

US EPA ARCHIVE DOCUMENT



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE, TENNESSEE 37243-0435

ROBERT J. MARTINEAU, JR.
COMMISSIONER

BILL HASLAM
GOVERNOR

February 27, 2012

Gwendolyn Keyes Fleming
Regional Administrator
USEPA, Region IV
Sam Nunn Atlanta Federal Center, 12th Floor
61 Forsyth Street, SW
Atlanta, GA 30303

RE: TDEC Response to EPA Region 4 Dec. 8, 2011 Ozone Designations Letter

Dear Ms. Fleming:

In our letter dated November 8, 2011, the Tennessee Department of Environment and Conservation revised our March 10, 2009 recommendations for ozone nonattainment areas in Tennessee (2008 standard). Our revised recommendations were based on 2009-2011 data and requested nonattainment status only for those portions of Blount, Cocke, and Sevier Counties that are in the Great Smoky Mountains National Park.

Subsequent discussions between Region 4 and TDEC staff revealed that the 2011 monitoring data completeness requirements for the Knox County sites may not have been met. If the Knox County data is acceptable, we would like to limit the nonattainment area to that portion of Blount County that contains the Great Smoky Mountains National Park. If it is not acceptable, we present our revised nonattainment recommendations for the Knoxville area based on 2008-2010 data. Our revised recommendation for this area is as follows:

Blount, Knox, and Loudon Counties

That portion of Anderson County limited to the census tract(s) including the TVA Bull Run Fossil Plant (see attached)

Your December 8, 2011 letter indicated that you intend to designate Sevier County, all of Anderson County, and a portion of Cocke County nonattainment. However, Sevier County is considered a Micropolitan Statistical Area by itself, and both monitors in this county are

attaining the standard based on 2009-2011 data. Sevier County has very little industry, and the majority of volatile organic compound (VOC) and nitrogen oxide (NO_x) emissions are from mobile sources (greater than 90% of both pollutants). As an extremely popular tourist area, out-of-county vehicles are estimated to be responsible for a significant percentage of the vehicle miles traveled within the county.

If 2008-2010 data is used, we request only a partial nonattainment status for Anderson County. The TVA Bull Run Fossil Plant is by far the largest source of VOC and NO_x emissions in the county, and it is equipped with selective catalytic reduction for NO_x control. Since Anderson County is north of Loudon County and northwest of Blount and Knox Counties, and the winds are climatologically from the southwest, west-southwest, and south-southwest, we request that only the portion of Anderson County limited to the census tract(s) around the TVA facility be included in the nonattainment area. The monitor in Anderson County shows attainment for both 2008-2010 and 2009-2011.

Cocke County has no significant sources of VOC or NO_x and no ozone monitors. It is not adjacent to any counties with violating monitors, and should not be designated nonattainment simply because it contains a portion of the Great Smoky Mountains National Park.

Your December 8, 2011 letter also indicated that you intend to designate Shelby County as nonattainment. We believe Shelby County should be designated attainment for the reasons outlined below.

1. Both monitors in Shelby County are attaining the standard based on 2009-2011 data. The only non-attaining monitor in the Memphis Metropolitan Statistical Area is in Crittenden County Arkansas, which is west of Shelby County. The winds in this region are primarily from the south, southwest, and south-southwest, indicating that industries in Shelby County only infrequently impact the non-attaining monitor.
2. The western boundary of Shelby County is also the western boundary for the NO_x SIP Call. Shelby County has faithfully been implementing the requirements of the NO_x SIP Call and will implement whatever is required by the successor to the currently stayed Cross-State Air Pollution Rule. Two large power plants in the Arkansas counties just to the west of Shelby County are not subject to the NO_x SIP Call and have done little to help the area attain. Modeling performed by EPA or its contractors shows that Arkansas contributes 7.034 parts per billion to ozone in Tennessee.

If, however, you still intend to include Shelby County in the nonattainment area, we request that you designate only the census tracts including the city of Memphis and not the whole county. Seventy percent of the population of Shelby County reside within the city limits, and the majority of the point source VOC and NO_x emissions are generated within the city limits (see attachment).

More detail on each of the foregoing positions is set forth in the attached nine factor analysis. This nine factor analysis is consistent with EPA's December 4, 2008, memorandum from Robert J. Meyers, Principal Deputy Assistant Administrator, concerning "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards."

We appreciate the opportunity to provide input during this consultation process, and ask that you revise your initial determinations in accordance with this letter and the enclosed analysis. We welcome the opportunity to discuss these issues in further detail with you at your earliest convenience before final designations are made. Your favorable review of these recommendations will be appreciated. If you should have further questions, please do not hesitate to contact me personally or have your staff contact our air pollution control program director, Barry R. Stephens, P. E., at (615) 532-0525 or Barry.Stephens@tn.gov .

Sincerely,

A handwritten signature in black ink, appearing to read "Robert J. Martineau, Jr.", with a large, stylized flourish extending to the right.

Robert J. Martineau, Jr.
Commissioner

Enclosure: Nine-Factor Analysis

Copy to w/enclosures:

Stan Meiburg, EPA Deputy Regional Administrator
Beverly Banister, EPA Region IV
Carol Kemker, EPA Region IV
Scott R. Davis, EPA Region IV
Lynorae Benjamin, EPA Region IV



Tennessee Response to EPA's Suggested 8-Hour Ozone Standard
Nonattainment Area Designations
Nine-Factor Analysis

Executive Summary

On March 12, 2008, the U.S. Environmental Protection Agency promulgated the new ozone standard of 0.075 ppm. Pursuant to the Clean Air Act, states had one year from issuance of the new standard to recommend areas of the state as nonattainment or attainment with the new standard. Tennessee submitted its recommendations March 10, 2009, but the rule was subsequently stayed, proposed to be replaced, and re-validated. On November 8, 2011, Tennessee submitted its revised nonattainment recommendations based on preliminary 2009-2011 monitoring data. This technical summary document presents the State of Tennessee's response to EPA's letter dated December 8, 2011. All Tennessee counties are currently attaining the 1997 standard for ozone.

Our November 8, 2011 recommendations were for the entire state to be designated attainment with the exception of the partial counties of Blount, Cocke, and Sevier that comprise the Great Smoky Mountains National Park. Your December 8, 2011 letter stated your intention to designate Anderson, Blount, Knox, Loudon, Sevier, Shelby, and a portion of Cocke Counties as nonattainment.

Preliminary monitoring data for 2009-2011 shows that all monitors in the Knoxville MSA meet the 2008 standard with the exception of the Blount County monitor located at Look Rock in the Great Smoky Mountains National Park. We understand that the Knox County monitoring data for 2011 may not meet the data availability requirements, and 2008-2010 monitoring data must be used for designation purposes if it does not. Whichever data set is used, we would like to exclude Sevier and Cocke Counties from the designation area. Sevier County is a Micropolitan Statistical Area by itself, and the monitors in Sevier County measure attainment of the standard based on 2009-2011 monitoring data. Sevier County has very little industry, and the majority of volatile organic compound (VOC) and nitrogen oxide (NOx) emissions are from mobile sources (greater than 90% of both pollutants per the 2008 NEI). As an extremely popular tourist area, out-of-county vehicles are estimated to be responsible for a significant percentage of the vehicle miles traveled within the county. Cocke County is located northeast of Sevier County and east of Jefferson County. Only three sources in Cocke County reported for the 2008 NEI, with total NOx emissions of 26.4 tons and 89.1 tons of VOC. We had previously requested that only the portion of Cocke County containing the Great Smoky Mountains National Park be designated non attainment. If Sevier County is designated attainment, Cocke County will not be adjacent to any counties in the Knoxville nonattainment area, and we request that all of Cocke County be designated unclassifiable/attainment. We also request a partial nonattainment designation for Anderson County, limited to the census tracts contained in a 3.1 kilometer radius circle centered on the TVA Bull Run Fossil Plant (see Attachment 1). This facility is by far the largest source of VOC and NOx emissions in the county, and is equipped with selective catalytic reduction for NOx control. Anderson County is north of Loudon County and northwest of Blount and Knox Counties and the winds are primarily from the southwest, west-southwest, and south-southwest. Based on these factors, it is unlikely that TVA Bull Run Fossil Plant significantly impacts air quality in those counties.

