

STATE OF TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION Air Pollution Control Division 9th Floor, L & C Annex, 401 Church Street, Nashville, TN 37243

June 3, 2011

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

RE: Tennessee's 2011 Sulfur Dioxide Designations Recommendations

Dear Ms. Fleming:

On behalf of the Commissioner of the Tennessee Department of Environment and Conservation, I am submitting the background document for the recommended sulfur dioxide ambient air quality designations for the 2011 primary sulfur dioxide standard. Tennessee's recommendations were submitted to you by Commissioner Martineau on May 26, 2011 and contained the following recommendations for designation as nonattainment for the revised primary sulfur dioxide national ambient air quality standard.

Tri-Cities Area Sullivan County **Calhoun-Charleston Area** Bradley and McMinn Counties⁽¹⁾

(1) Tennessee recommends that Bradley and McMinn counties be partially designated nonattainment for the portions of the counties limited to a circle centered on Universal Transverse Mercator (UTM) coordinate 703.927 kilometers E, 3908.144 kilometers N, with a radius of 2.0 kilometers. This area encompasses a pulp and paper mill that is the primary source of sulfur dioxide emissions in the two county area.

The remaining counties of Tennessee and the remaining portions of Bradley and McMinn Counties that are not specified above are each recommended as unclassifiable, and these counties may be subject to additional control measures that will help all of Tennessee demonstrate attainment of the 1-hour standard.

I believe these recommendations will enable Tennessee to attain the sulfur dioxide standard within the deadlines established by the Clean Air Act and its implementation regulations.

Gwendolyn Keyes Fleming, Regional Administrator US EPA, Region IV June 3, 2011 Page 2

Your favorable review of these recommendations will be appreciated. These recommendations may be revised as additional information becomes available.

Sincerely,

Quincy N. Style III

Barry R. Stephens, P.E., Director Division of Air Pollution Control

Enclosure

Copy to:

Commissioner Martineau Beverly H. Banister, Director Air, Pesticides and Toxics Management Division, EPA Region IV Dick Schutt, Chief, Air Planning Branch, EPA Region IV Tennessee Air Pollution Control Board Tennessee Local Air Programs





Tennessee 2010 Sulfur Dioxide 1-Hour Standard Nonattainment Area Designations Five-Factor Analysis

Executive Summary

On June 22, 2010, the U.S. Environmental Protection Agency published the new primary sulfur dioxide standard of 75 parts per billion (ppb). It was signed by Administrator Jackson on June 2, 2010. Pursuant to the Clean Air Act, the states have one year from issuance of the new standard to recommend areas of the state as nonattainment or attainment with the new standard. This technical summary document presents the State of Tennessee's recommendations. As detailed in Table 1, the TAPCD recommends one county (Sullivan) be designated nonattainment and two counties (Bradley and McMinn) partially designated nonattainment with the new SO2 standard. Tennessee recommends that the remaining 92 counties and remaining portions of Bradley and McMinn counties <u>each</u> be designated as unclassifiable, as listed in Appendix 3. The unclassifiable designation is requested rather than attainment because of the lack of modeling data and will likely change as additional information becomes available. These recommendations are based on the five-factor analysis outlined in the EPA guidance dated March 24, 2011. The TAPCD evaluated the counties shown below (Figure A) in each metropolitan statistical area (MSA) or micropolitan statistical area. The following is a summary of each MSA/MiSA in which at least one non-attaining monitor is located.

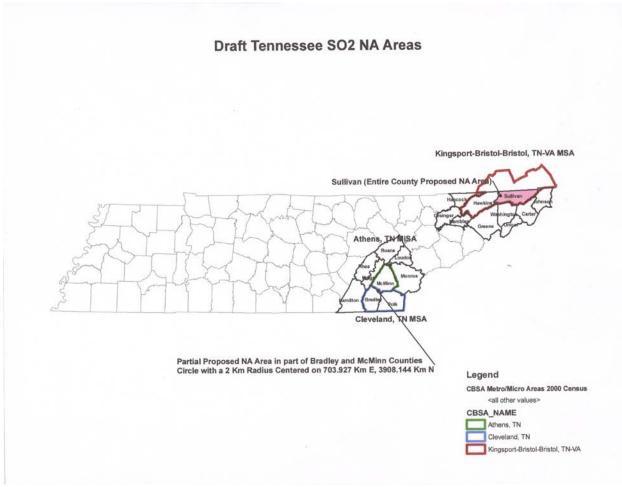


Figure A – Tennessee Proposed Designations

Tennessee 8-Hour Sulfur dioxide Nonattainment Designations – Five-Factor Analysis

