GEORGIA: Atlanta, Georgia Nonattainment Area

Intended Area Designations for the 2015 Ozone National Ambient Air Quality Standards Technical Support Document (TSD)

1.0 Summary

This technical support document (TSD) describes the EPA's intent to designate portions of the metropolitan Atlanta area in Georgia as nonattainment for the 2015 ozone National Ambient Air Quality Standards (NAAQS).

On October 1, 2015, the EPA promulgated revised primary and secondary ozone NAAQS (80 FR 65292; October 26, 2015). The EPA strengthened both standards to a level of 0.070 parts per million (ppm). In accordance with section 107(d) of the Clean Air Act (CAA), whenever the EPA establishes a new or revised NAAQS, the EPA must promulgate designations for all areas of the country for that NAAQS. The EPA must complete this process within 2 years of promulgating the NAAQS, unless the Administrator has insufficient information to make the initial designations decisions in that time frame. In such circumstances, the EPA may take up to 1 additional year to complete the designations.

Under section 107(d), states were required to submit area designation recommendations to the EPA for the 2015 ozone NAAQS no later than 1 year following promulgation of the standards, i.e., by October 1, 2016. Tribes were also invited to submit area designation recommendations. On September 23, 2016, Georgia recommended that the counties identified in Table 1 be designated as nonattainment for the 2015 ozone NAAQS based on air quality data from 2013-2015. On December 15, 2016, Georgia submitted to the EPA certified 2016 Georgia ambient air ozone monitoring data.

After considering these recommendations, and based on the EPA's technical analysis as described in this TSD, the EPA does not intend to modify the State's designation recommendation, as provided in Table 1, and intends to designate the identified counties as nonattainment for the 2015 ozone NAAQS (hereafter referred to as the Atlanta, GA nonattainment area). The EPA must designate an area nonattainment if it has an air quality monitor that is violating the standard or if it has sources of emissions that are contributing to a violation of the NAAQS in a nearby area. Detailed descriptions of the intended nonattainment boundaries for the area are found in the supporting technical analysis for the area in Section 3.

Table 1. Georgia's Recommended Nonattainment Area and the EPA's Intended Designated Nonattainment Area for the 2015 Ozone NAAQS

Area	Georgia's Recommended Nonattainment Counties	EPA's Intended Nonattainment Counties
Atlanta, GA	Bartow Clayton Cobb DeKalb Fulton Gwinnett Henry Rockdale	Bartow Clayton Cobb DeKalb Fulton Gwinnett Henry Rockdale

In its recommendation letter, Georgia recommended that the EPA designate as unclassifiable/attainment all counties not recommended for inclusion as part of the Atlanta, GA nonattainment area. On November 6, 2017, the EPA signed a notice (82 FR 54232; November 16, 2017) designating the remainder of Georgia, not listed in Table 1 above, as attainment/unclassifiable with the exception of Camden County which is the Jacksonville-St. Mary's-Palatka FL-GA CSA and is addressed in the TSD for that area.[1] EPA explains in section 2.0 the approach it is now taking to designate the remaining areas in the State.

2.0 Nonattainment Area Analyses and Intended Boundary Determination

The EPA evaluated and determined the intended boundaries for each nonattainment area on a case-by-case basis, considering the specific facts and circumstances of the area. In accordance with the CAA section 107(d), the EPA intends to designate as nonattainment the areas with the monitors that are violating the 2015 ozone NAAQS and nearby areas with emissions sources (i.e., stationary, mobile, and/or area sources) that contribute to the violations. As described in the EPA's designations guidance for the 2015 NAAQS (hereafter referred to as the "ozone designations guidance"[2] after identifying each monitor indicating a violation of the ozone NAAQS in an area, the EPA analyzed those nearby areas with emissions potentially contributing to the violating area. In guidance issued in February 2016, the EPA provided that using the Core Based Statistical Area (CBSA) or Combined Statistical Area (CSA)[3] as a starting point for the contribution analysis is a reasonable approach to

[1] In previous ozone designations and in the designation guidance for the 2015 ozone NAAQS, the EPA used the designation category label "unclassifiable/attainment" to identify both areas that were monitoring attainment and areas that did not have monitors but for which the EPA had reason to believe were likely attainment and were not contributing to a violation in a nearby area. The EPA is now reversing the order of the label to be "attainment/unclassifiable" so that the category is more clearly distinguished from the separate "unclassifiable" category.

[2] The EPA issued guidance on February 25, 2016 that identified important factors that the EPA intends to evaluate in determining appropriate area designations and nonattainment boundaries for the 2015 ozone NAAQS. Available at *https://www.epa.gov/ozone-designations/epa-guidance-area-designations-2015-ozone-naaqs*

[3] Lists of CBSAs and CSAs and their geographic components are provided at www.census.gov/population/www/metroareas/metrodef.html. The Office of Management and Budget (OMB) adopts standards for defining statistical areas. The statistical areas are delineated based on U.S. Census Bureau data. The lists are periodically updated by the OMB. The EPA used the most recent July 2015 update (OMB Bulletin No. 15-01), which is

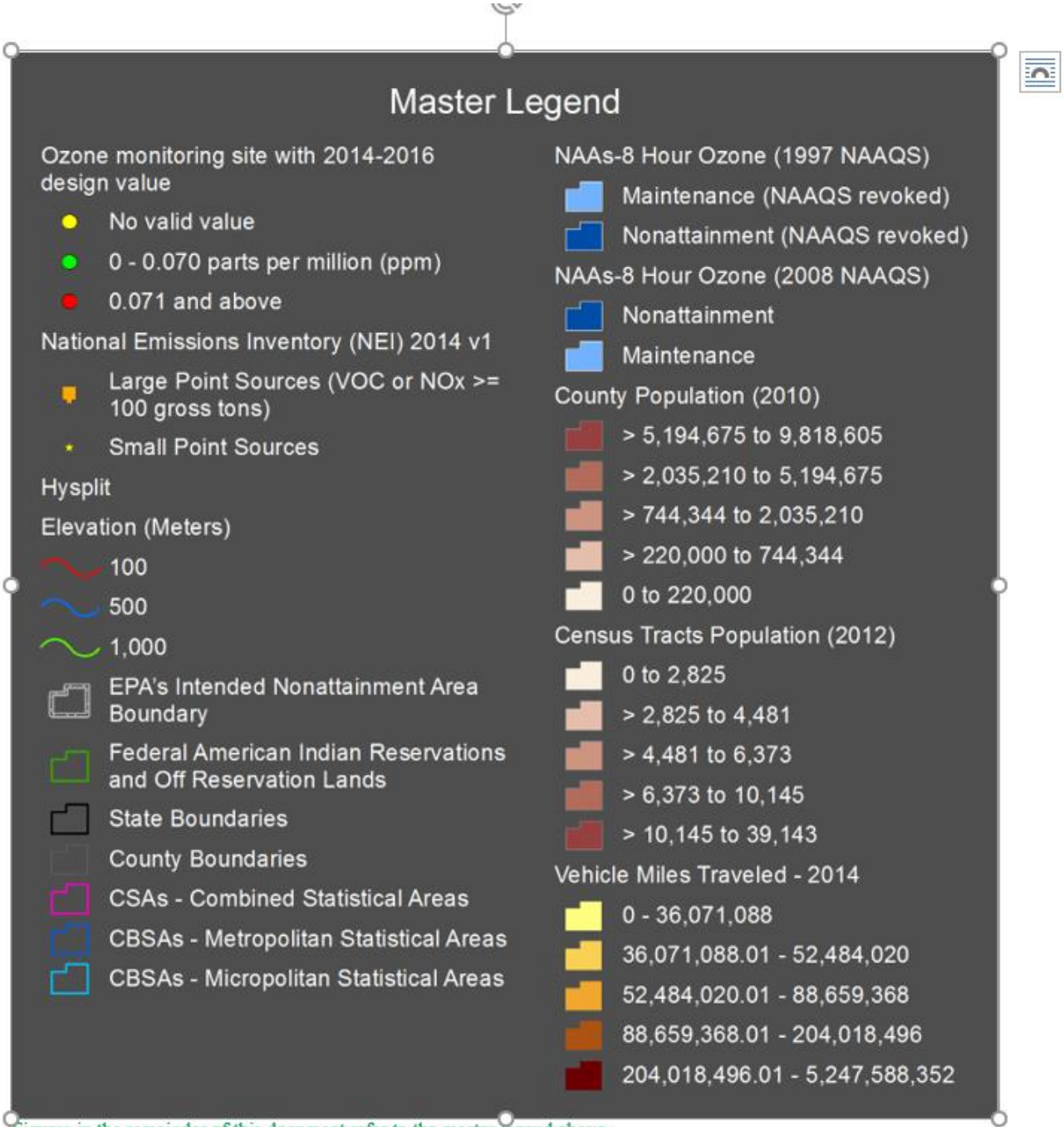
ensure that the nearby areas most likely to contribute to a violating area are evaluated. The area-specific analyses may support nonattainment boundaries that are smaller or larger than the CBSA or CSA.

On November 6, 2017, the EPA issued attainment/unclassifiable designations for approximately 85% of the United States and one unclassifiable area designation.[4] At that time, consistent with statements in the designations guidance regarding the scope of the area the EPA would analyze in determining nonattainment boundaries, EPA deferred designation for any counties in the larger of a CSA or CBSA where one or more counties in the CSA or CBSA was violating the standard and any counties with a violating monitor not located in a CSA or CBSA. In addition, the EPA deferred designation for any other counties adjacent to a county with a violating monitor. The EPA also deferred designation for any county that had incomplete monitoring data, any county in the larger of the CSA or CBSA where such a county was located, and any county located adjacent to a county with incomplete monitoring data.

The EPA is proceeding to complete the remaining designations consistent with the designations guidance (and EPA's past practice) regarding the scope of the area EPA would analyze in determining nonattainment boundaries for the ozone NAAQS as outlined above. For those deferred areas where one or more counties violating the ozone NAAQS or with incomplete data are located in a CSA or CBSA, in most cases the technical analysis for the nonattainment area includes any counties in the larger of the relevant CSA or CBSA. For counties with a violating monitor not located in a CSA or CBSA, EPA explains in the 3.0 Technical Analysis section, its decision whether to consider in the five-factor analysis for each area any other adjacent counties for which EPA previously deferred action. We intend to designate all counties not included in five-factor analyses for a specific nonattainment or unclassifiable area analyses, as attainment/unclassifiable. These deferred areas are identified in a separate document entitled "Intended Designations for Deferred Counties and Partial Counties Not Addressed in the Technical Analyses." which is available in the docket.

based on application of the 2010 OMB standards to the 2010 Census, 2006-2010 American Community Survey, as well as 2013 Population Estimates Program data.

[4] Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards published on November 16, 2017(82 FR 54232).



Figures in the remainder of this document refer to the master legend above.

3.0 Technical Analysis for Atlanta, GA CSA

This technical analysis identifies the area with monitors that violate the 2015 ozone NAAQS. The EPA evaluated this area and any nearby areas to determine whether those nearby areas have emissions sources that potentially contribute to ambient ozone concentrations at the violating monitors in the area, based on the weight-of-evidence of the five factors recommended in the EPA's ozone designations guidance and any other relevant information. In developing this technical analysis, the EPA used the latest data and information available to the EPA (and to the states and tribes through the Ozone Designations Mapping Tool and the EPA Ozone

Designations Guidance and Data web page).[5] In addition, the EPA considered any additional data or information provided to the EPA by states or tribes.

The area of analysis for the Atlanta, GA area included the Atlanta-Athens – Clarke County - Sandy Springs-, GA CSA (hereafter referred to as the Atlanta, GA CSA). The Atlanta, GA CSA is comprised of the following Georgia counties: Barrow County, Bartow County, Butts County, Carroll County, Cherokee County, Clarke County, Clayton County, Cobb County, Coweta County, Dawson County, DeKalb County, Douglas County, Fayette County, Forsyth County, Fulton County, Gordon County, Gwinnett County, Hall County, Haralson County, Heard County, Henry County, Jackson County, Jasper County, Lamar County, Madison County, Meriwether County, Morgan County, Newton County, Oconee County, Oglethorpe County, Paulding County, Pickens County, Pike County, Polk County, Rockdale County, Spalding County, Troup County, Upson County and Walton County.

The EPA applied the five factors recommended in its guidance to the area of analysis to determine the nonattainment area boundary.