If you determine that the 2011 monitoring data for Knox County is acceptable, we would like to modify our recommendation for designation to just the portion of Blount County that is part of the Great Smoky Mountains National Park, with the remaining counties in the MSA plus Sevier and Cocke Counties unclassifiable/attainment.

We also request that you reconsider your intention to designate Shelby County nonattainment. Shelby County is attaining the standard based on 2009-2011 monitoring data, with Crittenden County the only county in the metropolitan statistical area measuring nonattainment. Crittenden County is west of Shelby County, and the prevailing wind directions are from the south, southwest, and south-southwest. The

western boundary of Shelby County is also the western boundary for the NO_x SIP Call. Shelby County has faithfully been implementing the requirements of the NO_x SIP Call and will implement whatever is required by the successor to the currently stayed Cross-State Air Pollution Rule. Two large power plants in the Arkansas counties to the west of Shelby County are not subject to the NO_x SIP Call and have done little to help the area attain. See Attachment 2 for further discussion of the impact of neighboring EGUs on the failing Crittenden County monitor. Should the State of Arkansas fail to submit 2009-2011 monitoring data for Crittenden County, we request that EPA agree to evaluate Shelby County based on 2009-2011 data. The State of Tennessee has no control over the State of Arkansas and should not be penalized for their actions or their inaction.

The above recommendations are based on the Nine-Factor analysis, which was outlined in the EPA guidance dated December 4, 2008. The State of Tennessee evaluated the counties listed in your December 8, 2011 letter which we would like EPA to designate attainment rather than nonattainment. The following is our nine-factor analysis for these counties.

(1) Knoxville Metropolitan Statistical Area

Knoxville, TN Metropolitan Statistical Area (CBSA: 28940)

Principal Cities: Knoxville-Knox County, Oak Ridge-Anderson County, Maryville-Blount County
Anderson County, Blount County, Knox County, Loudon County, and Union County (in Tennessee)

The Knoxville, TN Metropolitan Statistical Area (hereinafter referred to as the Knoxville MSA) consists of 5 TN counties. The TAPCD is recommending that, should the Knox County 2011 monitoring data be deemed unacceptable, three counties be classified as nonattainment, one county be designated partial nonattainment, and one county be classified as attainment. The single attainment-designated county is Union. Union County is currently classified as attainment for the 1997 ozone standard and was not included in the 1997 ozone nonattainment area..

AFFECTED COUNTY SUMMARY

The following is a county-by-county summary of the factors that were considered in the inclusion/exclusion evaluation for the Knoxville MSA 8-hour ozone nonattainment area. These factors include precursor emissions, air quality data, population, urbanization, commuter/traffic patterns (“connectivity”), meteorology, growth, and jurisdictional boundaries. All factors in the applicable EPA guidance were considered.

Anderson County

- Recommendation: Attainment (2009-2011 monitoring data) OR Partial Nonattainment (2008-2010 monitoring data, Attachment 1).
- Air Quality Data: Anderson County has one ozone monitor (Freels Bend), and the preliminary design value for 2009-2011 is 0.070 ppm. Anderson County was included in the Knoxville nonattainment area for the 1997 ozone standard, and was designated attainment March 8, 2011.
- Emissions Data: The 2008 NEI shows 12,476 tons per year of NO_x and 3,569 tons per year of VOC from mobile and point sources. The majority (79.6%) of the NO_x emissions are from point sources; 20.4% from mobile sources. The majority of the VOC emissions (56.6%) are from mobile sources, with 43.4% from point sources. The TVA Bull Run Fossil Plant is the largest point source NO_x

emitter in the county, with 8,626.5 tons reported in the 2008 NEI. They have reduced their NO_x emissions significantly, however, reporting only 1,274.3 tons in 2009 and 1,224.6 tons in 2010. The next highest point source for NO_x emissions is the Chestnut Ridge Landfill, reporting 109.6 tons in 2008.

- Population density and degree of urbanization: 75,129 people (2010) and 222 people per square mile
- Traffic and commuting patterns: 2,147,996 DVMT in 2010
- Growth rates and patterns: The population grew 5.3% between 2000 and 2010. The DVMT decreased by 7.6 % between 2005 and 2010.
- Meteorology: The winds are climatologically from the southwest, west-southwest, and south-southwest.
- Geography/topography: Cumberland Plateau covers the western portion and Ridge and Valley topography covers the eastern portion of the county.
- Jurisdictional boundaries: The census tracts that include the TVA Bull Run Fossil Plant.
- Level of control of emission sources: Five sources in the county reported for the 2008 NEI. They are: TVA-Bull Run Fossil Plant, U.S. DOE Y-12, Carlisle Tire and Wheel Company, Chestnut Ridge Landfill, and Rogers Group. TVA-Bull Run utilizes an SCR for NO_x emissions. U.S. DOE Y-12 replaced their coal-fired boilers with natural gas fired boilers (#2 Fuel oil as backup) in 2010. The boilers have a total NO_x limit of 81 TPY. Carlisle Tire and Wheel Company has a VOC PAL permit with a limit of 267.24 TPY. 49.4 TPY of NO_x is allowed from the boilers at Carlisle (primarily natural gas, #2 fuel oil backup), and they reported 9.4 TPY for 2008. Chestnut Ridge Landfill operates a gas collection and control system. The collected gas is routed to either one or more open utility flares or a treatment system at the on-site gas plant. Treated landfill gas is used at the four internal combustion engines. Since 2005, the TAPCD requires the application of low NO_x burner (LNB) technology at new and certain modified sources for NO_x control. There is currently no I/M program for mobile emissions. Stage I vapor recovery is required for gasoline dispensing facilities.

(2) Sevierville Micropolitan Statistical Area

Sevierville, TN Micropolitan Statistical Area (CBSA: 42940)
Principal Cities: Gatlinburg, Pigeon Forge, and Sevierville
Sevier County (in Tennessee)

The Sevierville, TN Micropolitan Statistical Area (hereinafter referred to as the Sevierville MiSA) consists of one TN County. The TAPCD is recommending that this county be classified as attainment.