		2010 Standard Recommendation	
2009 MSA	County	Unclassifiable	Nonattainment
Kingsport-Bristol-	Hawkins	Yes	
Bristol TN-VA MSA	Sullivan		Yes
Athens MiSA	McMinn ⁽¹⁾		Partial
Cleveland MSA	Bradley ⁽²⁾		Partial
	Polk	Yes	

Table 1 - Tennessee 1-Hour Sulfur Dioxide County Designations

⁽¹⁾ McMinn County is recommended to be partially designated nonattainment for that portion of the county contained in a circle centered on Universal Transverse Mercator (UTM) coordinate 703.927 kilometers E, 3908.144 kilometers N, with a radius of 2.0 kilometers. This area encompasses a pulp and paper mill that is the primary source of sulfur dioxide emissions in the two county area.

⁽²⁾ Bradley County is a Micropolitan Statistical Area (MiSA). It is recommended to be partially designated nonattainment for that portion of the county contained in a circle centered on Universal Transverse Mercator (UTM) coordinate 703.927 kilometers E, 3908.144 kilometers N, with a radius of 2.0 kilometers. This area encompasses a pulp and paper mill that is the primary source of sulfur dioxide emissions in the two county area.

(1) Kingsport-Bristol (TN)-Bristol (VA), MSA

The TAPCD is recommending that one county in this Metropolitan Statistical Area be classified as nonattainment for the 2010 primary sulfur dioxide (SO_2) standard. The single nonattainment county is Sullivan, and it was formerly classified as attainment. The air monitoring data in this county (Sullivan) showed a design value for 2008-2010 data that exceeded the new standard. The TAPCD recommends that Hawkins County be designated unclassifiable.

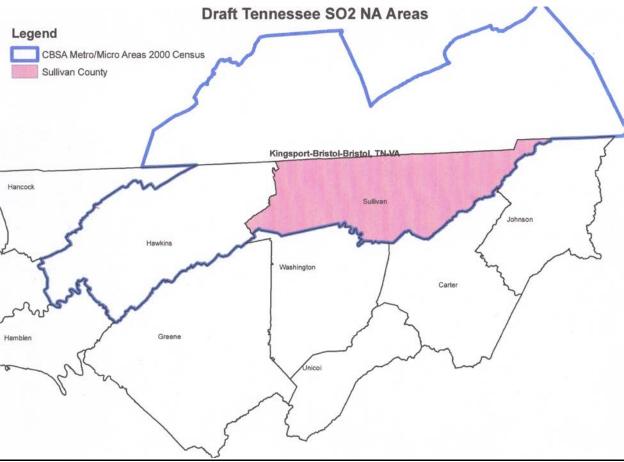


Figure 1 – Sullivan County

COUNTY SUMMARY

The following is a county summary of the factors that were considered in the inclusion/exclusion evaluation for the Kingsport-Bristol area. These factors include air quality data, emissions-related data, meteorology, geography/topography. and jurisdictional boundaries, as well as other available data. All factors in the applicable EPA guidance were considered.

Sullivan County

- Recommendation: nonattainment
- Air Quality Data: There are two sulfur dioxide monitors in Sullivan County. One of these monitors did not have a complete data set for 2008-2010. The remaining sulfur dioxide monitor in Sullivan County showed a design value for 2008-2010 data that is greater than the new standard of 75 ppb.
- Emissions: 21,980.51 tons per year of SO₂ emissions allowable from point sources, this includes facility and airport emissions. 38.98 tons per year of SO₂ emissions from mobile sources, on-road and non-road. 4,139.19 tons per year of SO₂ emissions from area sources.
- Meteorology: The winds are climatologically from the west, west-southwest, and southwest.
- Geography/topography: Most of the county is located in the Ridge and Valley Geographic Region, which covers 7,703 square miles and is situated between the Cumberland Plateau and the Unaka Mountains. This county is a rural area with urban centers. The topography of this region consists of

long linear ridges with elevations of 1100 to 1500 feet, and parallel lowland valleys, where the elevations vary from 700 to 1000 feet. The ridges and valleys are typically oriented from northeast to southwest. Generally, the ridges and valleys have a higher elevation in the northern part of the region and slightly less elevated in the south.