The five factors recommended in the EPA's guidance are:

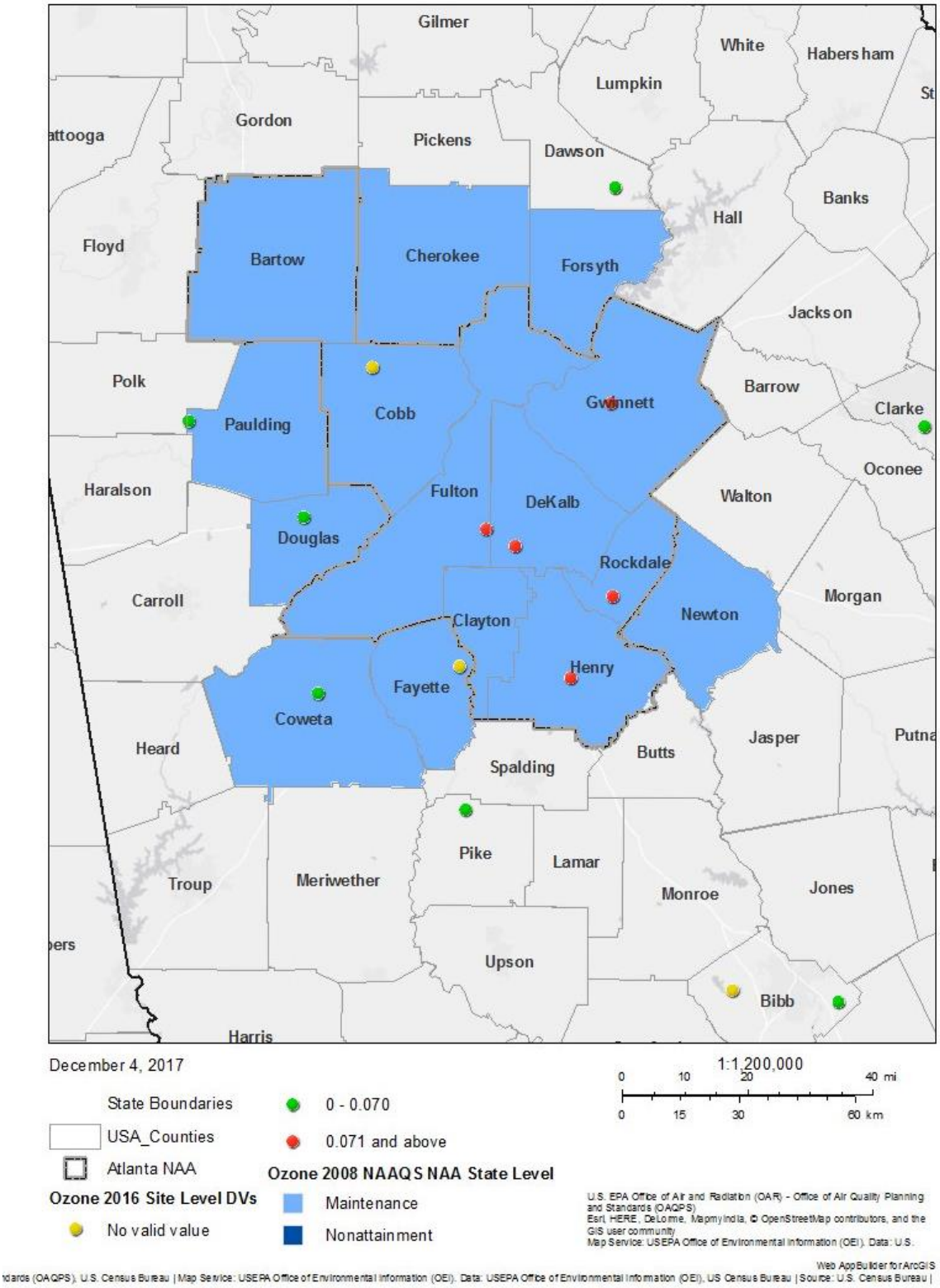
1. Air Quality Data (including the design value calculated for each Federal Reference Method (FRM) or Federal Equivalent Method (FEM) monitor;
2. Emissions and Emissions-Related Data (including locations of sources, population, amount of emissions, and urban growth patterns);
3. Meteorology (weather/transport patterns);
4. Geography/Topography (including mountain ranges or other physical features that may influence the fate and transport of emissions and ozone concentrations); and
5. Jurisdictional Boundaries (e.g., counties, air districts, existing nonattainment areas, areas of Indian country, Metropolitan Planning Organizations (MPOs)).

Figure 1 is a map of the EPA's intended nonattainment boundary for the Atlanta, GA, nonattainment area. The map shows the location of the ambient air quality monitors, county, and other jurisdictional boundaries.

For purposes of the 1997 ozone NAAQS, this area was designated nonattainment with a boundary that included 20 entire counties: Barrow, Bartow, Carroll, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Hall, Henry, Newton, Paulding, Rockdale, Spalding and Walton. The area was redesignated attainment for the 1997 ozone NAAQS on December 2, 2013 (78 FR 72040). For purposes of the 2008 ozone NAAQS, this area was designated nonattainment with a boundary that included 15 entire counties: Bartow, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Newton, Paulding and Rockdale. The area attained the 2008 ozone NAAQS and was redesignated to attainment for the 2008 ozone NAAQS on June 2, 2017 (82 FR 25523).

[5] The EPA's Ozone Designations Guidance and Data web page can be found at *https://www.epa.gov/ozone-designations/ozone-designations-guidance-and-data.*

Figure 1. The EPA's Intended Nonattainment Boundaries for the Atlanta Area



The EPA must designate as nonattainment any area that violates the NAAQS and any nearby areas that contribute to the violation in the violating area. DeKalb, Fulton, Gwinnett, Henry and Rockdale Counties in the

Atlanta, GA CSA have monitors in violation of the 2015 ozone NAAQS, therefore these counties are included in the intended nonattainment area. Based on the five factor analysis below, the EPA does not intend to modify the State's recommendation that Bartow, Clayton and Cobb counties in the Atlanta, GA CSA contribute to one or more of the violating areas and should be included in the designated nonattainment area. The following sections describe the five factor analysis. While the factors are presented individually, they are not independent. The five factor analysis process carefully considers the interconnections among the different factors and the dependence of each factor on one or more of the others, such as the interaction between emissions and meteorology for the area being evaluated.

Factor Assessment

Factor 1: Air Quality Data

The EPA considered 8-hour ozone design values in ppm for air quality monitors in the Atlanta, GA CSA based on data for the 2014-2016 period (i.e., the 2016 design value, or DV). This is the most recent three-year period with fully-certified air quality data. The design value is the 3-year average of the annual 4th highest daily maximum 8-hour average ozone concentration.[6] The 2015 NAAQS are met when the design value is 0.070 ppm or less. Only ozone measurement data collected in accordance with the quality assurance (QA) requirements using approved (FRM/FEM) monitors are used for NAAQS compliance determinations.[7] The EPA uses FRM/FEM measurement data residing in the EPA's Air Quality System (AQS) database to calculate the ozone design values. Individual violations of the 2015 ozone NAAQS that the EPA determines have been caused by an exceptional event that meets the administrative and technical criteria in the Exceptional Events Rule[8] are not included in these calculations. Whenever several monitors are located in a county (or designated nonattainment area), the design value for the county or area is determined by the monitor with the highest valid design value. The presence of one or more violating monitors (i.e. monitors with design values greater than 0.070 ppm) in a county or other geographic area forms the basis for designating that county or area as nonattainment. The remaining four factors are then used as the technical basis for determining the spatial extent of the designated nonattainment area surrounding the violating monitor(s) based on a consideration of what nearby areas are contributing to a violation of the NAAQS.

The EPA identified monitors where the most recent design values violate the NAAQS, and examined historical ozone air quality measurement data (including previous design values) to understand the nature of the ozone ambient air quality problem in the area. Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations that are operated in accordance with 40 CFR part 58, appendix A, C, D and E and operating with an FRM or FEM monitor. These requirements must be met in order to be acceptable for comparison to the 2015 ozone NAAQS for designation purposes. All data from Special Purpose Monitors using an FRM or FEM are eligible for comparison to the NAAQS, subject to the requirements given in the

[6] The specific methodology for calculating the ozone design values, including computational formulas and data completeness requirements, is described in 40 CFR part 50, appendix U.

[7] The QA requirements for ozone monitoring data are specified in 40 CFR part 58, appendix A. The performance test requirements for candidate FEMs are provided in 40 CFR part 53, subpart B.

[8] The EPA finalized the rule on the Treatment of Data Influenced by Exceptional Events (81 FR 68513) and the guidance on the Preparation of Exceptional Events Demonstrations for Wildfire Events in September of 2016. For more information, see *https://www.epa.gov/air-quality-analysis/exceptional-events-rule-and-guidance*.

March 28, 2016 Revision to Ambient Monitoring Quality Assurance and Other Requirements Rule (81 FR 17248).

The 2014-2016 design values for counties in the Atlanta, GA CSA are shown in Table 2.

Table 2. Air Quality Data (all values in ppm)[a].

County, State	State Recommended Nonattainment?	AQS Site ID	2014-2016 DV	2014 4th highest daily max value	2015 4th highest daily max value	2016 4th highest daily max value
Barrow, GA	No	No Monitor	N/A			
Bartow, GA	Yes	No Monitor	N/A			
Butts, GA	No	No Monitor	N/A			
Carroll, GA	No	No Monitor	N/A			
Cherokee, GA	No	No Monitor	N/A			
Clarke, GA	No	13-059-0002	0.064	0.063	0.061	0.069
Clayton, GA	Yes	No Monitor	N/A			
Cobb, GA	Yes	13-067-0003	N/A[b]	0.063[b]	0.066	0.070
Coweta, GA	No	13-077-0002	0.066	0.067	0.066	0.066
Dawson, GA	No	13-085-0001	0.065	0.066	0.063	0.067
DeKalb, GA	Yes	13-089-0002	**0.071**	0.070	0.071	0.074
Douglas, GA	No	13-097-0004	0.068	0.065	0.070	0.071
Fayette, GA	No	No Monitor	N/A			
Forsyth, GA	No	No Monitor	N/A			
Fulton, GA	Yes	13-121-0055	**0.075**	0.073	0.077	0.075
Gordon, GA	No	No Monitor	N/A			
Gwinnett, GA	Yes	13-135-0002	**0.072**	0.068	0.071	0.078
Hall, GA	No	No Monitor	N/A			
Haralson, GA	No	No Monitor	N/A			
Heard, GA	No	No Monitor	N/A			
Henry, GA	Yes	13-151-0002	**0.074**	0.075	0.070	0.078
Jackson, GA	No	No Monitor	N/A			
Jasper, GA	No	No Monitor	N/A			
Lamar, GA	No	No Monitor	N/A			
Madison, GA	No	No Monitor	N/A			
Meriwether, GA	No	No Monitor	N/A			
Morgan, GA	No	No Monitor	N/A			
Newton, GA	No	No Monitor	N/A			
Oconee, GA	No	No Monitor	N/A			
Oglethorpe, GA	No	No Monitor	N/A			
Paulding, GA	No	13-223-0003	0.063	0.059	0.065	0.067
Pickens, GA	No	No Monitor	N/A			
Pike, GA	No	13-231-9991	0.068	0.066	0.068	0.071
Polk	No	No Monitor	N/A			
Rockdale, GA	Yes	13-247-0001	**0.074**	0.079	0.068	0.076