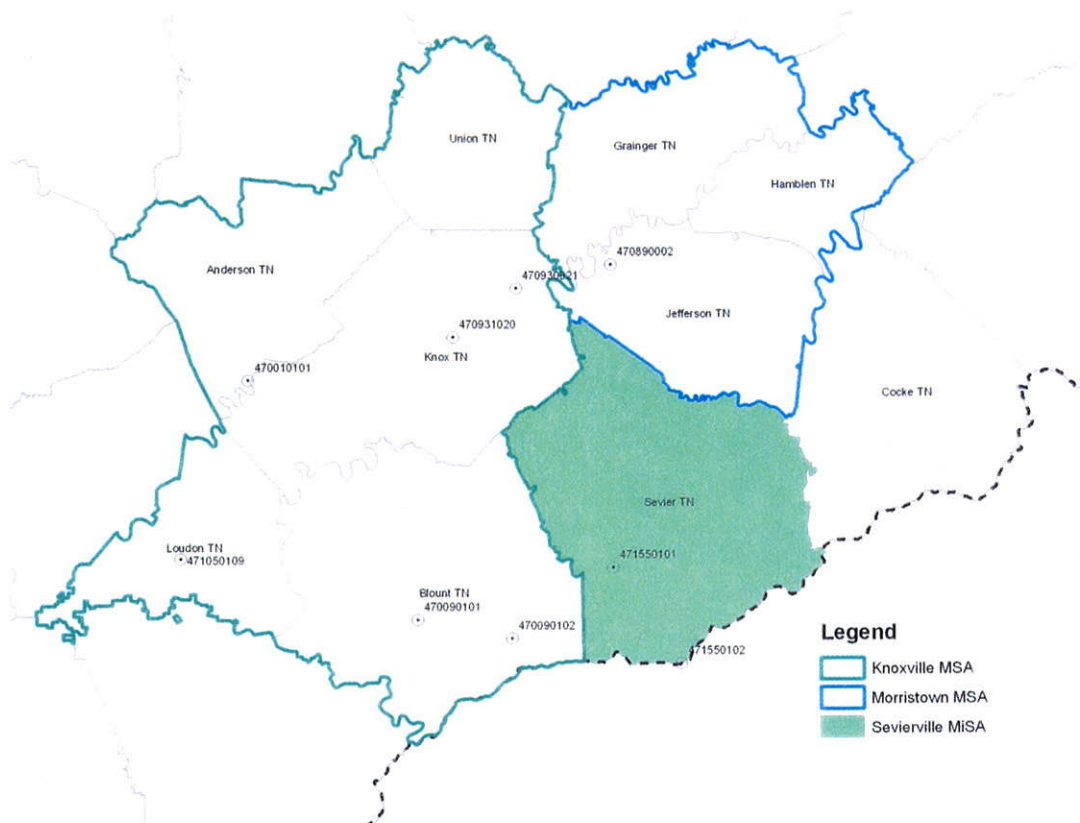


Figure 1 – Sevierville MiSA

Sevierville MiSA:

COUNTY SUMMARY

The following is a summary of the factors that were considered in the exclusion evaluation for the Sevierville MiSA 8-hour ozone nonattainment area. These factors include precursor emissions, air quality data, population, urbanization, commuter/traffic patterns (“connectivity”), meteorology, growth, and jurisdictional boundaries. All factors in the applicable EPA guidance were considered.

Sevier County

- Recommendation: Attainment.
- Air Quality Data: Sevier County has two ozone monitors, both in the Great Smoky Mountains National Park. They are located at Cove Mountain and Clingmans Dome, and both have preliminary 2009-2011 design values of 0.075 ppm. Sevier County was included in the Knoxville nonattainment area for the 1997 ozone standard, and was designated attainment March 8, 2011.
- Emissions Data: The 2008 NEI shows 2,602 tons per year of NO_x and 2,272 tons per year of VOC from mobile and point sources. The majority (90.2%) of the NO_x emissions are from mobile sources;

9.8% from point sources. The majority of the VOC emissions (78.4%) are from mobile sources, with 21.6% from point sources.

- Population density and degree of urbanization: 89,889 people (2010) and 152 people per square mile. Sevier County one of the most popular tourist areas in Tennessee.
- Traffic and commuting patterns: 3,566,986 DVMT for 2010
- Growth rates and patterns: The population grew 26.3% between 2000 and 2010. The DVMT grew 9.6% between 2005 and 2010.
- Meteorology: The winds are climatologically from the southwest, west-southwest, and south-southwest.
- Geography/topography: Developing tourist area (Gatlinburg, Pigeon Forge). Ridge and Valley topography covers the western portion and Unaka Smoky Mountains cover the eastern portion of the state. The Great Smokies National Park (GSMNP) area is located across several counties in Tennessee and North Carolina, including Sevier County.
- Jurisdictional boundaries: Entire County by itself.
- Level of control of emission sources: One point source, East Tennessee Natural Gas Company, reported for the 2008 NEI. Reported NO_x emissions were 25 TPY, and allowable NO_x emissions are 108 TPY. The turbines use natural gas only. Since 2005, the TAPCD requires the application of low NO_x burner (LNB) technology at new and certain modified sources for NO_x control. Stage I vapor recovery is required for gasoline dispensing facilities. The GSMNP is a federally controlled enclave within each of the two respective states.

(3) Newport, TN

Cocke County Summary

Cocke County is not part of an MSA or MiSA.

Principal City: Newport

COUNTY SUMMARY

The following is a summary of the factors that were considered in the exclusion evaluation for the Cocke 8-hour ozone attainment area. These factors include precursor emissions, air quality data, population, urbanization, commuter/traffic patterns (“connectivity”), meteorology, growth, and jurisdictional boundaries. All factors in the applicable EPA guidance were considered.

- Recommendation: Attainment
- Air Quality Data: No ozone monitors are located in Cocke County. The portion of Cocke County containing the Great Smoky Mountains National Park was included in the Knoxville nonattainment area for the 1997 ozone standard, and was designated attainment March 8, 2011.
- Emissions Data: The 2008 NEI shows 1,761 tons per year of NO_x and 5,399 tons per year of VOC from mobile and point sources. The majority (90.4%) of the NO_x emissions are from mobile sources; 9.6% from point sources. The majority of the VOC emissions (69.5%) are from mobile sources, with 30.5% from point sources.

- Population density and degree of urbanization: 35,662 people (2010) and 82 people per square mile.
- Traffic and commuting patterns: 1,233,802 DVMT for 2010
- Growth rates and patterns: The population grew 6.2% between 2000 and 2010. The DVMT decreased by 3.1 % between 2005 and 2010.
- Meteorology: Winds are primarily from the southwest during the day and the northeast at night.
- Geography/topography: The county has a total area of 443 square miles (1,147.4 km²), of which 434 square miles is land and 9 square miles (1.97%) is water. The county's highest point is Old Black at 1,942 meters (6,370 ft). The Great Smokies National Park (GSMNP) area is located across several counties in Tennessee and North Carolina, including Cocke County.
- Jurisdictional boundaries: The entire county by itself.
- Level of control of emission sources: Three emission sources reported in the 2008 NEI, and only two reported NOx emissions. They reported 23.4 TPY and 3 TPY. Sonoco Paper Products Company has an allowable of 73 tons per year of NOx, and SI Group has an allowable of 71 tons per year of NOx. Since 2005, the TAPCD requires the application of low NOx burner (LNB) technology at new and certain modified sources for NOx control.

(4) Memphis, TN-MS-AR Metropolitan Statistical Area

Principal Cities: Memphis-Shelby County
Shelby County, Fayette County, Tipton County (in Tennessee)

The Memphis, TN-MS-AR Metropolitan Statistical Area (hereinafter referred to as the Memphis MSA) includes 3 TN counties, DeSoto County in Mississippi, and Crittenden County in Arkansas. The City of Memphis is the center of the Memphis MSA. It also contains the city of West Memphis (in Arkansas). The Tennessee Division of Air Pollution Control (TAPCD) recommends that all Tennessee counties be classified as attainment. Both ozone monitors in Shelby County show preliminary design values for 2009-2011 data (0.073 ppm and 0.074 ppm) that meet the new ozone standard. Fayette and Tipton counties are primarily rural and do not have ozone monitors.

Memphis MSA:

COUNTY SUMMARY

The following is a summary of the factors that were considered in the exclusion evaluation for the Memphis MSA 8-hour ozone nonattainment area. These factors include precursor emissions, air quality data, population, urbanization, commuter/traffic patterns (“connectivity”), meteorology, growth, and jurisdictional boundaries. All factors in the applicable EPA guidance were considered.