- Jurisdictional boundaries: Entire county.
- Population: 154,552 people and 374.2 people per square mile.

Summary: The TAPCD recommends that Sullivan County be designated as nonattainment for sulfur dioxide. The county contribution to the Kingsport-Bristol (TN)-Bristol (VA), TN-VA MSA remains to be determined for the entire MSA, which includes portions of Virginia. For the Tennessee portion of this MSA, the county contribution for sulfur dioxide is 46.8%, of which the majority (39.3%) is from point sources. About 72.8% of the population in the two county TN part of the MSA reside in Sullivan County. The population density is 374.2 per square mile. The county is a rural area with urban centers.

Hawkins County

- Recommendation: Unclassifiable
- Air Quality Data: There are no sulfur dioxide monitors in Hawkins County.
- Emissions: 29,664.13 tons per year of SO₂ emissions allowable from point sources, including facility and airport emissions. 11.48 tons per year of SO₂ emissions from mobile sources, on-road and non-road. 82.35 tons per year of SO₂ emissions from area sources.
- Meteorology: The winds are climatologically from the west, west-southwest, and southwest.
- Geography/topography: The county is located in the Ridge and Valley Geographic Region, which covers 7,703 square miles and is situated between the Cumberland Plateau and Unaka Mountains. The topography of this region consists of long linear ridges with elevations of 1,100 to 1,500 feet, and parallel lowland valleys, where the elevations vary from 700 to 1,000 feet. The ridges and valleys are typically oriented from northeast to southwest. Generally, the ridges and valleys have a higher elevation in the northern part of the region and slightly less elevated in the south.
- Jurisdictional boundaries: Entire county
- Population: 57,784 people and 118.7 people per square mile.

Summary: The TAPCD recommends that Hawkins County be designated as unclassifiable for sulfur dioxide. The county contribution to the Kingsport-Bristol (TN)-Bristol (VA), TN-VA MSA remains to be determined for the entire MSA, which includes portions of Virginia. For the Hawkins County TN part of this MSA, the county contribution for sulfur dioxide is 53.2%, of which the majority (99.7%) is from point sources. About 27.2% of the population in the two-county TN part of the MSA reside in Hawkins County. The population density is 118.7 per square mile. The county is almost entirely rural and agrarian.

(2) Cleveland TN MSA and Athens TN MiSA

Bradley County is included in the Cleveland, TN Metropolitan Statistical Area that includes Polk County, and McMinn County is the only county in the Athens, TN Micropolitan Statistical Area. There is no sulfur dioxide monitor in Polk County. Tennessee recommends that Bradley and McMinn counties be designated partially nonattainment for the portions of the counties limited to a circle centered on Universal Transverse

Mercator (UTM) coordinate 703.927 kilometers E, 3908.144 kilometers N, with a radius of 2.0 kilometers, and that Polk County and the remainder of Bradley and McMinn counties be designated unclassifiable. This area encompasses a pulp and paper mill that is the primary source of sulfur dioxide emissions in the two-county area. Note: Bowater is now AbitibiBowater.