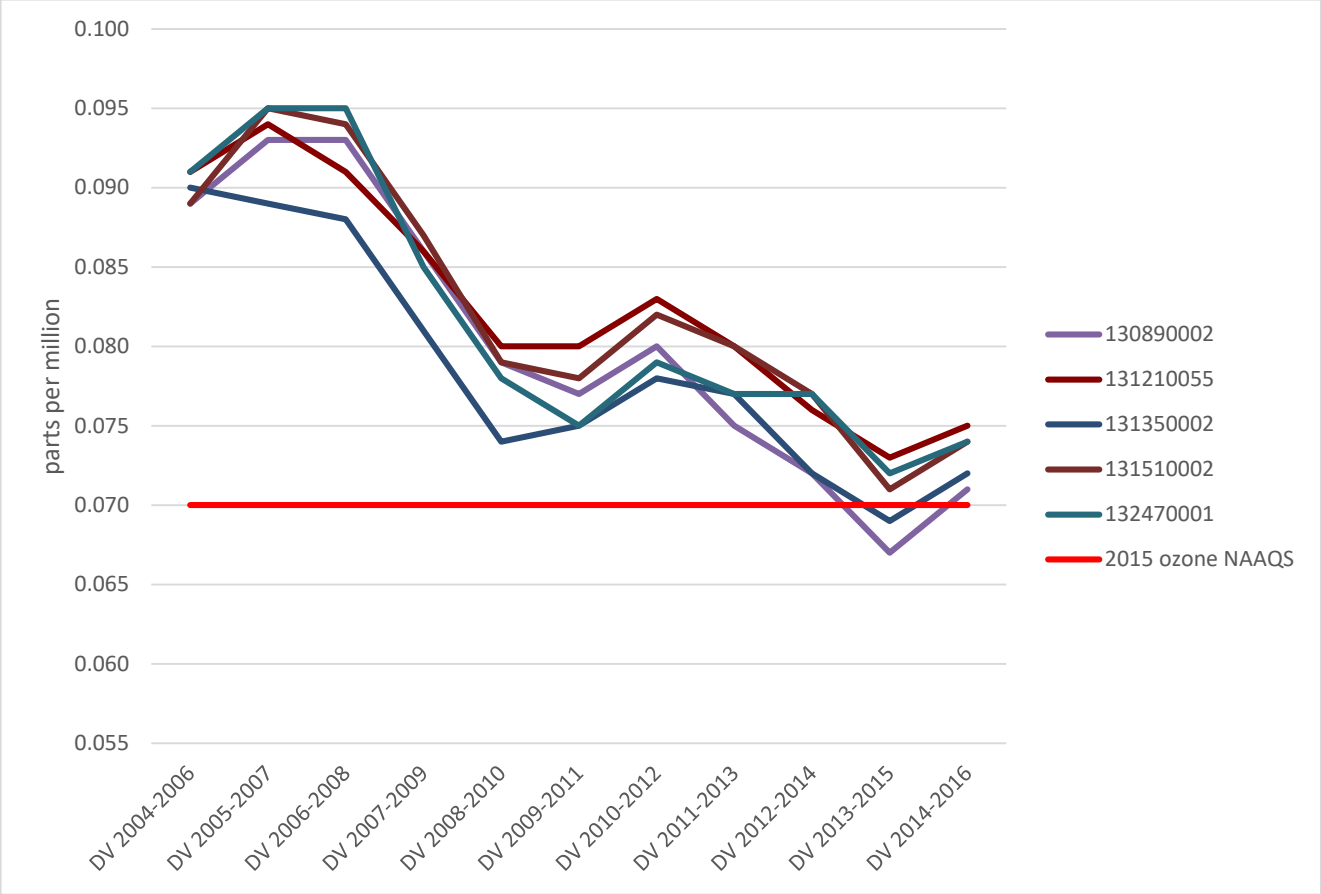
County, State	State Recommended Nonattainment?	AQS Site ID	2014-2016 DV	2014 4th highest daily max value	2015 4th highest daily max value	2016 4th highest daily max value
Spalding, GA	No	No Monitor	N/A			
Troup, GA	No	No Monitor	N/A			
Upson, GA	No	No Monitor	N/A			
Walton, GA	No	No Monitor	N/A			

[a] The monitors that exceed the 2015 NAAQS of 0.070 ppm are in bold type.
N/A means that the monitor did not meet the completeness criteria described in 40 CFR, part 50, Appendix U, or no data exists for the county.
[b] Georgia temporarily shut down this monitor during a portion of the 2014 monitoring season due to construction at the National Guard Depot. As a result, the monitor did not meet data completeness requirements in 2014, and did not produce a valid 2014-2016 design value.

DeKalb, Fulton, Gwinnett, Henry and Rockdale counties show a violation of the 2015 ozone NAAQS, therefore these counties are included in the intended nonattainment area. A county (or partial county) must also be designated nonattainment if it contributes to a violation in a nearby area.

Figure 1, shown previously, identifies the Atlanta, GA intended nonattainment area, the Atlanta, GA, CSA boundary and the violating monitors. Table 2 identifies the design values for all monitors in the area of analysis and Figure 2 shows the historical trend of design values for the violating monitors. As indicated on the map, there are five violating monitors, with two monitors in the city of Atlanta, one in Fulton and one in DeKalb Counties and the remaining violating monitors to the east, southeast and northeast of the city. There are three attaining monitors to the west of the city. In addition, the Cobb County monitor, with prior EPA approval, shut down temporarily due to construction around the monitoring site, therefore there is no valid design value. The Cobb County monitor resumed normal operations in August 2014. As shown in Figure 2, air quality has generally improved in the Atlanta, GA Area since 2006, though there has been a small uptick based on the most recent two DVs.

Figure 2. Three-Year Design Values for Violating Monitors (2006-2016).



While ozone design values have decreased in the Atlanta Area over time, there are five monitors that violated the 2015 Ozone NAAQS with 2014-2016 monitoring data.,

Factor 2: Emissions and Emissions-Related Data

The EPA evaluated ozone precursor emissions of nitrogen oxides (NOx) and volatile organic compounds (VOC) and other emissions-related data that provide information on areas contributing to violating monitors.

Emissions Data

The EPA reviewed data from the 2014 National Emissions Inventory (NEI). For each county in the area of analysis, the EPA examined the magnitude of large sources (NOx or VOC emissions greater than 100 tons per year (tpy)) and small point sources and the magnitude of county-level emissions reported in the NEI. These county-level emissions represent the sum of emissions from the following general source categories: point sources, non-point (i.e., area) sources, non-road mobile, on-road mobile, and fires. Emissions levels from sources in a nearby area indicate the potential for the area to contribute to monitored violations.

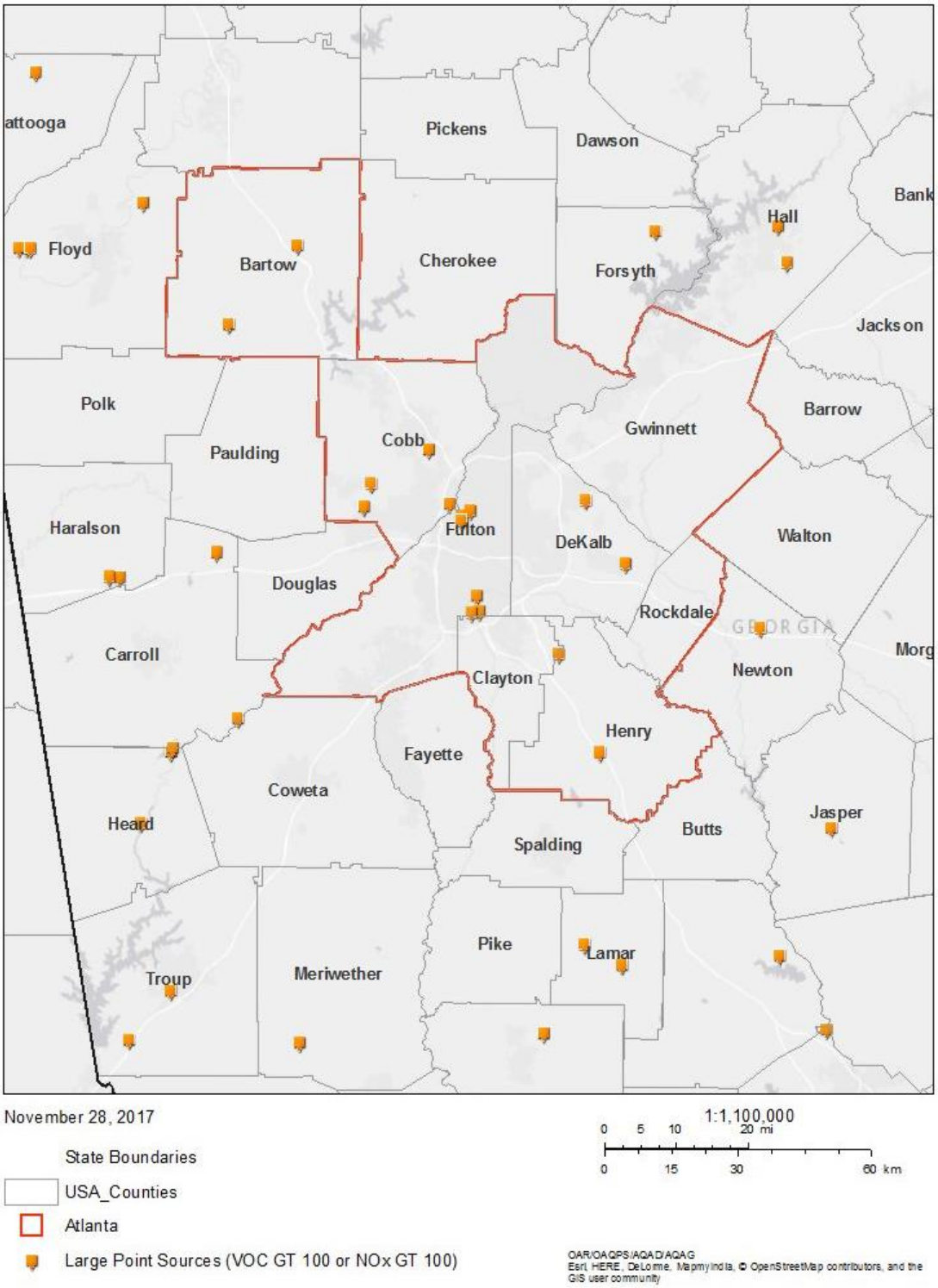
Table 3 provides a county-level emissions summary of NOx and VOC (given in tpy) emissions for the area of analysis considered for inclusion in the intended Atlanta, GA Area nonattainment area.

Table 3. Total County-Level NO_x and VOC Emissions.

County	State Recommended Nonattainment?	Total NO_x (tpy)	Total VOC (tpy)
Barrow, GA	No	2,060	1,525
Bartow, GA	Yes	12,848	3,445
Butts, GA	No	1,417	828
Carroll, GA	No	4,126	3,095
Cherokee, GA	No	3,809	3,583
Clarke, GA	No	2,835	2,893
Clayton, GA	Yes	10,860	5,326
Cobb, GA	Yes	13,625	13,776
Coweta, GA	No	4,412	2,486
Dawson, GA	No	647	672
DeKalb, GA	Yes	11,273	12,088
Douglas, GA	No	2,561	2,627
Fayette, GA	No	1,677	2,010
Forsyth, GA	No	3,457	3,977
Fulton, GA	Yes	19,117	17,435
Gordon, GA	No	2,861	2,093
Gwinnett, GA	Yes	13,636	14,805
Hall, GA	No	5,142	5,377
Haralson, GA	No	1,208	1,350
Heard, GA	No	2,862	743
Henry, GA	Yes	5,949	3,672
Jackson, GA	No	3,126	2,198
Jasper, GA	No	553	883
Lamar, GA	No	955	782
Madison, GA	No	2,281	1,054
Meriwether, GA	No	1,592	1,144
Morgan, GA	No	1,956	1,294
Newton, GA	No	2,843	2,647
Oconee, GA	No	1,004	1,006
Oglethorpe, GA	No	493	712
Paulding, GA	No	2,066	1,937
Pickens, GA	No	876	1,031
Pike, GA	No	498	755
Polk, GA	No	1,285	1,726
Rockdale, GA	Yes	1,715	1,638
Spalding, GA	No	1,592	1,585
Troup, GA	No	3,479	3,223
Upson, GA	No	1,120	1,195
Walton, GA	No	2,154	2,061
	Area wide:	155,970	130,678

In addition to reviewing county-wide emissions of NOx and VOC in the area of analysis, the EPA also reviewed emissions from large point sources. The location of these sources, together with the other factors, can help inform nonattainment boundaries. The locations of the large point sources are shown in Figure 3 below. The intended nonattainment boundary is also shown.

Figure 3. Large Point Sources in the Area of Analysis.



In summary, the EPA's analysis of relevant county-level emissions and the geographic locations of the relevant emissions showed varying levels of NOx and VOC emitted throughout the Atlanta, GA CSA.

Within the Atlanta, GA CSA, Fulton County has the highest NOx emissions of just over 19,000 tpy. Bartow, Clayton, Cobb, DeKalb, and Gwinnett Counties have the next highest total NOx emissions, ranging between slightly less than 11,000 tpy to approximately 13,600 tpy. The largest major point source in the area, Georgia Power Company-Plant Bowen, which emits 7,062 tons NOx emissions, is located in Bartow County and the emissions from that facility account for 55 percent of Bartow County's total NOx emissions. Another large major point source in the area is The Hartsfield-Jackson Atlanta International Airport, which emits just under 6,500 tpy of NOx and is located in Clayton County. The remaining counties have relatively lower total NOx emissions. Henry has just under 6,000 tpy total NOx emissions and Hall (5,100 tpy), Coweta (4,400 tpy) and Carroll (4,126 tpy) are the next highest for total NOx emissions. The majority of counties have emissions between 1,000 tpy and approximately 3,000 tpy. Six counties – Dawson, Jasper, Lamar, Oglethorpe, Pickens and Pike have less than 1,000 tpy.