Shelby County

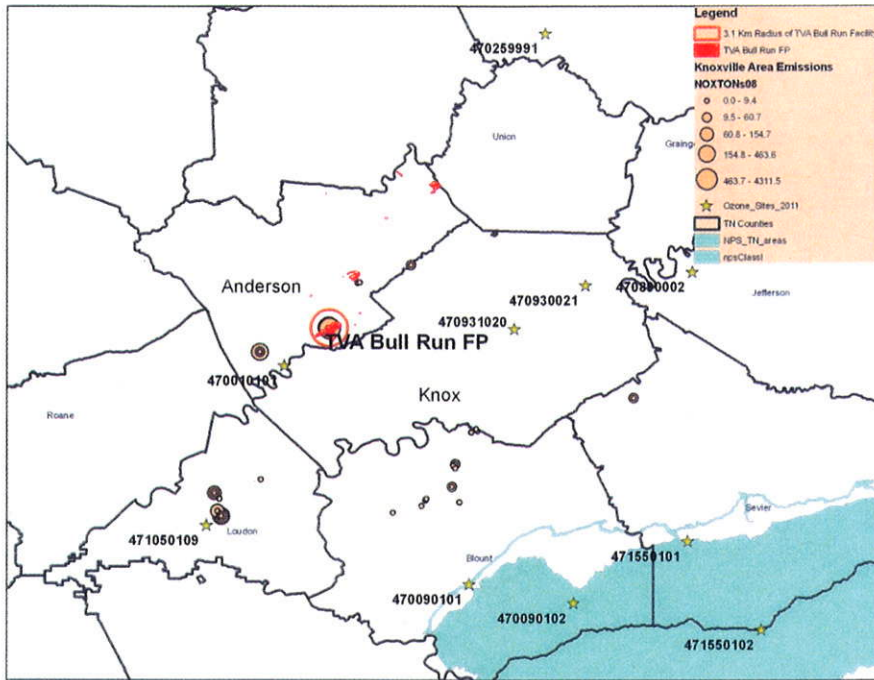
- Recommendation: Attainment
- Jurisdictional boundaries: Entire county by itself (attainment) OR the City of Memphis (nonattainment). 70% of the population of Shelby County resides in the Memphis city limits. See Attachments 2 and 3 for maps showing the Memphis City Limits and the NOx and VOC sources in Shelby County and the EGU analysis.

- Air Quality Data: There are a total of four ozone monitors in the Memphis, TN-MS-AR Metropolitan Statistical Area, of which two are in Shelby County, one in DeSoto County (MS), and one in Crittenden County (AR). Preliminary data for both ozone monitors in Shelby County and the monitor in DeSoto County show design values for 2009-2011 data that are less than the new standard of 0.075 ppm. Preliminary data for the monitor in Crittenden County Arkansas shows a design value for 2009-2011 data that is greater than the new standard of 0.075 ppm. Shelby County and Crittenden County were classified as nonattainment for the 1997 ozone standard, and were designated attainment with that standard on January 4, 2010.
- Emissions Data: The 2008 NEI shows 39,519 tons per year of NO_x and 27,930 tons per year of VOC from mobile and point sources. The majority (69.7%) of the NO_x emissions are from mobile sources; 30.3% from point sources. The majority of the VOC emissions (54.6%) are from mobile sources, with 45.4% from point sources.
- Population density and degree of urbanization: 927,644 people (2010) and 1,229 people per square mile.
- Traffic and commuting patterns: 23,353,266 DVMT for 2010
- Growth rates and patterns: The population grew 3.4% between 2000 and 2010. The DVMT decreased 5% between 2005 and 2010.
- Meteorology: The winds are climatologically from the south, southwest, and south-southwest.
- Geography/topography: Most of Shelby County is located in the West Tennessee Plain Geographic Region. The topography of this West Tennessee Plain is a relatively flat terrain that slopes gently westward to the Mississippi River floodplain. A small north-south strip of the County is located in the Mississippi Alluvial Valley Region.
- Level of control of emission sources: There are 30 point sources in Shelby County that reported for the 2010 NEI. One of those sources permanently shut down in 2010, and another permanently shut down in 2011. The TVA Allen Steam Plant has selective catalytic reduction for control of nitrogen oxide emissions. Cargill uses low NO_x burners, fuel use limitations, and heat input restrictions. DuPont has fuel use restrictions. Valero uses low NO_x burners and fuel usage limitations, among other things. Regulations have been implemented that control VOC emissions from point sources. The City of Memphis requires OBD testing of motor vehicles. Stage I vapor recovery is required for gasoline dispensing facilities.

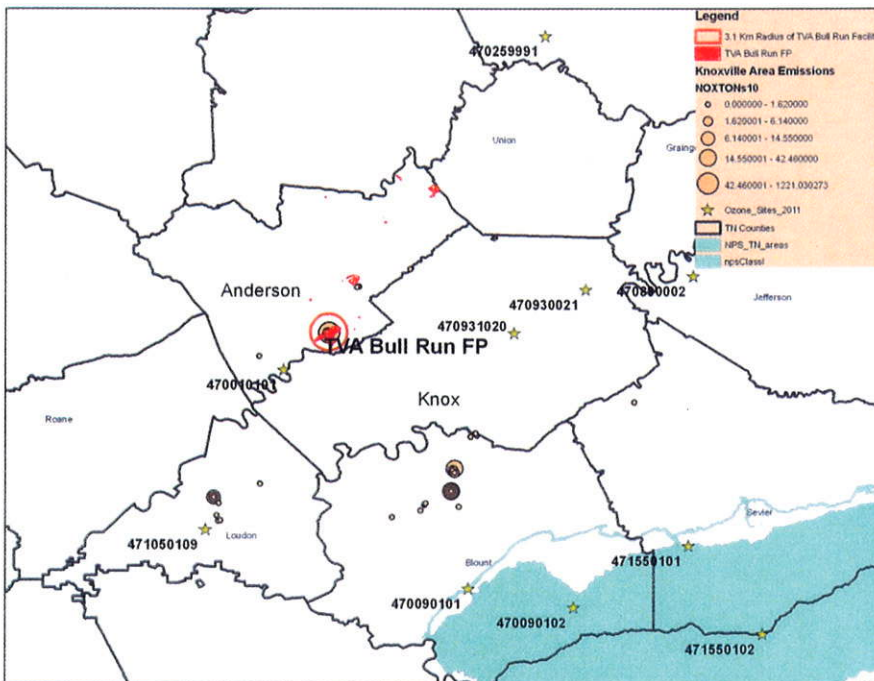
Summary: The TAPCD recommends that Shelby County be designated as attainment for Ozone.

Attachment 1
Proposed Anderson County Partial Designation
Census Tract Information