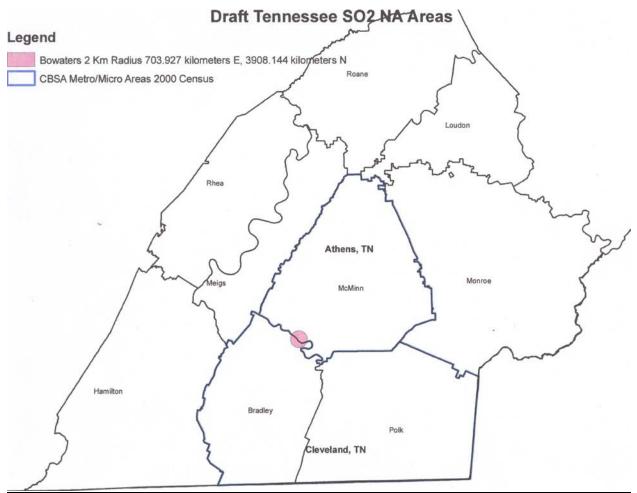


Figure 2 – Bradley and McMinn Counties

COUNTY BY COUNTY SUMMARY

The following is a county summary of the factors that were considered in the inclusion/exclusion evaluation for the Bradley, Polk, and McMinn Counties area. These factors include air quality data, emissions-related data, meteorology, geography/topography. and jurisdictional boundaries, as well as other available data. All factors in the applicable EPA guidance were considered.

Bradley County

- Recommendation: partial nonattainment, remainder unclassifiable
- Air Quality Data: This county has one sulfur dioxide monitor. This monitor showed a design value for 2008-2010 data that is greater than the new standard of 75 ppb.

- Emissions: 489 tons per year of SO₂ emissions from point sources, including facility and airport emissions. 26.962 tons per year of SO₂ emissions from mobile sources, on-road and non-road. 2,563.82 tons per year of SO₂ emissions from area sources with the majority of the emissions coming from Source Classification Code 2102002000, Industrial Bituminous/Subbituminous Coal.
- Meteorology: The winds are climatologically from the South, North, and Southwest.
- Geography/topography: The county is located in the Ridge and Valley Geographic Region, which covers 7,703 square miles and is situated between the Cumberland Plateau and Unaka Mountains. The topography of this region consists of long linear ridges with elevations of 1,100 to 1,500 feet, and parallel lowland valleys, where the elevations vary from 700 to 1,000 feet. The ridges and valleys are typically oriented from northeast to southwest. Generally, the ridges and valleys have a higher elevation in the northern part of the region and slightly less elevated in the south.
- Jurisdictional boundaries: The portions of the county contained in a circle centered on Universal Transverse Mercator (UTM) coordinate 703.927 kilometers E, 3908.144 kilometers N, with a radius of 2.0 kilometers.
- 97,710 people and 297.0 people per square mile.

Summary: The TAPCD recommends that Bradley County be designated as partially nonattainment for sulfur dioxide, with the remaining part of the county unclassifiable. For the Bradley County TN part of the Cleveland TN MSA, the county contribution for sulfur dioxide is 96.8%, of which the majority (80.6%) is from area sources. About 86.2% of the population in the Cleveland MSA reside in Bradley County. For the three-county area (Bradley, Polk, and McMinn), the county contribution for sulfur dioxide is 41.5%, of which the majority (34.5%) is from area sources. About 58.8% of the population in the three-county area reside in Bradley County. The population density is 297.0 per square mile. The county is a mostly rural area.

Polk County

- Recommendation: unclassifiable
- Air Quality Data: This county does not have a sulfur dioxide monitor.
- Emissions: 0.06 tons per year of SO₂ emissions from point sources, this includes facility and airport emissions. 4.33 tons per year of SO₂ emissions from mobile sources, on-road and non-road. 96.20 tons per year of SO₂ emissions from area sources.
- Meteorology: The winds are climatologically from the South, North, and Southwest.
- Geography/topography: Most of the county is located in the Unaka Mountains Region, which covers 2523 square miles and is the eastern most physiographic province in Tennessee. The Unaka Mountains are known for having the highest and most rugged terrain in Tennessee. The highest point in both the region and Tennessee is Clingman's Dome (6,643 feet) in Sevier County. In addition to Clingman's Dome, there are 13 mountain peaks with elevations above 6,000 feet and 33 peaks with elevations above 5,000 feet. The topography includes lofty mountain ridges and peaks, narrow lowland valleys, and isolated coves, which are heavily forested and deeply carved by precipitous stream valleys.
- Jurisdictional boundaries: Entire county
- Population: 15,648 people and 36.0 people per square mile.