Within the Atlanta, GA CSA, Fulton, Gwinnett, Cobb, and DeKalb Counties have the highest VOC emissions, ranging from approximately 12,000 tpy to 17,400 tpy. Most of the counties have VOC emissions of less than 2,000 tpy. However, a few, including Bartow and Clayton, which had relatively high NOx emissions, have VOC emissions within the range of 2,000 tpy to approximately 5,300 tpy.

Population density and degree of urbanization

In this part of the factor analysis, the EPA evaluated the population and vehicle use characteristics and trends of the area as indicators of the probable location and magnitude of non-point source emissions. These include emissions of NOx and VOC from on-road and non-road vehicles and engines, consumer products, residential fuel combustion, and consumer services. Areas of dense population or commercial development are an indicator of area source and mobile source NOx and VOC emissions that may contribute to violations of the NAAQS. Table 4 shows the population, population density, and population growth information for each county in the area of analysis.

Table 4. Population and Growth.

County	State Recommended Nonattainment?	2010 Population	2015 Population	2015 Population Density (per sq. mi.)	Absolute change in population (2010-2015)	Population % change (2010-2015)
Fulton, GA	Yes	920,581	1,010,562	1919	89,981	10%
Gwinnett County	Yes	805,321	895,823	2081	90,502	11%
Cobb County	Yes	688,078	741,334	2183	53,256	8%
DeKalb County	Yes	691,893	734,871	2746	42,978	6%
Clayton County	Yes	259,424	273,955	1935	14,531	6%
Cherokee County	No	214,346	235,900	559	21,554	10%
Henry County	Yes	203,922	217,739	676	13,817	7%
Forsyth County	No	175,511	212,438	948	36,927	21%
Hall County	No	179,684	193,535	493	13,851	8%
Paulding County	No	142,324	152,238	488	9,914	7%
Douglas County	No	132,403	140,733	703	8,330	6%
Coweta County	No	127,317	138,427	314	11,110	9%

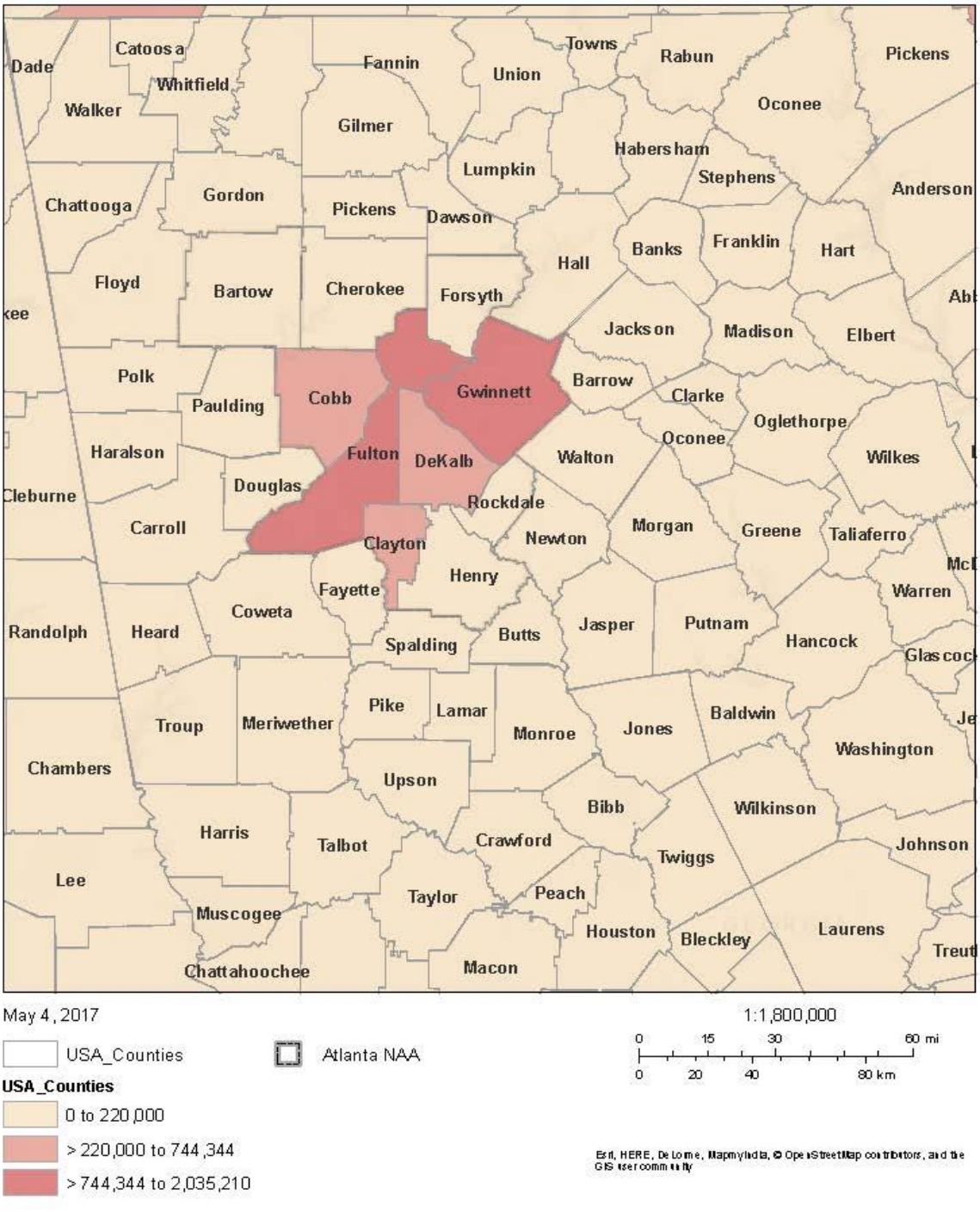
Clarke County	No	116,714	123,912	1040	7,198	6%
Carroll County	No	110,527	114,545	230	4,018	4%
Fayette County	No	106,567	110,714	570	4,147	4%
Newton County	No	99,958	105,473	388	5,515	6%
Bartow County	Yes	100,157	102,747	224	2,590	3%
Rockdale County	Yes	85,215	88,856	685	3,641	4%
Walton County	No	83,768	88,399	271	4,631	6%
Barrow County	No	69,367	75,370	470	6,003	9%
Troup County	No	67,044	69,763	169	2,719	4%
Spalding County	No	64,073	64,051	326	-22	0%
Jackson County	No	60,485	63,360	187	2,875	5
Gordon County	No	55,186	56,574	159	1,388	3
Polk County	No	41,475	41,524	134	49	0
Oconee County	No	32,808	35,965	195	3,157	10
Pickens County	No	29,431	30,309	131	878	3%
Haralson County	No	28,780	28,854	102	74	0%
Madison County	No	28,120	28,441	101	321	1
Upson County	No	27,153	26,368	82	785	-3%
Butts County	No	23,655	23,593	128	-62	0%
Dawson County	No	22,330	23,312	111	982	4%
Meriwether, County	No	21,992	21,190	42	-802	-4%
Lamar County	No	18,317	18,201	99	-116	-1%
Morgan County	No	17,868	18,046	52	178	1%
Pike County	No	17,869	17,941	83	72	0%
Oglethorpe County	No	14,899	14,871	34	28	0%
Jasper County	No	13,900	13,635	37	-265	-2%
Heard County	No	11,834	11,539	39	-295	-2%
	Area wide:	5,910,296	6,365,108	537	454,812	8%

Source: U.S. Census Bureau population estimates for 2010 and 2015. https://www.census.gov/popest/data/

Fulton, Gwinnett, Cobb and DeKalb Counties all have the highest population and all are densely populated. While Clayton County has a population that is less than half of that of those four counties, it has a similar population density of almost 2,000 people per square mile. For the area, a number of counties have both moderate population levels – roughly between 100,000 and 250,000 and are fairly densely populated with population densities ranging from about 230 to 1040. While Rockdale County has a population of less than 90,000, it has a population density of 685. The remaining counties all have populations of less than 90,000 and population densities less than 500 with most having a density less than 200. Growth in the area varies significantly. Forsyth had almost double the percent increase of any other county at 21 percent. This was an increase of 36,927 people from 2010 to 2015. Barrow, Cherokee, Coweta, Fulton, Gwinnett and Oconee, Counties also had above CSA average percent growth of 9 to 11 percent. Because Fulton and Gwinnett are the most populated counties, this relatively high percent growth corresponded to the highest total population increase of approximately 90,000 for each county. Butts, Haralson, Heard, Jasper, Lamar, Meriwether, Oglethorpe, Pike, Polk, Spalding and Upson Counties had 0 percent increase or a decrease in population

between 2010 and 2015. The remaining counties had at or below average percent growth in population for the area.

Figure 4. County-Level Population.



Traffic and Vehicle Miles Travelled (VMT)

The EPA evaluated the commuting patterns of residents, as well as the total VMT for each county in the area of analysis. In combination with the population/population density data and the location of main transportation arteries, this information helps identify the probable location of non-point source emissions. A county with high VMT and/or a high number of commuters is generally an integral part of an urban area and high VMT and/or high number of commuters indicates the presence of motor vehicle emissions that may contribute to violations of the NAAQS. Rapid population or VMT growth in a county on the urban perimeter may signify increasing integration with the core urban area, and thus could indicate that the associated area source and mobile source emissions may be appropriate to include in the nonattainment area. In addition to VMT, the EPA evaluated worker data collected by the U.S. Census Bureau[9] for the counties in the area of analysis. Table 5 shows the traffic and commuting pattern data, including for each county: total VMT, number of residents who work, number of residents that work in counties with violating monitors, and the percent of residents working in counties with violating monitors. The data in Table 5 are 2014 data.

Table 5. Traffic and Commuting Patterns.

County	State Recommended Nonattainment?	2014 Total VMT (Million Miles)	Number of County Residents Who Work	Number Commuting to or Within Counties with Violating Monitor(s)	Percentage Commuting to or Within Counties with Violating Monitor(s)
Fulton, GA	**Yes**	**13,389**	**402,753**	**296,516**	**73.60%**
Gwinnett, GA	**Yes**	**8,655**	**353,246**	**271,611**	**76.90%**
Cobb, GA	Yes	8,029	328,553	144,126	43.90%
DeKalb, GA	**Yes**	**7,956**	**303,151**	**238,073**	**78.50%**
Clayton, GA	Yes	2,834	103,530	56,521	54.60%
Henry, GA	**Yes**	**2,441**	**91,429**	**57,038**	**62.40%**
Forsyth, GA	No	2,124	92,338	47,661	51.60%
Cherokee, GA	No	2,119	100,824	37,474	37.20%
Hall, GA	No	2,067	74,686	19,490	26.1%
Bartow, GA	Yes	1,908	41,968	8,233	19.60%
Douglas, GA	No	1,758	56,462	21,359	37.80%
Coweta, GA	No	1,699	59,278	20,545	34.70%
Carroll, GA	No	1,602	44,339	9,920	22.40%
Paulding, GA	No	1,179	65,602	17,751	27.10%
Newton, GA	No	1,108	42,066	22,352	53.10%
Rockdale, GA	**Yes**	**1,089**	**35,127**	**24,679**	**70.30%**
Fayette, GA	No	1,040	49,500	21,643	43.70%
Clarke, GA	No	1,038	41,668	5,650	13.60%
Jackson, GA	No	1,026	24,398	4,754	19.50%
Troup, GA	No	976	29,017	2,756	9.50%