Proposed Anderson County Partial Designation 3 Kilometer Radius



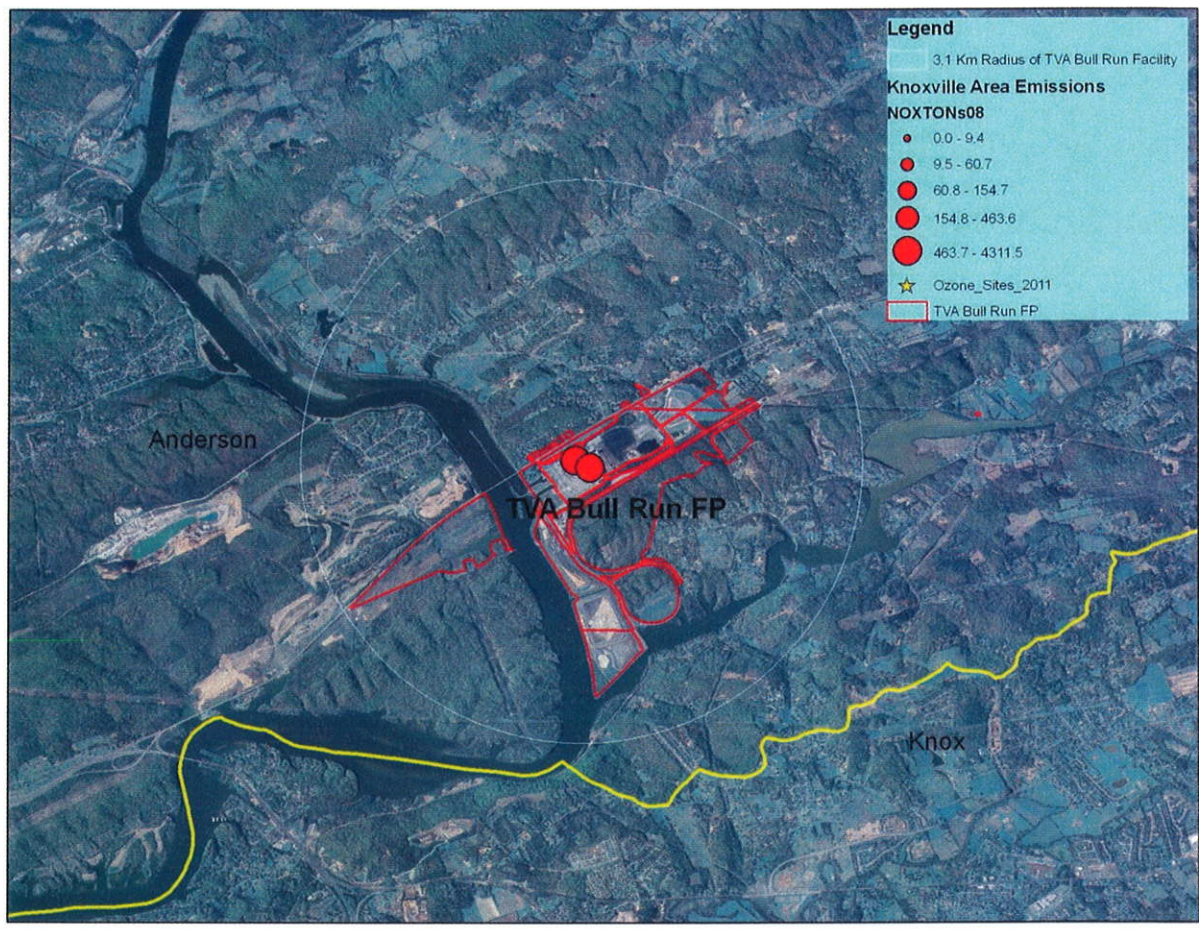
2008 NOx



2010 NOx

Note that the additional red properties in Anderson County are owned by TVA but are not part of the TVA Bull Run Fossil Plant.

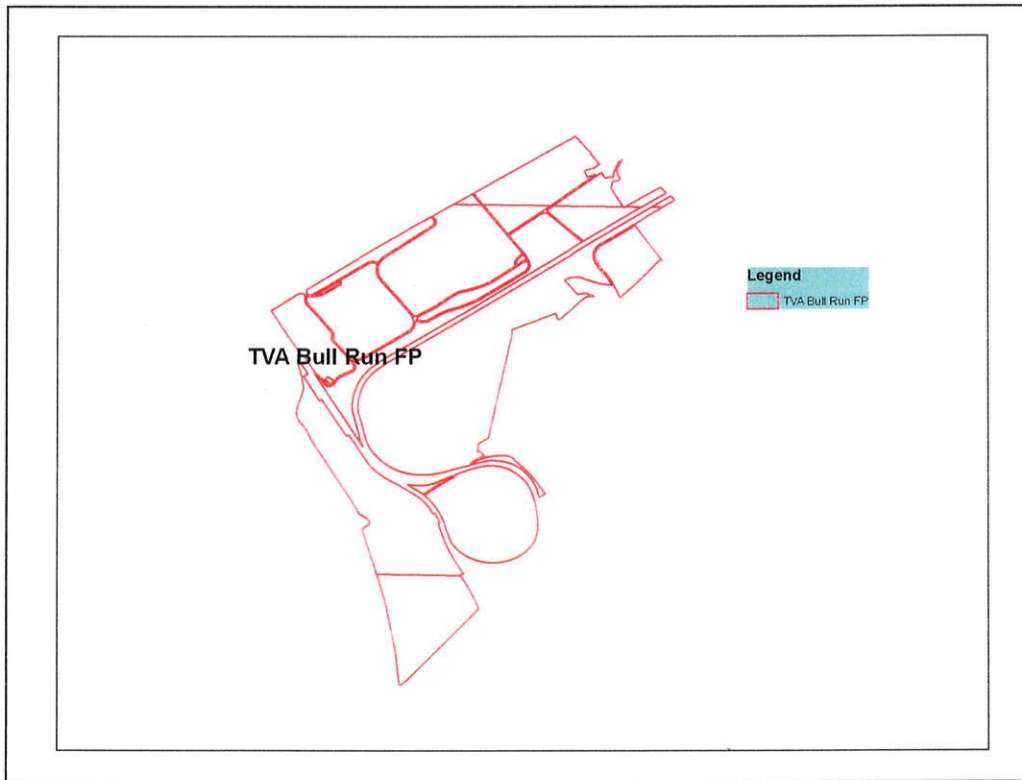
Close-Up of the Anderson County 3 Kilometer Radius Around TVA Bull Run



Partial Anderson County nonattainment area consisting of a 3.1 Km radius circle centered on the TVA Bull Run FP with a center of 36.021 latitude, -84.156 longitude.

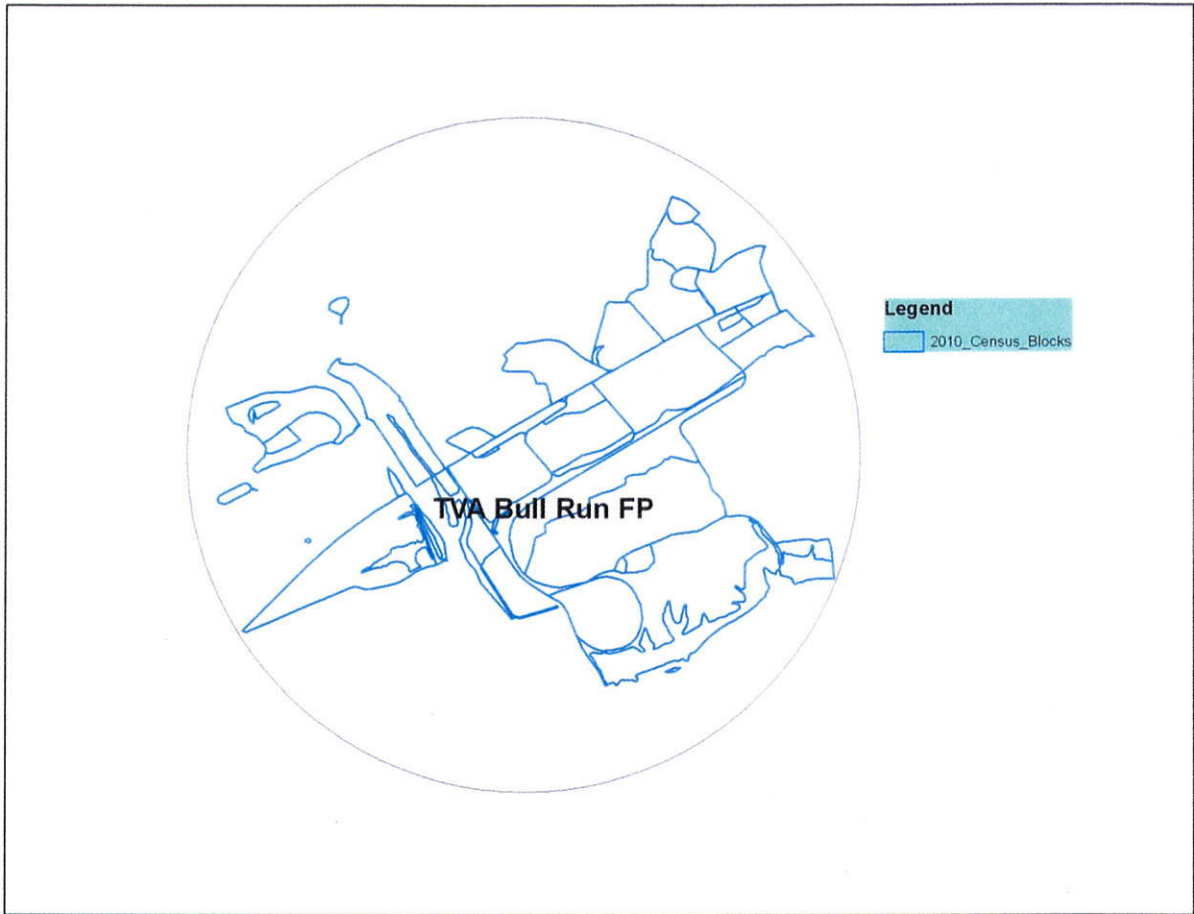
Parcel Information	
COUNTY_ID	1
CALC_ACRE	674.4899902
SHAPE_AREA	4853719.298
PARCELID	A001101 00900 000101 CA
ID	101 009.00
ST_NUM	
STREET	BULL RUN
ADDRESS	BULL RUN
OWNER	TVA
PROPTYPE	4
PT	04 FEDERAL
UPDSORT	20050412
UPDATED	4/12/2005