Summary: The TAPCD recommends that Polk County be designated as unclassifiable for sulfur dioxide. For the Polk County TN part of the Cleveland TN MSA, the county contribution for sulfur dioxide is

3.2%, of which the majority (3.0%) is from area sources. About 13.8% of the population in the Cleveland MSA reside in Polk County. For the three-county area (Bradley, Polk, and McMinn), the county contribution for sulfur dioxide is 1.4%, of which the majority (1.3%) is from area sources. About 9.4% of the population in the three-county area reside in Polk County. The population density is 36.0 per square mile. The county is a mostly rural area and mostly sparsely populated mountainous region.

McMinn County

- Recommendation: partial nonattainment with the remainder unclassifiable
- Air Quality Data: This county has one sulfur dioxide monitor. This monitor showed a design value for 2008-2010 data that is greater than the new standard of 75 ppb.
- Emissions: 2519.47 tons per year of SO₂ emissions from point sources, this includes facility and airport emissions. 21.89 tons per year of SO₂ emissions from mobile sources, on-road and non-road. 1706.16 tons per year of SO₂ emissions from area sources.
- Meteorology: The winds are climatologically from the South, North, and Southwest.
- Geography/topography: Most of the county is located in the Ridge and Valley Geographic Region, which covers 7,703 square miles and is situated between the Cumberland Plateau and Unaka Mountains. The county is primarily rural. The topography of this region consists of long linear ridges with elevations of 1,100 to 1,500 feet, and parallel lowland valleys, where the elevations vary from 700 to 1,000 feet. The ridges and valleys are typically oriented from northeast to southwest. Generally, the ridges and valleys have a higher elevation in the northern part of the region and slightly less elevated in the south.
- Jurisdictional boundaries: The portions of the county contained in a circle centered on Universal Transverse Mercator (UTM) coordinate 703.927 kilometers E, 3908.144 kilometers N, with a radius of 2.0 kilometers.
- Population: 52,739 people and 122.6 people per square mile.

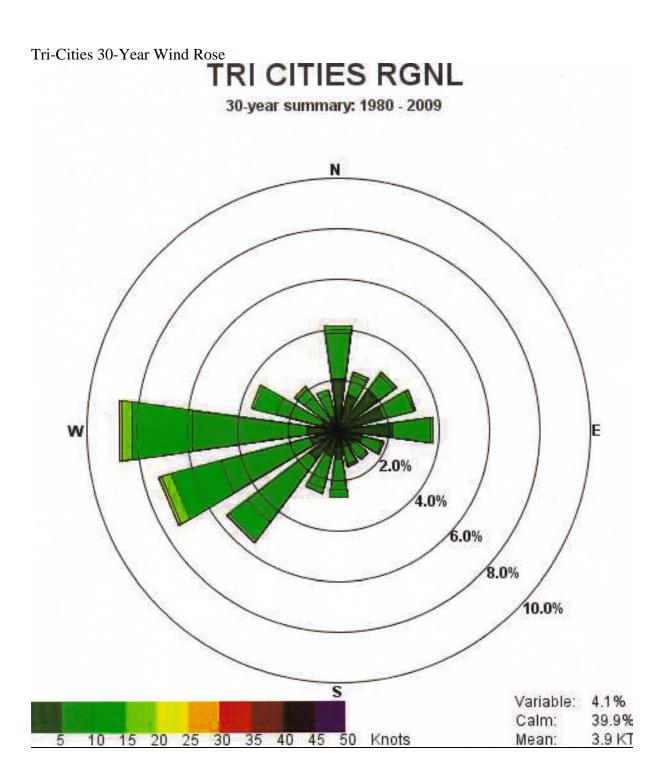
Summary: The TAPCD recommends that McMinn County be partially designated nonattainment for sulfur dioxide, with the remainder unclassifiable. For the McMinn County TN part of the affected three-county area (Bradley, Polk, and McMinn), the county contribution for sulfur dioxide is 57.2%, of which the majority (33.9%) is from point sources. About 31.8% of the population in the three-county area reside in McMinn County. The population density is 122.6 people per square mile. The county is a mostly rural area.

