Second Ozone Maintenance Plan
for the
Knoxville, Tennessee Area
(2008 Ozone NAAQS)

Draft

January 11, 2024

Prepared by:

State of Tennessee
Department of Environment and Conservation
Division of Air Pollution Control
WRS Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243

Table of Contents

List of Tables

List of Figures

List of Appendices

List of Acronyms

Acronym	Definition
AERR	Air Emissions Reporting Requirements
AIRS	Aerometric Information Retrieval System
APC	Air Pollution Control Division
AQS	Air Quality System
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CBP	County Business Patterns
CFR	Code of Federal Regulations
CHP	Combined Heat and Power
CSAPR	Cross-State Air Pollution Rule
DAQM	Knox County Department of Air Quality Management
DV	Design Value
DVMT	Daily Vehicle Miles Traveled
EIA	Energy Information Administration
EIS	Emission Inventory System
EPA	U.S. Environmental Protection Agency
FIP	Federal Implementation Plan
FR	Federal Register
GA DNR	Georgia Department of Natural Resources
HC	Hydrocarbons
HPMS	Highway Performance Monitoring System
IAC	Interagency Consultation
KOMP	Knoxville Ozone Maintenance Plan
MAR	Commercial Marine, Aircraft, and Rail
MSA	Metropolitan Statistical Area
MOVES	Motor Vehicle Emission Simulator
MVEB	Motor Vehicle Emissions Budget
NAAQS	National Ambient Air Quality Standard
NEI	National Emission Inventory
NLEV	National Low Emission Vehicles
NOx	Nitrogen Oxides
ppb	Parts per billion
ppm	Parts per million
QA/QC	Quality Assured/Quality Controlled
RACT	Reasonably Available Control Technology
SAF	Seasonal adjustment factors
SCC	Source Classification Code
SCR	Selective Catalytic Reduction
SEMAP	Southeastern Modeling, Analysis, and Planning organization
SESARM	Southeastern States Air Resource Managers

SIP	State Implementation Plan
SNCR	Selective Non-Catalytic reduction
SUV	Sport Utility Vehicles
TDEC	Tennessee Department of Environment and Conservation
TDEC-APC	Tennessee Department of Environment and Conservation, Air Pollution Control Division
TDM	Travel Demand Model
TDOT	Tennessee Department of Transportation
TPD	tons per day
TPY	tons per day
TPO	Knoxville Transportation Planning Organization
TVA	Tennessee Valley Authority
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds

Executive Summary

This document contains the second ozone maintenance plan for the Knoxville, Tennessee area for the 2008 ozone National Ambient Air Quality Standards (NAAQS). On March 12, 2008, the U.S. Environmental Protection Agency (EPA) promulgated a revised 8-hour ozone NAAQS of 0.075 ppm. EPA subsequently designated the Knoxville area as nonattainment for the 8-hour ozone NAAQS on May 21, 2012, with an effective date of July 20, 2012. The Knoxville ozone nonattainment area includes part of Anderson County and all of Blount and Knox Counties. Air quality monitoring data for 2011 through 2013 indicated declining ozone concentrations in the Knoxville area, and the design value at the controlling monitor was 0.074 ppm. On November 14, 2014, the Tennessee Department of Environment and Conservation's Air Pollution Control Division (TDEC-APC) requested that EPA redesignate the Knoxville Area to attainment. On July 13, 2015, the EPA approved the redesignation request and maintenance plan with an effective date of August 12, 2015.

The ozone design values for all of the Knoxville area monitors for 2013 to 2022 are all equal to or below 0.075 ppm, which is the level of the 2008 ozone NAAQS. The design values for 2015 to 2022 are all equal to or below 0.070 ppm, which is the level of the 2015 ozone NAAQS.