Table 1 TVA Bull Run Parcel Details



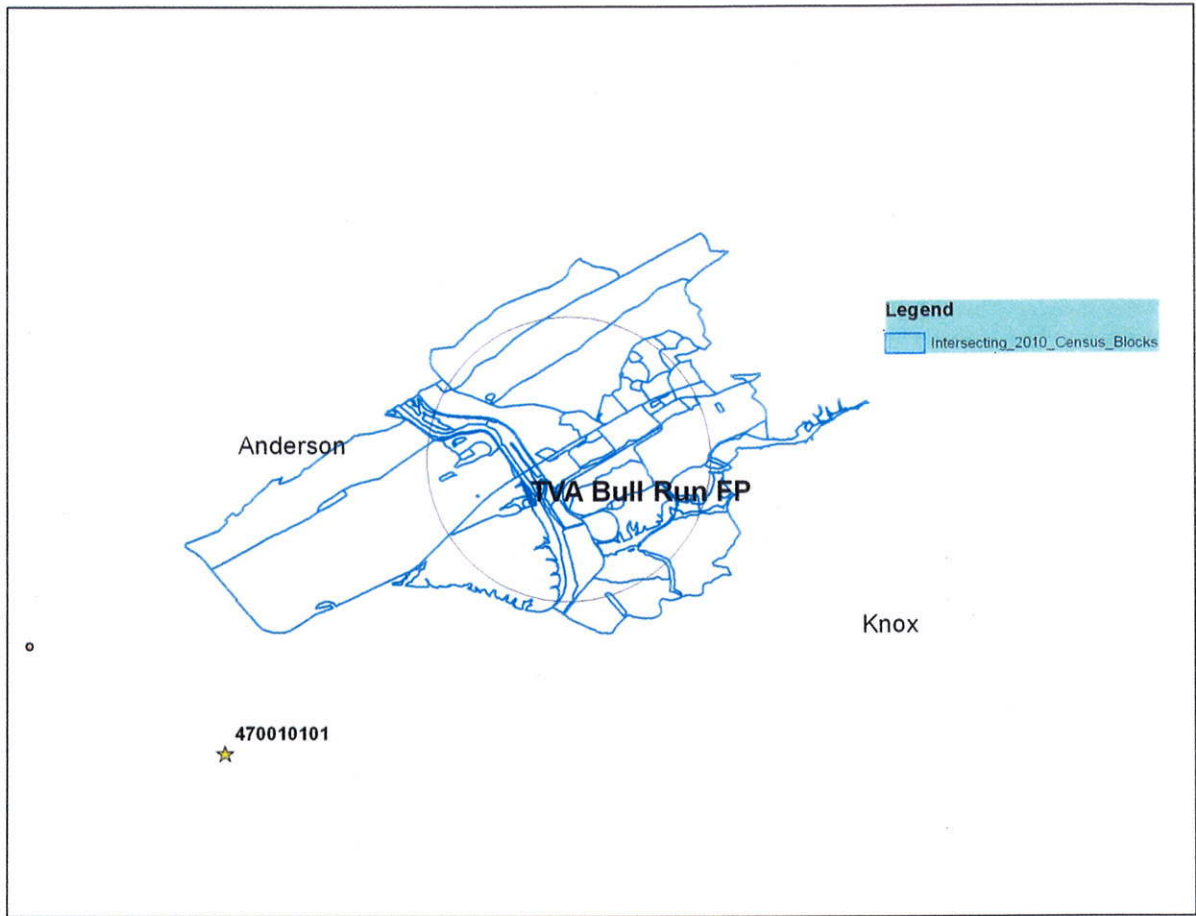
BLOCKID	TOTAL POP	STATE	COUNTY	TRACT	NAME	AREA LAND
470010202011002	0	47	1	20201	Block 1002	12647
470010202011003	0	47	1	20201	Block 1003	584278
470010202011004	0	47	1	20201	Block 1004	0
470010202011005	0	47	1	20201	Block 1005	0
470010202011006	0	47	1	20201	Block 1006	12857
470010202011008	167	47	1	20201	Block 1008	251436
470010202011009	0	47	1	20201	Block 1009	515
470010202011026	0	47	1	20201	Block 1026	261
470010202011027	131	47	1	20201	Block 1027	133627
470010202011029	15	47	1	20201	Block 1029	22879
470010202011030	2	47	1	20201	Block 1030	992
470010202011033	39	47	1	20201	Block 1033	34924
470010202011066	21	47	1	20201	Block 1066	20879
470010213011004	6	47	1	21301	Block 1004	15974
470010213011005	0	47	1	21301	Block 1005	302
470010213021002	50	47	1	21302	Block 1002	174876
470010213021006	56	47	1	21302	Block 1006	253174
470010213021007	21	47	1	21302	Block 1007	39472
470010213021010	5	47	1	21302	Block 1010	47836
470010213021017	0	47	1	21302	Block 1017	5721
470010213021018	74	47	1	21302	Block 1018	241849
470010213021019	42	47	1	21302	Block 1019	202221
470010213021020	0	47	1	21302	Block 1020	461
470010213021021	0	47	1	21302	Block 1021	0
470010213021022	0	47	1	21302	Block 1022	13564
470010213021023	29	47	1	21302	Block 1023	205739
470010213021024	36	47	1	21302	Block 1024	34760
470010213021025	0	47	1	21302	Block 1025	2037
470010213023025	0	47	1	21302	Block 3025	0
470010213023041	21	47	1	21302	Block 3041	57078
470010213024011	14	47	1	21302	Block 4011	163632
470010213024015	114	47	1	21302	Block 4015	894796
470010213024016	0	47	1	21302	Block 4016	183888
470010213024017	0	47	1	21302	Block 4017	5116
470010213024018	0	47	1	21302	Block 4018	42948
470010213024019	47	47	1	21302	Block 4019	553145
470010213024020	142	47	1	21302	Block 4020	67820
470010213024021	67	47	1	21302	Block 4021	16060
470010213024022	16	47	1	21302	Block 4022	10327
470010213024023	135	47	1	21302	Block 4023	47703
470010213024024	0	47	1	21302	Block 4024	355
470010213024025	142	47	1	21302	Block 4025	751634
470010213024026	0	47	1	21302	Block 4026	0
470010213024027	36	47	1	21302	Block 4027	41112
470010213024028	9	47	1	21302	Block 4028	9241
470010213024029	2	47	1	21302	Block 4029	491285
470010213024030	0	47	1	21302	Block 4030	330483
470010213024031	0	47	1	21302	Block 4031	65120
470010213024032	0	47	1	21302	Block 4032	3721
470010213024033	0	47	1	21302	Block 4033	1268
470010213024034	0	47	1	21302	Block 4034	59715
470010213024035	0	47	1	21302	Block 4035	284982
470010213024037	0	47	1	21302	Block 4037	0
470010213024038	0	47	1	21302	Block 4038	67105
470010213024039	0	47	1	21302	Block 4039	92461
470010213024040	0	47	1	21302	Block 4040	0
470010213024042	0	47	1	21302	Block 4042	5758
470010213024044	0	47	1	21302	Block 4044	2044
470010213024047	0	47	1	21302	Block 4047	312283