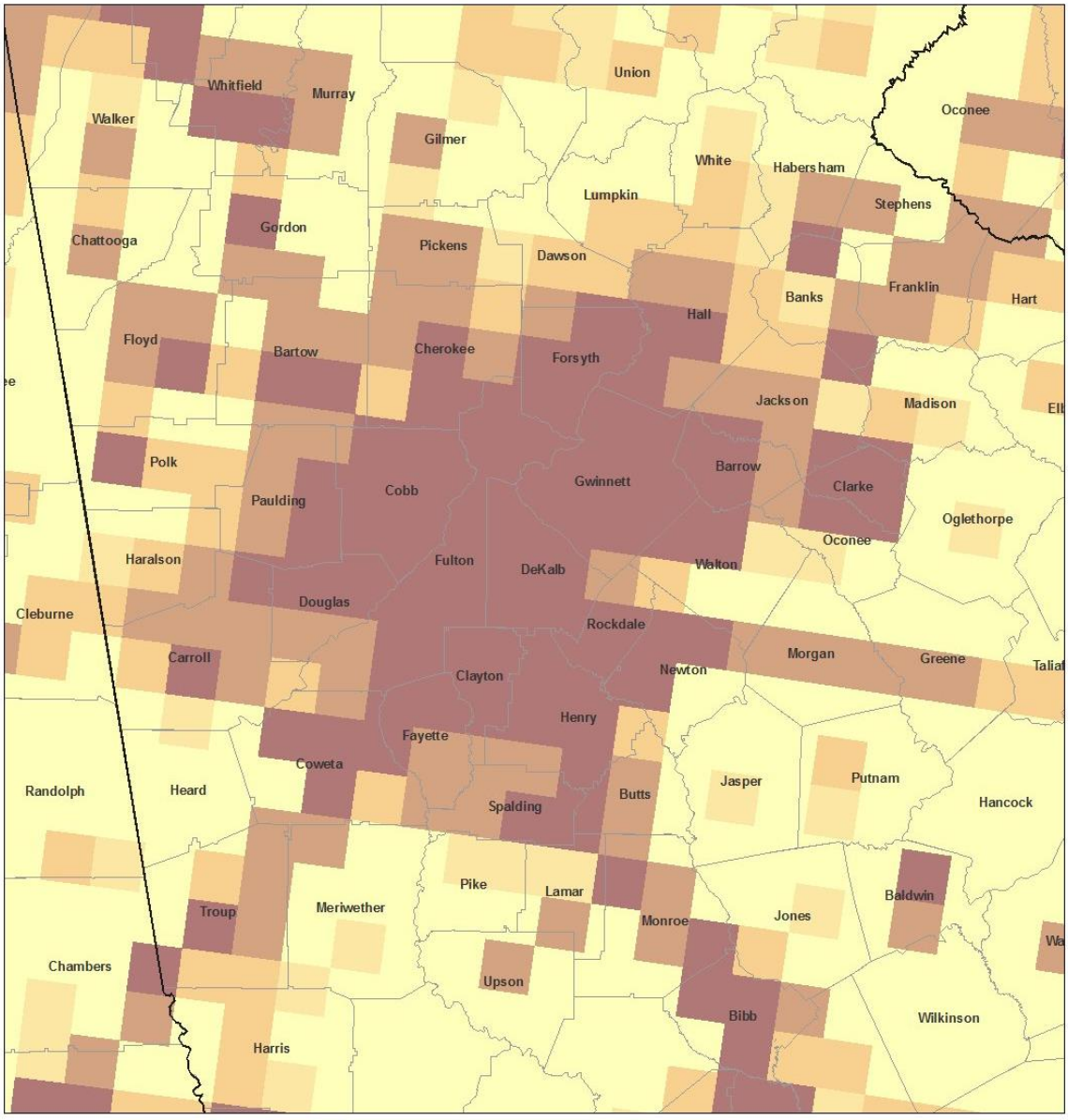
[9] The worker data can be accessed at: http://onthemap.ces.census.gov/.

County	State Recommended Nonattainment?	2014 Total VMT (Million Miles)	Number of County Residents Who Work	Number Commuting to or Within Counties with Violating Monitor(s)	Percentage Commuting to or Within Counties with Violating Monitor(s)
Walton, GA	No	906	36,573	17,026	46.60%
Barrow, GA	No	858	32,313	14,794	45.80%
Gordon, GA	No	773	21,279	1,384	6.50%
Spalding, GA	No	677	25,732	8,614	33.50%
Oconee, GA	No	477	14,744	1,563	10.60%
Morgan, GA	No	457	7,738	1,314	17.00%
Polk, GA	No	366	16,094	1,559	9.70%
Haralson, GA	No	338	10,535	1,392	13.20%
Butts, GA	No	334	8,806	2,977	33.80%
Pickens, GA	No	315	12,649	2,913	23.00%
Meriwether, GA	No	278	8,252	1,082	13.10%
Madison, GA	No	265	11,409	1,401	12.30%
Dawson, GA	No	232	9,380	2,948	31.40%
Lamar, GA	No	226	6,904	1,471	21.30%
Upson	No	219	10,524	1,753	16.70%
Pike, GA	No	158	7,417	1,653	22.30%
Oglethorpe	No	125	6,914	711	10.30%
Jasper, GA	No	121	4,297	649	15.10%
Heard, GA	No	107	4,449	522	11.70%
	Area wide:	71,268	2,595,944	1,393,878	54%

Counties with a monitor(s) violating the NAAQS are indicated in bold.

To show traffic and commuting patterns, Figure 5 overlays twelve-kilometer gridded VMT from the 2014 NEI with a map of the transportation arteries.

Figure 5. Twelve Kilometer Gridded VMT (Miles) Overlaid with Transportation Arteries.



The EPA compared on-road mobile emissions to emissions from all source categories for the Atlanta, GA CSA. On-road mobile NOx emissions comprise 92,609 tpy, or 59 percent of the total 155,968 tpy NOx emissions from all source categories in the Atlanta, GA CSA. On-road mobile VOC emissions comprise 42,592 tpy, or 33 percent of the total 130,678 tpy VOC emissions from all source categories in the Atlanta, GA CSA. Fulton, Gwinnett, Cobb and DeKalb Counties have the highest on-road mobile NOx and VOC emissions.

Fulton County has the largest VMT and commuters to or within a county with a violating monitor, followed by Gwinnett, Cobb and DeKalb Counties. Each of those 4 counties has 2.5 to 9 times as many VMT and/or commuters commuting into a county with a violating monitor as Clayton, Henry, Forsyth or Cherokee Counties, which are the counties with the next highest levels of both VMT and number of commuters commuting into a county with a violating monitor.

Hall, Bartow, Douglas, Coweta, Carroll, Paulding, Newton, Rockdale, Fayette, Clarke and Jackson Counties have the next highest VMT, ranging from approximately 1,000 to 2,000 VMT. Each of these counties' VMT range from 1 percent to 3 percent of the CSA total VMT. The remaining counties in the CSA, Troup, Walton, Barrow, Gordon, Spalding, Oconee, Morgan, Polk, Haralson, Butts, Pickens, Meriwether, Madison, Dawson, Lamar, Upson, Pike, Oglethorpe, Jasper and Heard, each have less than 1,000 VMT, which are each 1 percent or less of the CSA total VMT.

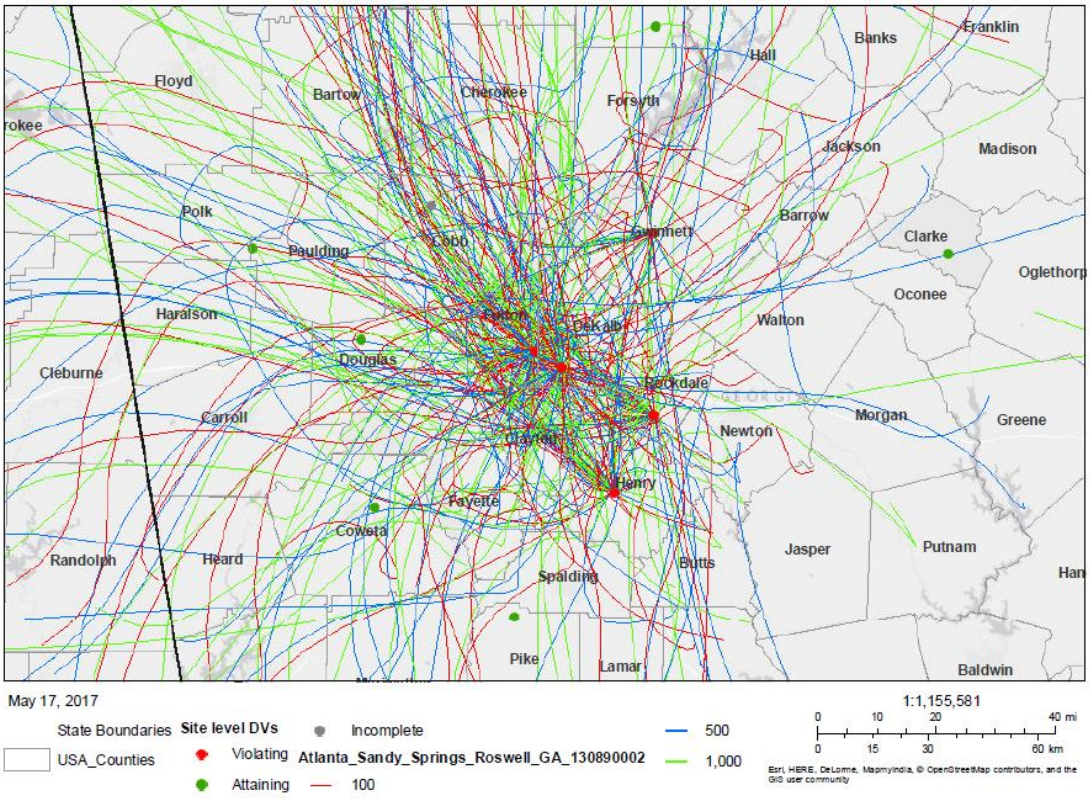
Similarly, Hall, Douglas, Coweta, Paulding, Newton, Rockdale, Fayette, Walton, and Barrow County have the next highest number of commuters commuting into a county with a violating monitor when compared to Clayton, Henry, Forsyth or Cherokee Counties. These counties each have between approximately 15,000 to 25,000 commuters, or 1 percent each for the total CSA, commuting to a county with a violating monitor. The remaining counties, Bartow, Carroll, Clarke, Jackson, Troup, Gordon, Spalding, Oconee, Morgan, Polk, Haralson, Butts, Pickens, Meriwether, Madison, Dawson, Lamar, Upson, Pike, Oglethorpe, Jasper, and Heard are each less than 1 percent of the total CSA commuters commuting to a county with a violating monitor.

Factor 3: Meteorology

Evaluation of meteorological data helps to assess the fate and transport of emissions contributing to ozone concentrations and to identify areas potentially contributing to the monitored violations. Results of meteorological data analysis may inform the determination of nonattainment area boundaries.

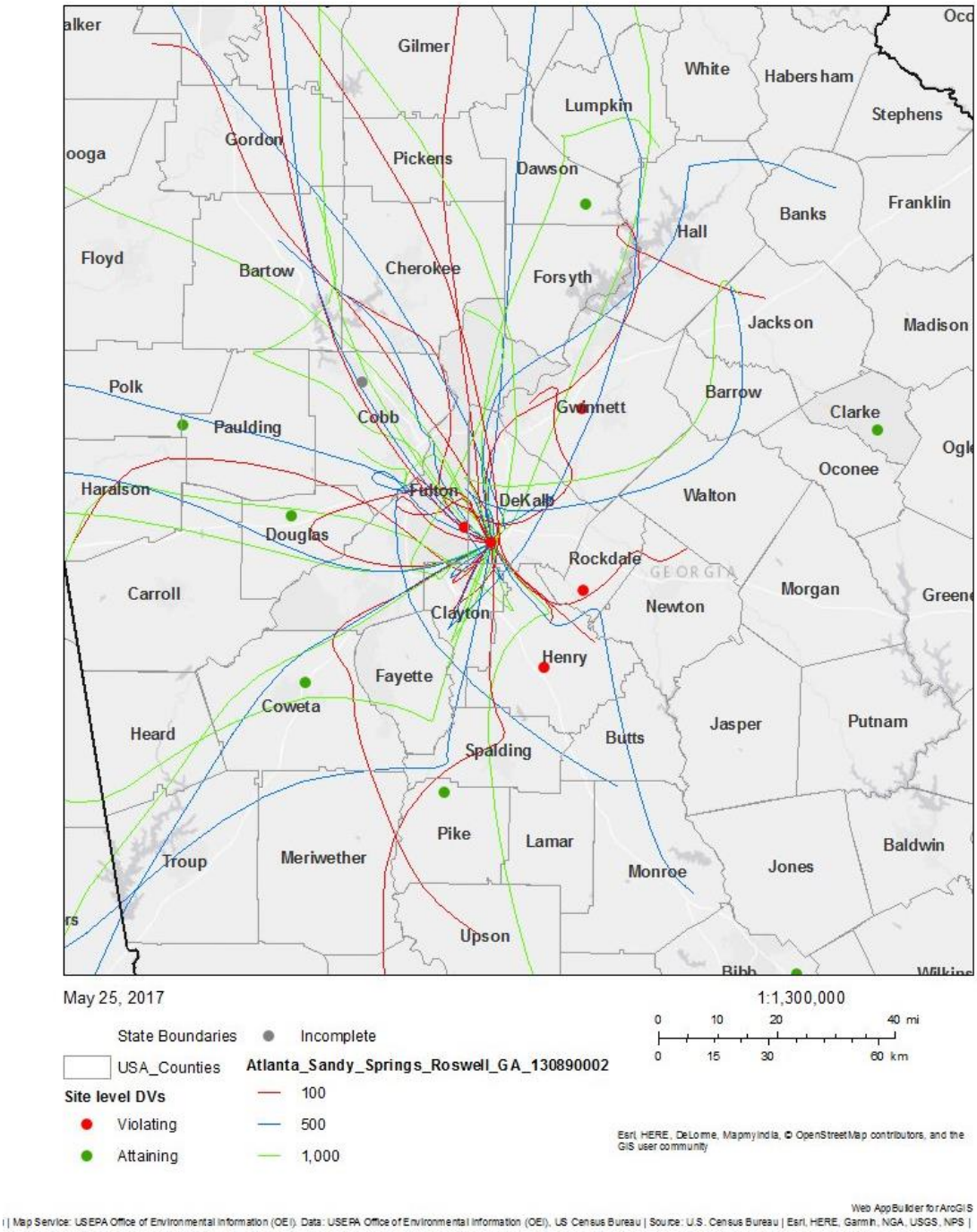
In order to determine how meteorological conditions, including, but not limited to, weather, transport patterns, and stagnation conditions, could affect the fate and transport of ozone and precursor emissions from sources in the area, the EPA evaluated 2014-2016 HYSPLIT (i.e., HYbrid Single-Particle Lagrangian Integrated Trajectory) trajectories at 100, 500, and 1000 meters above ground level (AGL) that illustrate the three-dimensional paths traveled by air parcels to a violating monitor. Figure 6 shows the 24-hour HYSPLIT back trajectories for each exceedance day (i.e., daily maximum 8 hour values that exceed the 2015 ozone NAAQS) for the three violating monitors.