(3) Additional Monitoring Information

The following counties each have at least one sulfur dioxide monitor, and all monitors in these counties show attainment with the 1-hour sulfur dioxide standard:

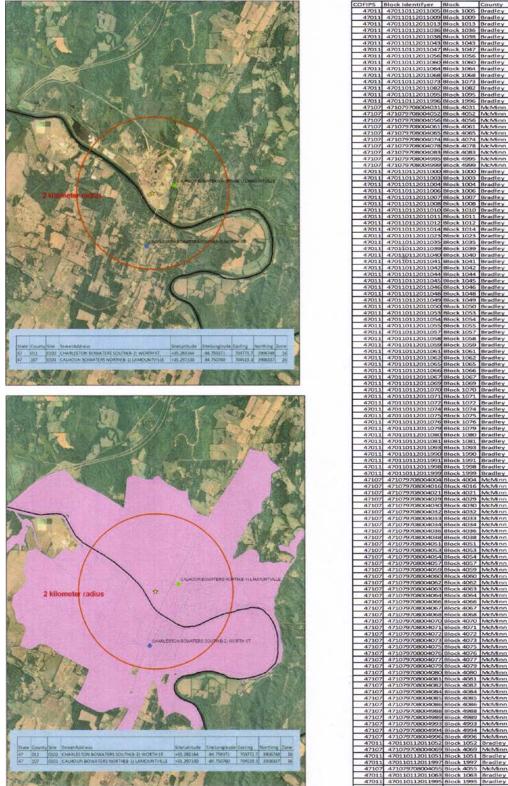
- 1. Davidson (1 monitor)
- 2. Montgomery (2 monitors)
- 3. Sevier (1 monitor)
- 4. Shelby (1 monitor)

Appendix 1: Additional Information for Sullivan County



Appendix 2: Additional Information for Bradley and McMinn Counties

2 Kilometer Radius Proposed Non-attainment Area



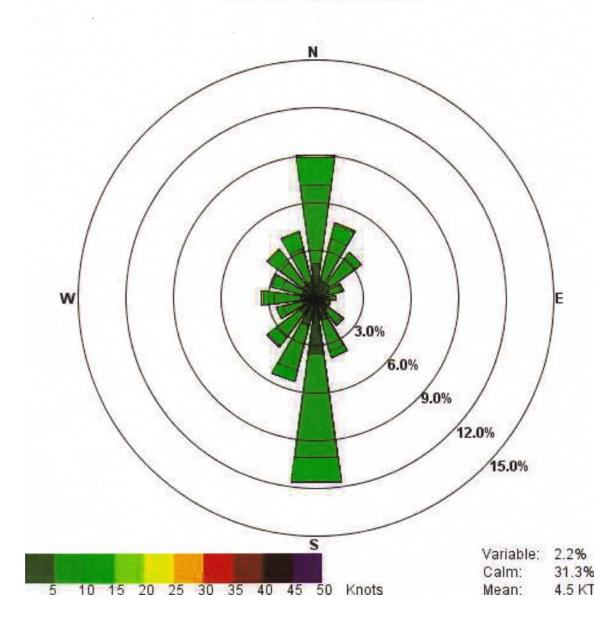
Tennessee 8-Hour Sulfur dioxide Nonattainment Designations – Five-Factor Analysis

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Chattanooga 30-Year Wind Rose CHATTANOOGA/LOVELL