Table 2 Census Block Population and Area Within 3.1 Km Radius Area



BLOCKID	TOTAL POP	STATE	COUNTY	TRACT	NAME	AREA LAND
470010202011000	0	47	1	20201	Block 1000	0
470010202011001	0	47	1	20201	Block 1001	0
470010202011002	0	47	1	20201	Block 1002	12647
470010202011003	0	47	1	20201	Block 1003	584278
470010202011004	0	47	1	20201	Block 1004	0
470010202011005	0	47	1	20201	Block 1005	0
470010202011006	0	47	1	20201	Block 1006	12857
470010202011007	0	47	1	20201	Block 1007	94478
470010202011008	167	47	1	20201	Block 1008	251436
470010202011009	0	47	1	20201	Block 1009	515
470010202011013	17	47	1	20201	Block 1013	3854364
470010202011023	377	47	1	20201	Block 1023	9524633
470010202011026	0	47	1	20201	Block 1026	261
470010202011027	131	47	1	20201	Block 1027	133627
470010202011029	15	47	1	20201	Block 1029	22879
470010202011030	2	47	1	20201	Block 1030	992
470010202011033	39	47	1	20201	Block 1033	34824
470010202011053	33	47	1	20201	Block 1053	3614940
470010202011066	21	47	1	20201	Block 1066	20879
470010213011002	286	47	1	21301	Block 1002	3975067
470010213011004	6	47	1	21301	Block 1004	15974
470010213011005	0	47	1	21301	Block 1005	302
470010213011007	140	47	1	21301	Block 1007	2443731
470010213021000	391	47	1	21302	Block 1000	3689597
470010213021002	50	47	1	21302	Block 1002	174876
470010213021003	77	47	1	21302	Block 1003	331549
470010213021004	84	47	1	21302	Block 1004	202592
470010213021006	56	47	1	21302	Block 1006	253174
470010213021007	21	47	1	21302	Block 1007	39472
470010213021009	204	47	1	21302	Block 1009	1642448
470010213021010	5	47	1	21302	Block 1010	47836
470010213021011	0	47	1	21302	Block 1011	40011
470010213021012	0	47	1	21302	Block 1012	59694
470010213021013	0	47	1	21302	Block 1013	0
470010213021014	0	47	1	21302	Block 1014	105441
470010213021015	0	47	1	21302	Block 1015	0
470010213021017	0	47	1	21302	Block 1017	5721
470010213021018	74	47	1	21302	Block 1018	241849
470010213021019	42	47	1	21302	Block 1019	202221
470010213021020	0	47	1	21302	Block 1020	461
470010213021021	0	47	1	21302	Block 1021	0
470010213021022	0	47	1	21302	Block 1022	13564
470010213021023	29	47	1	21302	Block 1023	205739
470010213021024	36	47	1	21302	Block 1024	34760
470010213021025	0	47	1	21302	Block 1025	2037
470010213022029	49	47	1	21302	Block 2029	245256
470010213023022	0	47	1	21302	Block 3022	0
470010213023023	21	47	1	21302	Block 3023	144190
470010213023024	21	47	1	21302	Block 3024	159569
470010213023025	0	47	1	21302	Block 3025	0
470010213023026	0	47	1	21302	Block 3026	0
470010213023028	114	47	1	21302	Block 3028	459981
470010213023029	13	47	1	21302	Block 3029	33132
470010213023031	151	47	1	21302	Block 3031	1888579
470010213023032	20	47	1	21302	Block 3032	90873
470010213023041	21	47	1	21302	Block 3041	57078
470010213024008	350	47	1	21302	Block 4008	2494469
470010213024011	14	47	1	21302	Block 4011	163632
470010213024012	129	47	1	21302	Block 4012	165915
470010213024013	19	47	1	21302	Block 4013	52962
470010213024015	114	47	1	21302	Block 4015	894796
470010213024016	0	47	1	21302	Block 4016	183888
470010213024017	0	47	1	21302	Block 4017	5116
470010213024018	0	47	1	21302	Block 4018	42948
470010213024019	47	47	1	21302	Block 4019	553145
470010213024020	142	47	1	21302	Block 4020	67820
470010213024021	67	47	1	21302	Block 4021	16060
470010213024022	16	47	1	21302	Block 4022	10327
470010213024023	135	47	1	21302	Block 4023	47703
470010213024024	0	47	1	21302	Block 4024	355
470010213024025	142	47	1	21302	Block 4025	751634
470010213024026	0	47	1	21302	Block 4026	0
470010213024027	36	47	1	21302	Block 4027	41112
470010213024028	9	47	1	21302	Block 4028	9241
470010213024029	2	47	1	21302	Block 4029	491285
470010213024030	0	47	1	21302	Block 4030	330483
470010213024031	0	47	1	21302	Block 4031	65120
470010213024032	0	47	1	21302	Block 4032	3721
470010213024033	0	47	1	21302	Block 4033	1268
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470010213024035	0	47	1	21302	Block 4035	284982
470010213024036	0	47	1	21302	Block 4036	804097
470010213024037	0	47	1	21302	Block 4037	0
470010213024038	0	47	1	21302	Block 4038	67105
470010213024039	0	47	1	21302	Block 4039	92461
470010213024040	0	47	1	21302	Block 4040	0
470010213024041	0	47	1	21302	Block 4041	0
470010213024042	0	47	1	21302	Block 4042	3758
470010213024043	124	47	1	21302	Block 4043	729124
470010213024044	0	47	1	21302	Block 4044	2044
470010213024045	176	47	1	21302	Block 4045	1471062
470010213024046	64	47	1	21302	Block 4046	52090
470010213024047	0	47	1	21302	Block 4047	312283

Table 3 Census Block Population and Area Intersecting 3.1 Km Radius Area



Attachment 2
EGU Contributions to Nonattaining
Crittenden County Monitor

Acid Rain Program 2010 emissions data were reviewed for electricity generating units (EGUs) in Tennessee, Kentucky, Arkansas, Mississippi, and Missouri to determine if there was a difference in the level of control for each State (Table 1). While some differences were observed between the highest (Arkansas and Kentucky) and lowest Statewide emission rates (Missouri and Tennessee), significant differences were not observed from the Statewide data.

State	Year	NO _x Emissions (tons)	Heat Input (MMBtu)	NO _x Emission Rate (lb/MMBtu)
AR	2010	18,300	197,408,060	0.19
KY	2010	39,030	431,731,520	0.18
MS	2010	16,088	205,331,109	0.16
MO	2010	25,467	357,643,413	0.14
TN	2010	14,469	209,233,087	0.14

While the level of control appeared to be similar for all States, significant variation was observed for individual EGUs within the region (Table 2). Specifically, two large Arkansas EGUs (White Bluff and Independence) were identified, and review of a map suggested that both facilities were within 100-150 miles of Crittenden County. When facility locations were plotted against a back-trajectory analysis for the three worst days¹ from 2009 – 2011 (Figure 1), both facilities located along the 2,500 meter back-trajectory line for July 11, 2010. The back-trajectory analysis indicated additional large EGUs (Figure 2) located on or near the back-trajectory lines, and these facilities were also noted as potential NO_x contributors to the Crittenden County monitor. Finally, the Acid Rain Program data indicated multiple facilities that did not lie along the back-trajectory lines, but whose emissions and/or proximity could contribute to regional transport of NO_x at the violating monitor.

State	Facility	NO _x Emissions (tons)	NO _x Emission Rate (lb/MMBtu)
AR	White Bluff	8,165	0.29
AR	Independence	6,364	0.24
TN	Johnsonville	4,936	0.30
MO	Labadie	4,029	0.11
MO	Sioux	3,109	0.26
MS	Baxter Wilson	2,780	0.31
TN	Cumberland	2,240	0.07
AR	Flint Creek Power Plant	2,210	0.26
TN	Gallatin	2,062	0.15
MO	Rush Island	1,719	0.09
MO	New Madrid Power Plant	1,615	0.10
MS	Red Hills Generation Facility	1,166	0.12
MO	Sikeston	878	0.21

¹ Back trajectories were plotted for June 21, 2010, July 2, 2011, and July 9, 2011. The monitor would have attained the NAAQS for 2009 – 2011 if not for these three days.