Figure 6. HYSPLIT Back Trajectories for Violating Monitors.



The 2014-2016 HYSPLIT back trajectories displayed in Figure 6 show that transport winds blew predominantly from the northwest during times when the violating monitors in the Atlanta measured exceedances of the 2015 Ozone NAAQS. A significant number of back trajectories also pass over counties to the west, north and south directions. The counties in the area of analysis located to the northwest of the violating monitors are: Bartow, Cherokee, Cobb, Douglas, Gordon, Haralson, Paulding, Pickens and Polk. Additional counties to the west, north and south of the violating monitors include Butts, Barrow, Carroll, Coweta, Dawson, Fayette, Forsyth, Hall, Heard, Lamar, Meriwether, Monroe, Newton, Pickens, Pike, Rockdale, Spalding, Troup, Upson and Walton.

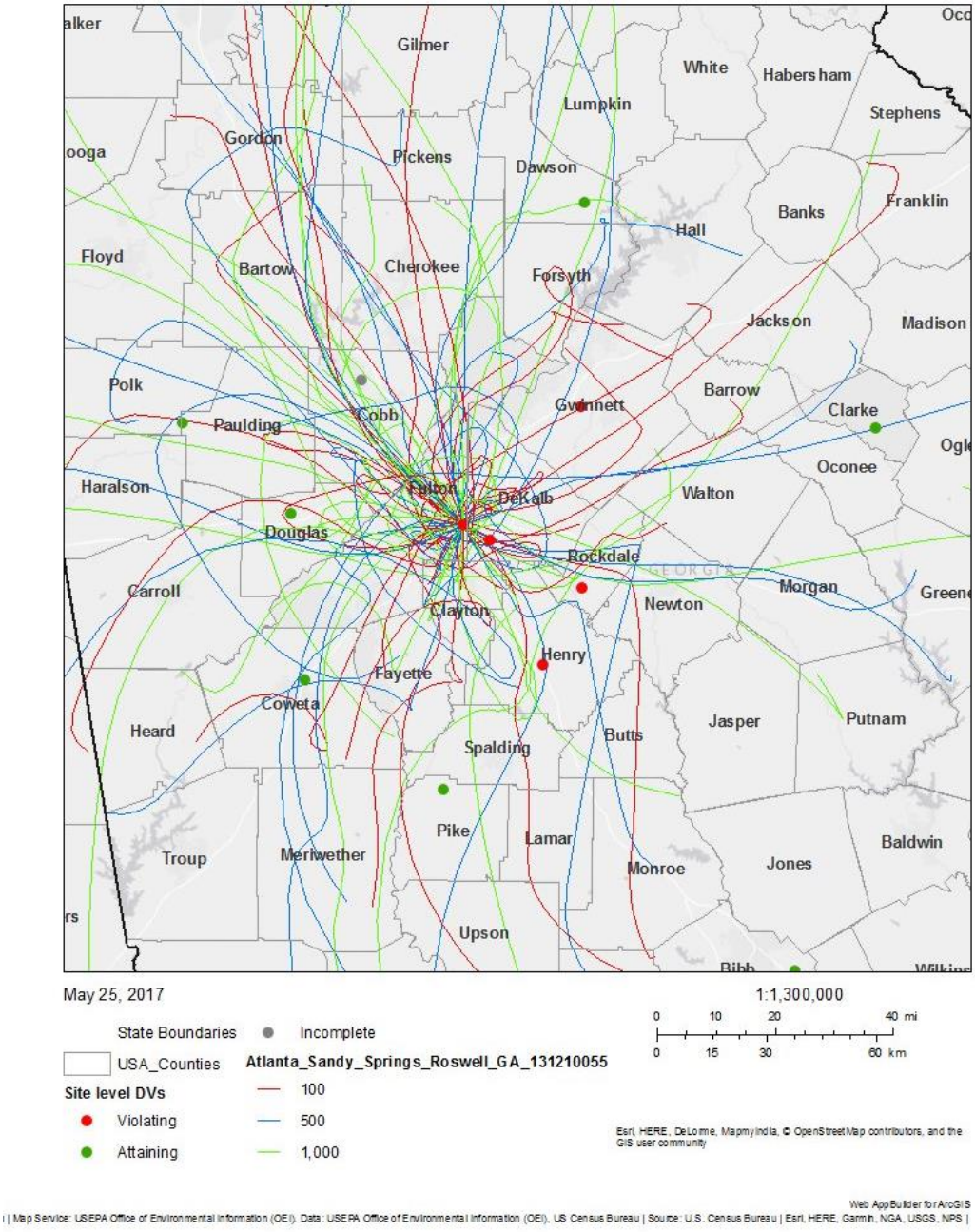
Figure 7: 2014 – 2016 HYSPLIT for DeKalb County Monitor



The 2014-2016 HYSPLIT back trajectories displayed in Figure 7 show that transport winds blew predominantly from the north-northwest during times when the violating monitor in DeKalb County measured exceedances of the 2015 Ozone NAAQS. A more limited number of back trajectories pass over counties to the south, west and northeast. Based on these back trajectories, emissions from the following counties were most likely to flow toward the DeKalb monitor during times when the monitor was violating the 2015 NAAQS: Barrow, Bartow, Butts, Carroll, Cherokee, Clayton, Cobb, Coweta, Dawson, DeKalb, Douglas, Fayette, Forsyth, Fulton,

Gwinnett, Gordon, Hall, Haralson, Heard, Henry, Jackson, Meriwether, Monroe, Newton, Paulding Pickens, Pike, Polk, Rockdale, Spalding, Troup and Walton.

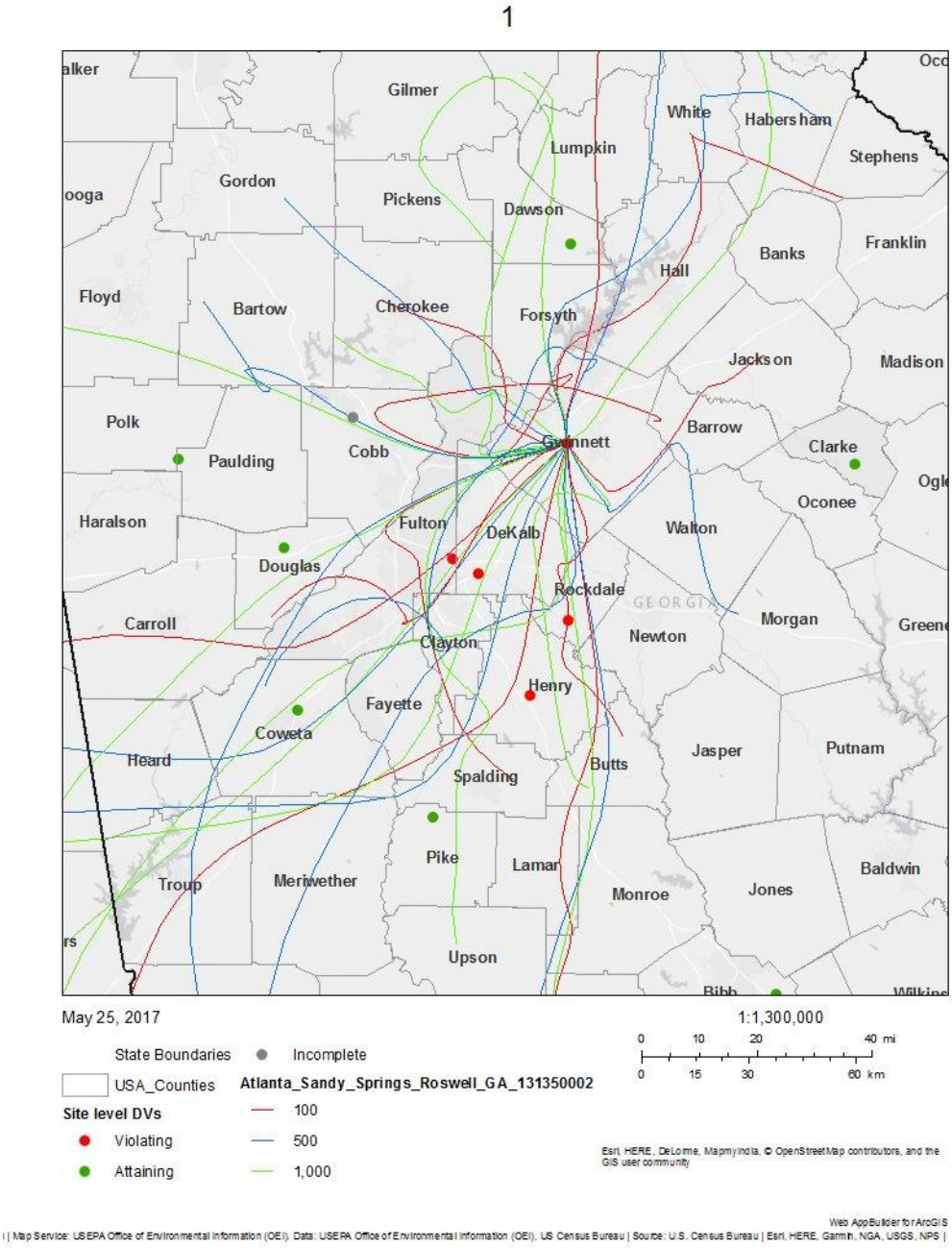
Figure 8: 2014 – 2016 HYSPLIT for Fulton County Monitor



The 2014-2016 HYSPLIT back trajectories displayed in Figure 8 show that transport winds blew predominantly from the north-northwest during times when the violating monitor in Fulton County measured exceedances of the 2015 Ozone NAAQS. A more limited number of back trajectories pass over counties to the west, south, north and east. Based on these back trajectories, emissions from the following counties were most likely to flow toward the Fulton monitor during times when the monitor was violating the 2015 NAAQS: Barrow, Bartow, Butts, Carroll, Cherokee, Clarke, Clayton, Cobb, Coweta, Dawson, DeKalb, Douglas, Fayette, Forsyth, Fulton,

Gwinnett, Gordon, Hall, Haralson, Heard, Henry, Jackson, Jasper, Lamar, Meriwether, Monroe, Morgan, Newton, Oconee, Paulding Pickens, Pike, Polk, Rockdale, Spalding, Troup and Walton.