30-year summary: 1980 - 2009



Appendix 3: Statewide County-by-County Designation Recommendations List

County	2010 Standard Recommendation		
	Unclassifiable		MSA/MiSA
ANDERSON	Yes	Nonattainment	Knoxville MSA
BEDFORD	Yes		Shelbyville MiSA
BENTON	Yes		N/A
BLEDSOE	Yes		N/A
BLOUNT	Yes		Knoxville MSA
BRADLEY	103	Partial	Cleveland MSA
CAMPBELL	Yes	1 artiar	La Follette MiSA
CANNON	Yes		Nashville MSA
CARROLL	Yes		N/A
CARTER	Yes		Johnson City MSA
CHEATHAM	Yes		Nashville MSA
CHEATHAM	Yes		Jackson MSA
	Yes		
CLAIBORNE			N/A
CLAY	Yes		N/A
COCKE	Yes		Newport MiSA
COFFEE	Yes		Tullahoma MiSA
CROCKETT	Yes		N/A
CUMBERLAND	Yes		Crossville MiSA
DAVIDSON	Yes		Nashville MSA
DECATUR	Yes		N/A
DEKALB	Yes		N/A
DICKSON	Yes		Nashville MSA
DYER	Yes		Dyersburg MiSA
FAYETTE	Yes		Memphis TN-MS-AR MSA
FENTRESS	Yes		N/A
FRANKLIN	Yes		Tullahoma MiSA
GIBSON	Yes		Humboldt MiSA
GILES	Yes		N/A
GRAINGER	Yes		Morristown MSA
GREENE	Yes		Greeneville MiSA
GRUNDY	Yes		N/A
HAMBLEN	Yes		Morristown MSA
HAMILTON	Yes		Chattanooga TN-GA MSA
HANCOCK	Yes		N/A
HARDEMAN	Yes		N/A
HARDIN	Yes		N/A
HAWKINS	Yes		Kingsport-Bristol-Bristol TN- VA MSA
HAYWOOD	Yes		Brownsville MiSA

Tennessee 8-Hour Sulfur dioxide Nonattainment Designations – Five-Factor Analysis

HENDERSON	Yes		N/A
HENRY	Yes		Paris MiSA
HICKMAN	Yes		Nashville MSA
HOUSTON	Yes		N/A
HUMPHREYS	Yes		N/A
JACKSON	Yes		Cookeville MSA
JEFFERSON	Yes		Morristown MSA
JOHNSON	Yes		N/A
KNOX	Yes		Knoxville MSA
LAKE	Yes		N/A
LAUDERDALE	Yes		N/A
LAWRENCE	Yes		Lawrenceburg MiSA
LEWIS	Yes		N/A
LINCOLN	Yes		N/A
LOUDON	Yes		Knoxville MSA
MCMINN		Partial	Athens MiSA
MCNAIRY	Yes		N/A
MACON	Yes		Nashville MSA
MADISON	Yes		Jackson MSA
MARION	Yes		Chattanooga TN-GA MSA
MARSHALL	Yes		Lewisburg MiSA
MAURY	Yes		Columbia MiSA
MEIGS	Yes		N/A
MONROE	Yes		N/A
MONTGOMERY	Yes		Clarksville TN-KY MSA
MOORE	Yes		Tullahoma MiSA
MORGAN	Yes		N/A
OBION	Yes		Union City MiSA
OVERTON	Yes		Cookeville MSA
PERRY	Yes		N/A
PICKETT	Yes		N/A
POLK	Yes		Cleveland MSA
PUTNAM	Yes		Cookeville MSA
RHEA	Yes		N/A
ROANE	Yes		Harriman MiSA
ROBERTSON	Yes		Nashville MSA
RUTHERFORD	Yes		Nashville MSA
SCOTT	Yes		N/A
SEQUATCHIE	Yes		Chattanooga TN-GA MSA
SEVIER	Yes		Sevierville MiSA
SHELBY	Yes		Memphis TN-MS-AR MSA
SMITH	Yes		Nashville MSA
STEWART	Yes		Clarksville TN-KY MSA

Tennessee 8-Hour Sulfur dioxide Nonattainment Designations – Five-Factor Analysis June 3, 2011 Page 16 of 17

SULLIVAN		Yes	Kingsport-Bristol-Bristol TN-
			VA MSA
SUMNER	Yes		Nashville MSA
TIPTON	Yes		Memphis TN-MS-AR MSA
TROUSDALE	Yes		Nashville MSA
UNICOI	Yes		Johnson City MSA
UNION	Yes		Knoxville MSA
VAN BUREN	Yes		N/A
WARREN	Yes		McMinnville MiSA
WASHINGTON	Yes		Johnson City MSA
WAYNE	Yes		N/A
WEAKLEY	Yes		Martin MiSA
WHITE	Yes		N/A
WILLIAMSON	Yes		Nashville MSA
WILSON	Yes		Nashville MSA