Table 2: Ozone Season NO _x Emissions for Selected Facilities (2010 ARP Data) Ranked by Total NO _x Emissions			
State	Facility	NO _x Emissions (tons)	NO _x Emission Rate (lb/MMBtu)
TN	Allen	783	0.06

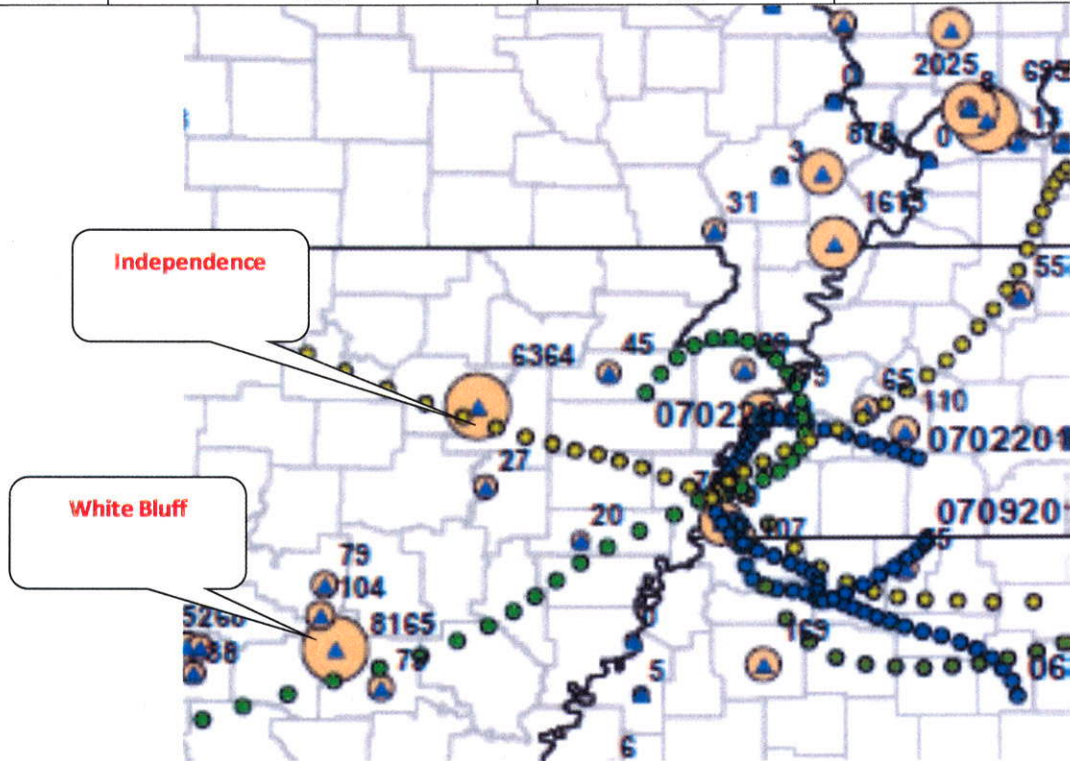


Figure 1: Back-Trajectory Analysis Showing White Bluff and Independence EGUs

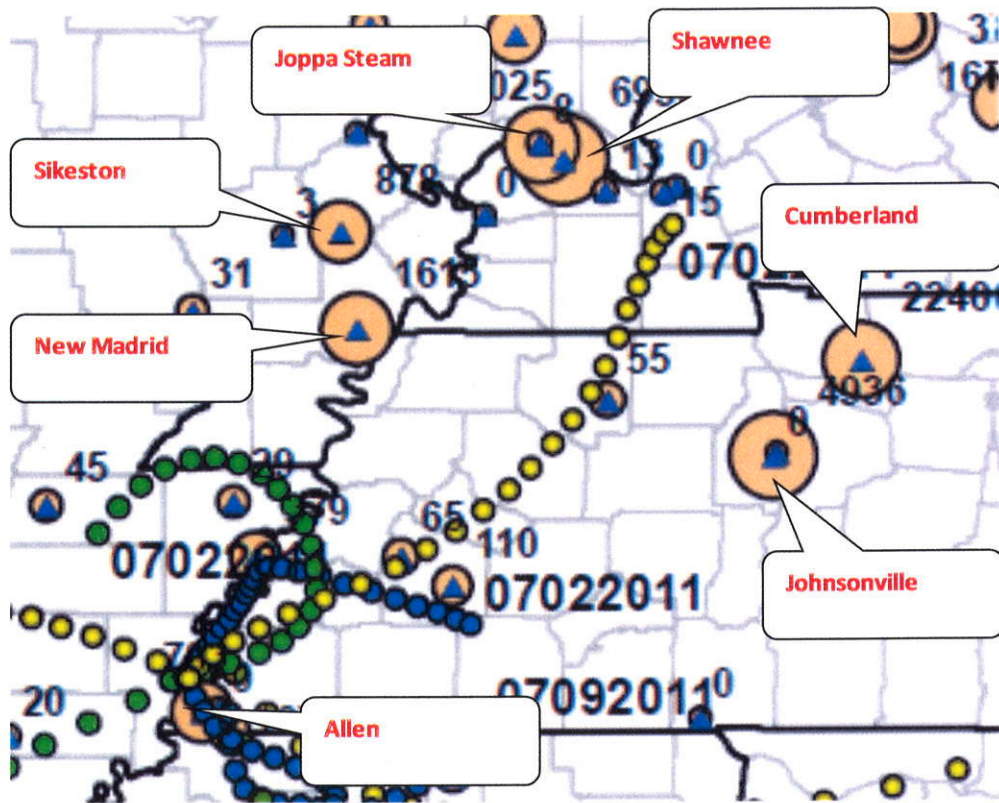
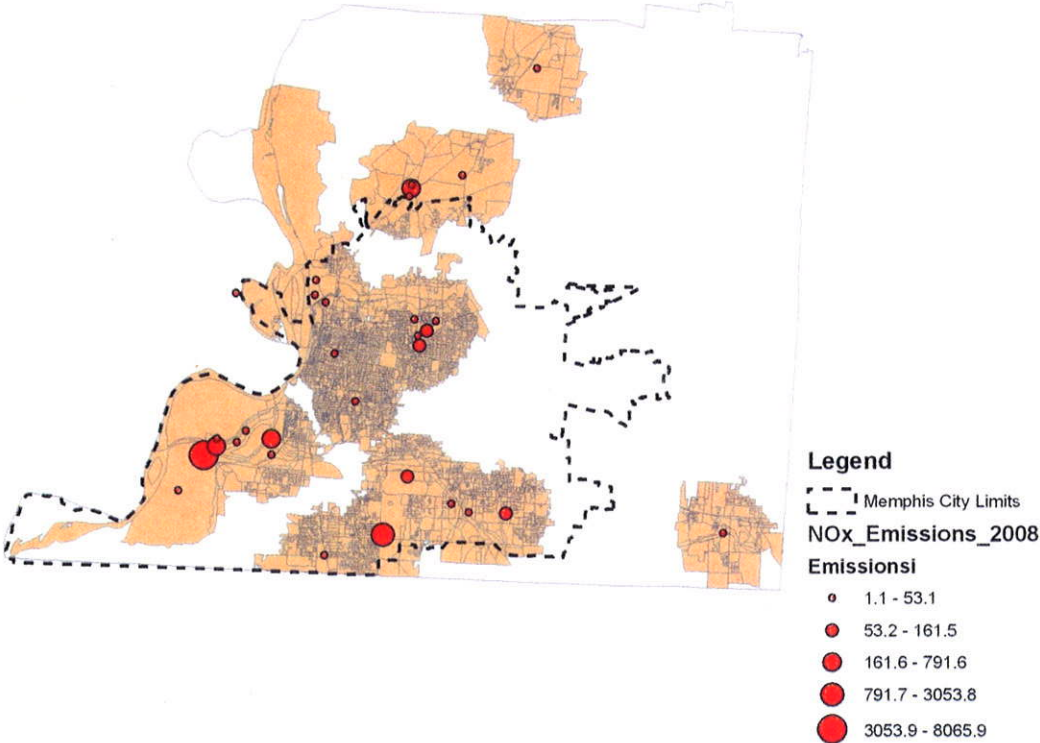


Figure 2: Back-Trajectory Analysis Showing Allen, Cumberland, Johnsonville, Joppa, New Madrid, Shawnee, and Sikeston EGUs

Attachment 3
Other Data Relevant to the
Shelby County Recommendation

Shelby County NO_x Sources and the Memphis City Limits



Shelby County VOC Sources and the Memphis City Limits