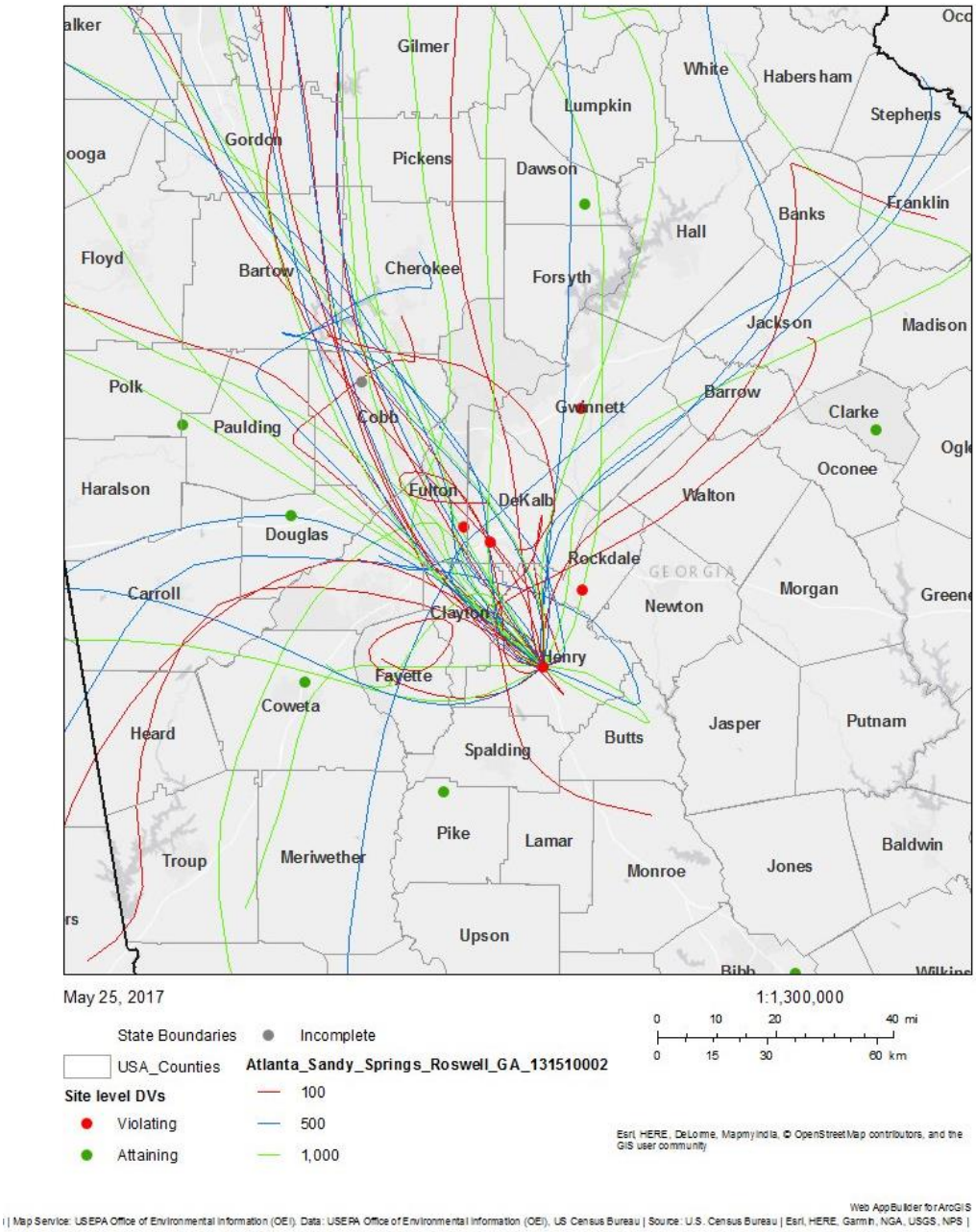
Figure 9: 2014 – 2016 HYSPLIT for Gwinnett County Monitor



The 2014-2016 HYSPLIT back trajectories displayed in Figure 9 show that transport winds blew predominantly from the south, southwest during times when the violating monitor in Gwinnett County measured exceedances of the 2015 Ozone NAAQS. A more limited number of back trajectories pass over counties to the north and west directions. Based on these back trajectories, emissions from the following counties were most likely to flow toward the Gwinnett monitor during times when the monitor was violating the 2015 NAAQS: Bartow, Butts,

Carroll, Cherokee, Clayton, Cobb, Coweta, Dawson, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Gordon, Hall, Heard, Henry, Jackson, Lamar, Meriwether, Monroe, Morgan, Newton, Paulding Pickens, Pike, Rockdale, Spalding, Troup and Walton.

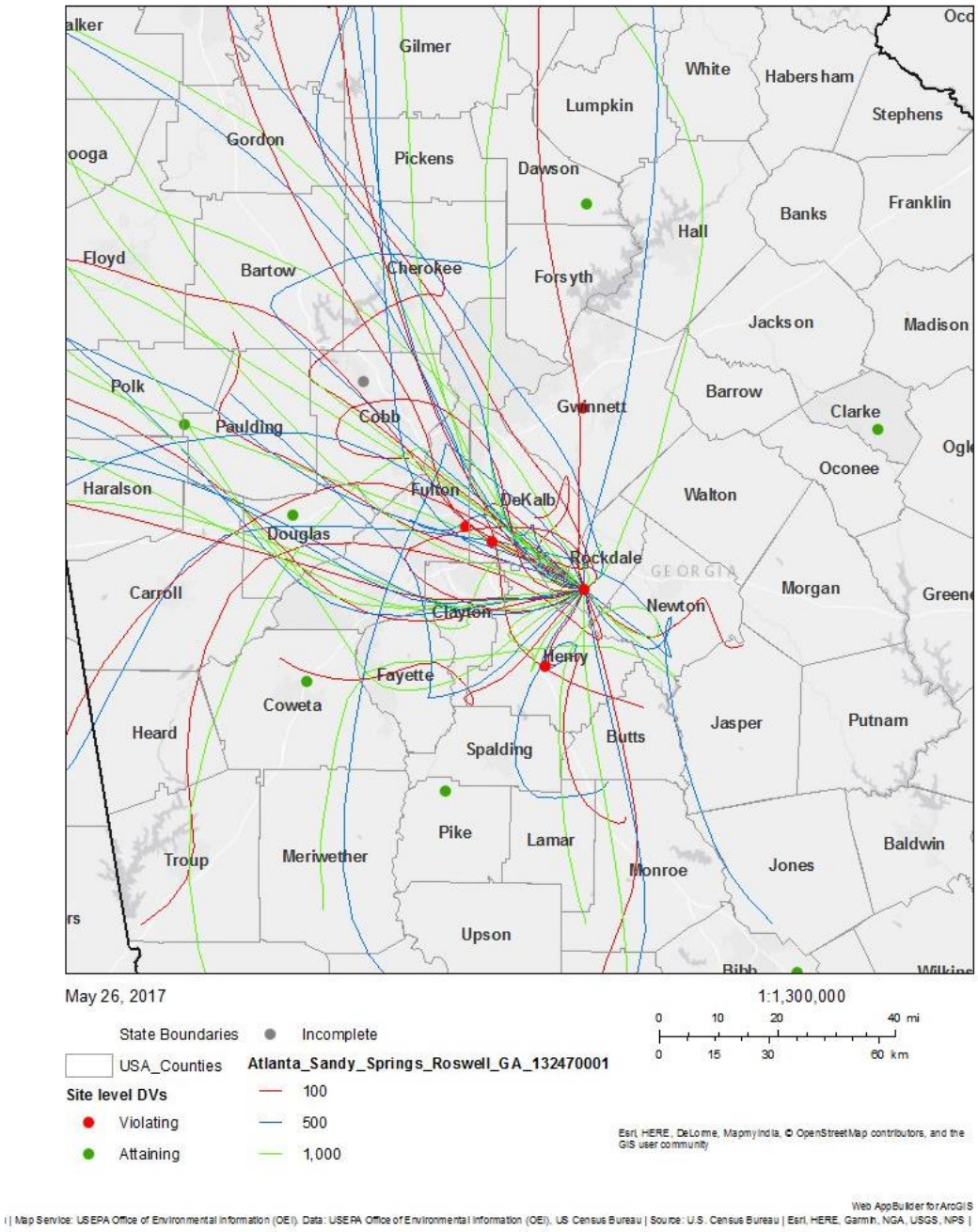
Figure 10: 2014 – 2016 HYSPLIT for Henry County Monitor



The 2014-2016 HYSPLIT back trajectories displayed in Figure 10 show that transport winds blew predominantly from the northwest during times when the violating monitor in Henry County measured exceedances of the 2015 Ozone NAAQS. A more limited number of back trajectories pass over counties to the west, south and northeast directions. Based on these back trajectories, emissions from the following counties were most likely to flow toward the Henry monitor during times when the monitor was violating the 2015

NAAQS: Barrow, Bartow, Butts, Carroll, Cherokee, Clayton, Cobb, Coweta, Dawson, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Gordon, Hall, Haralson, Heard, Henry, Jackson, Lamar, Meriwether, Newton, Paulding Pickens, Pike, Polk, Rockdale, Spalding, Troup and Walton.

Figure 11: 2014 – 2016 HYSPLIT for Rockdale County Monitor



The 2014-2016 HYSPLIT back trajectories displayed in Figure 11 show that transport winds blew predominantly from the northwest during times when the violating monitor in Rockdale County measured exceedances of the 2015 Ozone NAAQS. A more limited number of back trajectories pass over counties to the west, north and south directions. Based on these back trajectories, emissions from the following counties were most likely to flow toward the Rockdale monitor during times when the monitor was violating the 2015

NAAQS: Barrow, Bartow, Butts, Carroll, Cherokee, Clayton, Cobb, Coweta, Dawson, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Gordon, Hall, Haralson, Heard, Henry, Jackson, Lamar, Meriwether, Monroe, Newton, Paulding Pickens, Pike, Polk, Rockdale, Spalding, Troup and Walton.

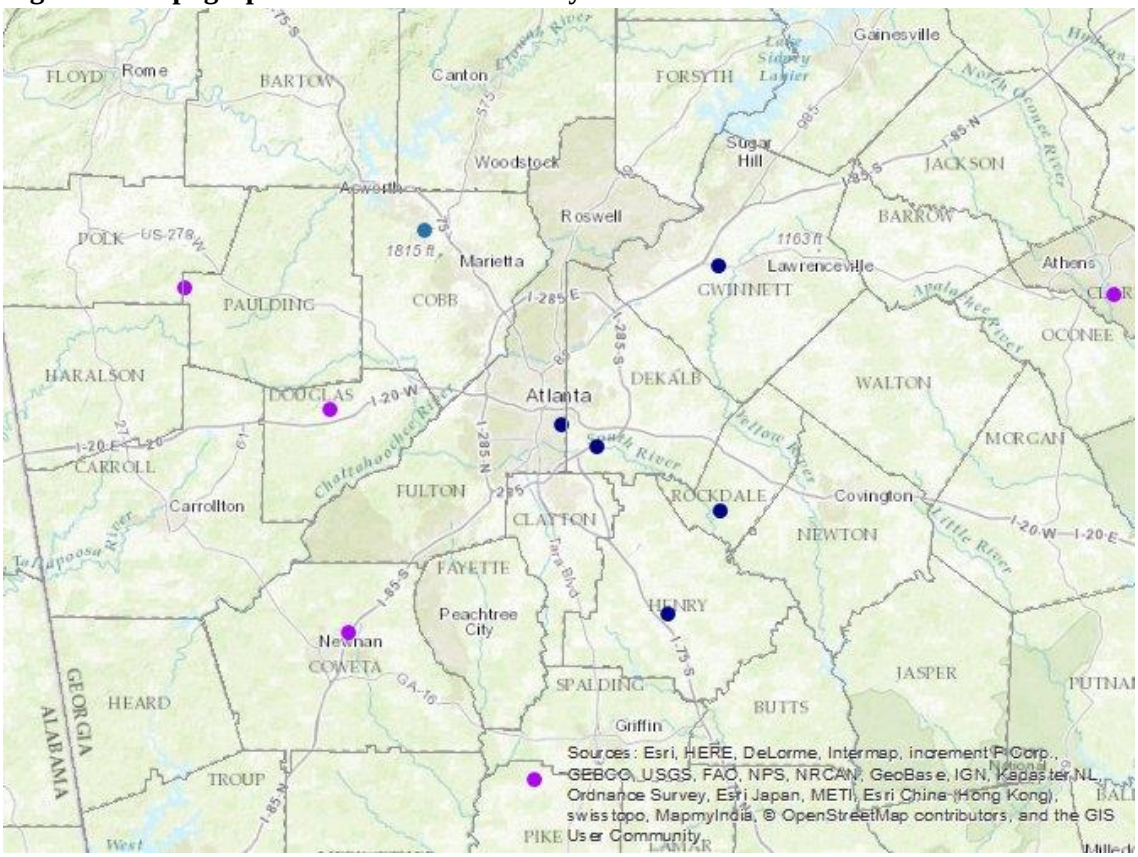
Factor 4: Geography/topography

Consideration of geography or topography can provide additional information relevant to defining nonattainment area boundaries. Analyses should examine the physical features of the land that might define the airshed. Mountains or other physical features may influence the fate and transport of emissions as well as the formation and distribution of ozone concentrations. The absence of any such geographic or topographic features may also be a relevant consideration in selecting boundaries for a given area.

