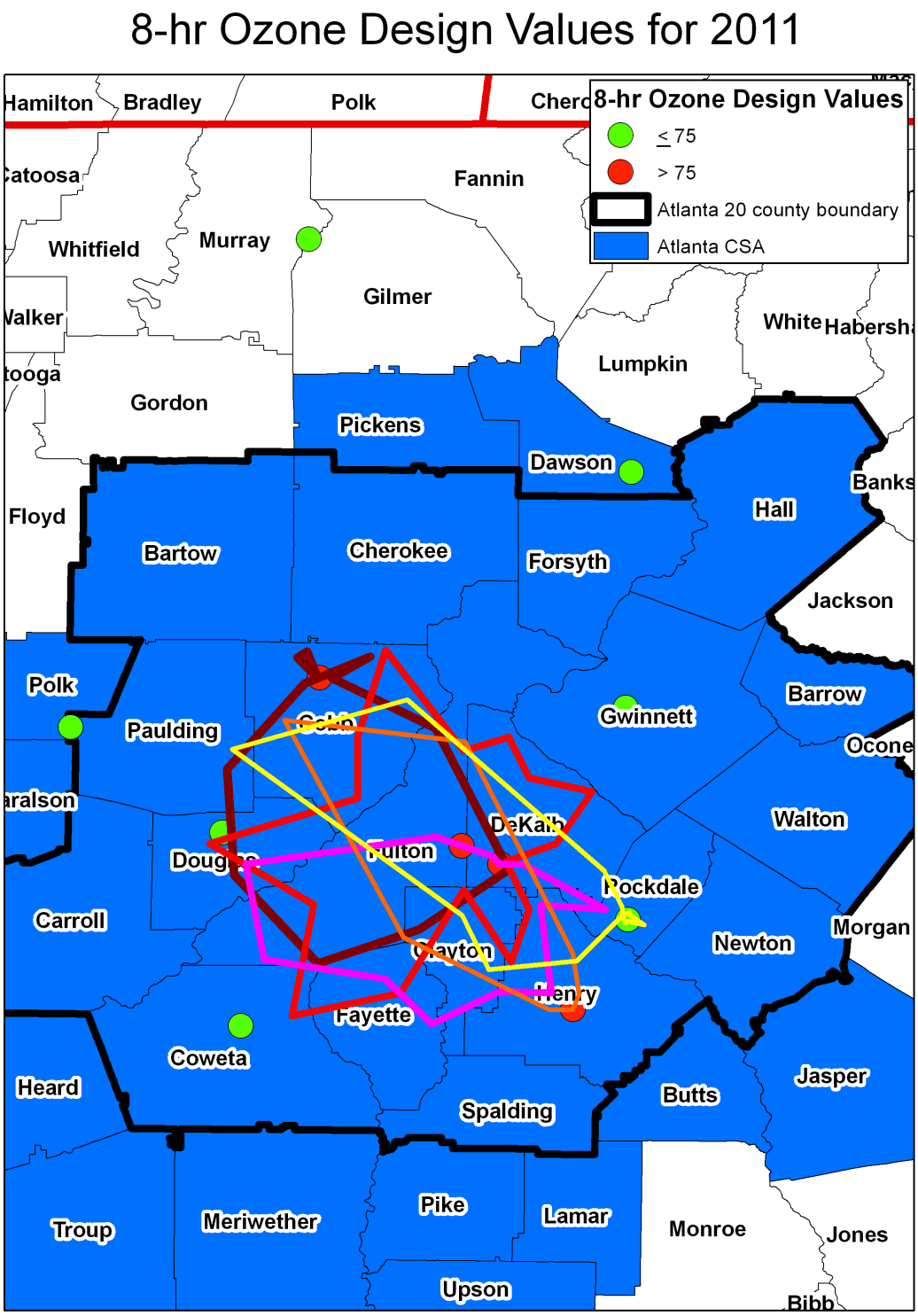

Figure 18: Wind direction frequency histogram for Kennesaw, South Dekalb, Confederate Ave., McDonough, and Conyers placed on GIS map of CSA.