The EPA used geography/topography analysis to evaluate the physical features of the land that might affect the airshed and, therefore, the distribution of ozone over the area. Figure 13 illustrates the topographic features in the area of analysis.

The Atlanta, GA CSA does not have any geographical or topographical features significantly limiting air pollution transport within its air shed. Therefore, this factor did not play a significant role in this evaluation.

Figure 13. Topographic Illustration of the Physical Barriers.



Factor 5: Jurisdictional boundaries

Once the geographic extent of the violating area and the nearby area contributing to violations is determined, the EPA considered existing jurisdictional boundaries for the purposes of providing a clearly defined legal boundary

to carry out the air quality planning and enforcement functions for nonattainment areas. In defining the boundaries of the intended Atlanta, GA nonattainment area for the 2015 ozone NAAQS, the EPA considered existing jurisdictional boundaries, which can provide easily identifiable and recognized boundaries for purposes of implementing the NAAQS. Examples of jurisdictional boundaries include, but are not limited to: counties, air districts, areas of Indian country, MPOs, and existing nonattainment areas. If an existing jurisdictional boundary is used to help define the nonattainment area, it must encompass all of the area that has been identified as meeting the nonattainment definition. Where existing jurisdictional boundaries are not adequate or appropriate to describe the nonattainment area, the EPA considered other clearly defined and permanent landmarks or geographic coordinates for purposes of identifying the boundaries of the intended designated area.

The Atlanta, GA area has previously established nonattainment boundaries associated with the 1-hour ozone, the 1997 and the 2008 8-hour ozone NAAQS, respectively. The Atlanta, GA 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, GA 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 nonattainment boundary for the 2008 8-hour ozone NAAQS included 15 counties in Georgia in their entireties: Bartow, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Newton, Paulding, and Rockdale.

Georgia's Source Apportionment Modeling (SAM)

In addition to the 5 Factor analysis, the EPA also considered Georgia's source apportionment modeling (SAM) using the Comprehensive Air Quality Model with eXtensions (CAMx) with its Anthropogenic Precursor Culpability Assessment (APCA) tool. Attachment III to the EPA's February 25, 2016, "Area Designations for the 2015 Ozone National Ambient Air Quality Standards," guidance states that SAM is not required for the designations but that it may be used to "help identify possible areas for inclusion in the nonattainment area because of their contribution to violations in nearby areas with violating monitors." When available, the EPA considers SAM as one part of the total weight of evidence that makes up the overall assessment of the potential nonattainment area boundaries. The guidance further states that SAM "can be a useful technique for comparing the relative contribution of individual county emissions of ozone precursor emissions."

Georgia performed SAM to evaluate the contribution of each of the 39 counties in the Atlanta, GA CSA to the 5 monitors with measured NAAQS violations in the 2014-2016 timeframe. Georgia included the SAM results along with a Modeling Technical Support Document describing the details of the modeling with their designation recommendations submittal dated September 23, 2016. Georgia's Five-Factor Technical Analysis Document states that the SAM combines the first four factors of the five-factor analysis into a single contribution value for each county. Georgia chose to use a contribution threshold of 1.0 parts per billion (ppb) to determine which counties "significantly contribute" to the violating monitors. The SAM results show that the following counties have a modeled contribution greater than 1.0 ppb to any of the 5 violating monitors in the 2014-2016 timeframe: Fulton, Gwinnett, DeKalb, Cobb, Bartow, Clayton, and Henry. Rockdale County shows a modeled contribution slightly below 1.0 ppb. The complete SAM results were provided in Table 9 of Georgia's Modeling Technical Support Document (included below for ease of reference).

Figure 12. Table of Georgia's Source Apportionment Modeling (SAM) Results copied from their Modeling Technical Support Document dated, September 23, 2016.

Table 9. Contributions of 39 counties in the Atlanta CSA to violating ozone monitors. Red values indicate more than 1.0 ppb contribution to a violating ozone monitor.

Monitor	Confederate Ave. (13-121-0055)	Conyers (13-247-0001)	McDonough (13-151-0002)	Gwinnett Tech (13-135-0002)	South DeKalb (13-089-0002)
Barrow	0.12	0.06	0.10	0.23	0.10
Bartow	1.17	0.77	0.97	1.45	0.96
Butts	0.04	0.07	0.14	0.02	0.04
Carroll	0.24	0.33	0.15	0.09	0.26
Cherokee	0.40	0.30	0.36	0.64	0.33
Clarke	0.08	0.03	0.10	0.09	0.08
Clayton	3.54	4.22	3.85	0.68	3.26
Cobb	2.69	1.50	1.72	2.49	2.05
Coweta	0.24	0.38	0.29	0.14	0.23
Dawson	0.03	0.03	0.03	0.04	0.03
DeKalb	3.04	3.07	3.17	2.33	5.56
Douglas	0.68	0.41	0.33	0.16	0.55
Fayette	0.21	0.31	0.40	0.07	0.18
Forsyth	0.29	0.26	0.24	0.78	0.24
Fulton	8.74	4.12	4.07	3.92	5.98
Gordon	0.15	0.11	0.14	0.07	0.13
Gwinnett	1.71	1.93	1.60	8.25	1.58
Hall	0.26	0.18	0.16	0.61	0.19
Haralson	0.07	0.10	0.03	0.04	0.09
Heard	0.14	0.26	0.16	0.09	0.15
Henry	0.55	2.65	4.08	0.26	0.88
Jackson	0.16	0.07	0.12	0.29	0.13
Jasper	0.01	0.01	0.03	0.01	0.01
Lamar	0.01	0.02	0.03	0.01	0.01
Madison	0.07	0.03	0.07	0.11	0.07
Meriwether	0.02	0.03	0.03	0.02	0.03
Morgan	0.06	0.02	0.08	0.03	0.06
Newton	0.17	0.29	0.34	0.06	0.21
Oconee	0.04	0.01	0.05	0.04	0.04
Oglethorpe	0.01	0.00	0.01	0.01	0.01
Paulding	0.35	0.20	0.22	0.20	0.29
Pickens	0.05	0.05	0.05	0.03	0.05
Pike	0.01	0.01	0.02	0.01	0.01
Polk	0.09	0.06	0.05	0.07	0.08
Rockdale	0.23	0.95	0.41	0.09	0.31
Spalding	0.04	0.10	0.15	0.03	0.05
Troup	0.03	0.04	0.04	0.03	0.04
Upson	0.01	0.01	0.01	0.01	0.01
Walton	0.16	0.09	0.20	0.14	0.17

The EPA has reviewed the SAM documentation provided by Georgia and has determined that the procedures used for the modeling are consistent with the EPA's guidance for photochemical modeling demonstrations. Georgia's SAM used a similar approach as the EPA used for the proposed Cross-State Air Pollution Rule modeling. The EPA believes that use of 2011 meteorology and the modeled-projected ozone season from April 1 to October 31, 2017, provide sufficient analysis of meteorological and emissions conditions that could lead to

elevated ozone levels in the Atlanta area. Overall, the modeling represents a high-quality analysis of the potential contribution sources in the area and provides useful information to consider along with the five-factor analysis for establishing the nonattainment area boundary.

Conclusion for Atlanta, GA Area

Based on the assessment of factors described above, the EPA has preliminarily determined that it does not intend to modify the State's recommendation that the following counties should be included in the intended Atlanta, GA nonattainment area for the 2015 ozone NAAQS: Bartow County, Clayton County, Cobb County, DeKalb County, Fulton County, Gwinnett County, Henry County, and Rockdale County.

The air quality monitors in DeKalb County, Fulton County, Gwinnett County, Henry County, and Rockdale County indicate violations of the 2015 ozone NAAQS based on the 2016 design values, therefore these counties are included in the intended nonattainment area. Bartow County and Clayton County are counties in the Atlanta, GA CSA that do not have any monitors and Cobb County has a monitor with incomplete data but the EPA has preliminarily concluded that these areas contribute to the ozone concentrations in violation of the 2015 ozone NAAQS through emissions from point sources and other non-point sources (e.g., vehicles and other small area sources) and from commuters into the counties with violating monitors.

As shown on Table 3 under Factor 2 in this document, Bartow County, Clayton County, Cobb County, DeKalb County, Fulton County and Gwinnett County have the highest NOx emissions in the Atlanta, GA CSA. The largest major point source in the Atlanta, GA CSA area, Georgia Power Company-Plant Bowen, which emits 7,062 tons per year NOx emissions, is located in Bartow County and the emissions from that facility account for 55 percent of Bartow County's total NOx emissions. Another large major point source, The Hartsfield-Jackson Atlanta International Airport, which emits just under 6,500 tpy of NOx and is located in Clayton County. Emissions from this source account for 60 percent of Clayton County's total NOx emissions. Cobb County, DeKalb County, Fulton County and Gwinnett County have the highest VOC emissions in the Atlanta, GA CSA area.

Barrow, Carroll, Cherokee, Clarke, Coweta, Douglas, Fayette, Forsyth, Gordon, Hall, Heard, Henry, Jackson, Madison, Meriwether, Morgan, Newton, Paulding, Rockdale, Spalding, Troup, and Walton counties, each have 1 percent to 4 percent of the total CSA NOx emissions and the remaining counties with lowest emissions, Butts, Dawson, Haralson, Jasper, Lamar, Oconee, Oglethorpe, Pickens, Pike, Polk, and Upson each have less than 1 percent of the total CSA NOx emissions. This is part of the basis for excluding these counties from the preliminarily determined nonattainment boundary.

As shown on Table 4 of Factor 2, Fulton County, Gwinnett County, Cobb County and DeKalb County ranked the highest for total population and Fulton County, Gwinnett County, Cobb County, DeKalb County, and Clayton County ranked highest for population density.

Table 5 of Factor 2 shows that Fulton County, Gwinnett County, Cobb County, and DeKalb County also ranked relatively high for VMT and residents commuting to or within counties with violating monitor.

While Clayton, Henry, Forsyth or Cherokee Counties, are the counties with the next highest levels of both VMT and number of commuters commuting into a county with a violating monitor, they individually have only approximately 3 percent of the total CSA VMT. Hall, Bartow, Douglas, Coweta, Carroll, Paulding, Newton, Rockdale, Fayette, Clarke and Jackson Counties have the next highest VMT, each have less than 3 percent of

the CSA total VMT, and the remaining counties in the CSA, Troup, Walton, Barrow, Gordon, Spalding, Oconee, Morgan, Polk, Haralson, Butts, Pickens, Meriwether, Madison, Dawson, Lamar, Upson, Pike, Oglethorpe, Jasper and Heard, each have 1 percent or less of the CSA total VMT. This is also part of the basis for excluding these counties from the preliminarily determined nonattainment boundary.

When compared to Clayton, Henry, Forsyth or Cherokee Counties, Hall, Douglas, Coweta, Paulding, Newton, Rockdale, Fayette, Walton, and Barrow County have the next highest number of commuters commuting into a county with a violating monitor, each with 1 percent of the total for the CSA, and Bartow, Carroll, Clarke, Jackson, Troup, Gordon, Spalding, Oconee, Morgan, Polk, Haralson, Butts, Pickens, Meriwether, Madison, Dawson, Lamar, Upson, Pike, Oglethorpe, Jasper, and Heard are each less than 1 percent of the total CSA commuters commuting to a county with a violating monitor. This is also part of the basis for excluding these counties from the preliminarily determined nonattainment boundary.

The HYSPLIT analysis shows heavy trajectories through Bartow, Clayton, Cobb, DeKalb, Fulton, Gwinnett, Henry, and Rockdale Counties. Furthermore, the SAM submitted by the State further supports inclusion of Bartow, Clayton, Cobb, DeKalb, Fulton, Gwinnett, Henry, and Rockdale in the designated nonattainment area. The SAM results show a contribution of 0.78 ppb and less for each remaining county in the CSA and, when used as weight-of-evidence these SAM results support excluding these remaining counties.