For this second maintenance plan, an emission inventory was prepared to estimate base year (2017) nitrogen oxides (NOx) and volatile organic compounds (VOC) emissions in the Knoxville maintenance area, with emissions projections for the years 2020, 2023, 2026, 2029, 2032 and 2035. The year 2035 was chosen as the final year since it is twenty years after the effective date that the Knoxville area was redesignated from a nonattainment area to a maintenance area. For NOx, the total emissions in 2017 (39.17 ton/day) are greater than the total emissions in 2035 (25.76 ton/day). For VOC, the total emissions in 2017 (36.60 ton/day) are less than the total emissions in 2035 (44.62 ton/day). Previous modeling studies have demonstrated that anthropogenic NO_X emission reductions are much more effective at reducing 8-hour maximum ozone concentrations in the Knoxville area compared to anthropogenic VOC emission reductions. Maintenance is demonstrated since there is a decrease in NOx emissions from 2017 to 2035, the Knoxville area is NOx -limited, and monitoring design values are well below the 2008 NAAQS of 75 ppb.

This maintenance plan identifies the contingency measures to be considered for possible adoption, a schedule for adoption and implementation of the selected contingency measures, and a time limit for action by the State.

1 Introduction

This document contains the second ozone maintenance plan for the Knoxville, Tennessee area for the 2008 ozone NAAQS. The TDEC-APC is requesting that the EPA approve this second ozone maintenance plan. On March 12, 2008, EPA promulgated a revised 8-hour ozone NAAQS of 0.075 ppm (73 FR 16436, March 27, 2008). Between 2009 and 2011, air quality monitoring at one high-elevation site near Knoxville (Look Rock in Blount County) indicated that the highest 8-hour average ozone concentration exceeded the 0.075 parts per million NAAQS.[1] EPA subsequently designated the Knoxville area as nonattainment for the 8-hour ozone NAAQS on May 21, 2012 with an effective date of July 20, 2012 (77 FR 30088, May 21, 2012). The Knoxville ozone nonattainment area includes part of Anderson County (the area included in 2000 Census tracts 202 and 213.02) and all of Blount and Knox Counties. The area was designated as a marginal nonattainment area, pursuant to the requirements of the Clean Air Act (CAA). Air quality monitoring data for 2011 through 2013 indicated declining ozone concentrations in the Knoxville area, and the design value at the controlling monitor was 0.074 ppm. On November 14, 2014, the TDEC-APC requested that EPA redesignate the Knoxville Area to attainment. This request also included the first ozone maintenance plan. On July 13, 2015, the EPA approved the redesignation request and maintenance plan with an effective date of August 12, 2015 (80 FR 39970, July 13, 2015).

2 Air Quality

Tropospheric ozone is a secondary pollutant that is formed in the ambient air by the photochemical reaction of NO_X and reactive VOC. This pollutant is associated with a number of health and environmental impacts, including respiratory impairment and damage to crops and forests. High ozone concentrations tend to occur in the eastern United States during the hot summer months under hot, stagnant conditions. EPA mandates seasonal monitoring of ambient ozone concentrations in Tennessee and other States from March 1 through October 31 (40 CFR 58 Appendix. D).

Because ozone is formed in the ambient air, control of ozone focuses upon reduction of precursor emissions. NO_X are formed from the high-temperature reaction of nitrogen and oxygen during combustion processes, such as electric utility boilers, industrial fuel-burning sources, and motor vehicles. VOC includes many industrial solvents and coatings, as well as the hydrocarbons (HC) that are emitted by motor vehicles as evaporative losses from gasoline, and tailpipe emissions of unburned hydrocarbon. Past efforts at control of ground-level ozone have focused primarily upon reduction of VOC emissions at a local level, through control of automotive emissions and industrial solvent/coating

[1] Under EPA's regulations at 40 CFR part 50, the 2008 8-hour ozone NAAQS is attained when the 3-year average of the annual fourth highest daily maximum 8-hour average ambient air quality ozone concentrations is less than or equal to 0.075 ppm. The 3-year average is referred to as the design value. *See* 40 CFR 50.15. Ambient air quality monitoring data for the 3-year period must meet a data completeness requirement. The ambient air quality monitoring data completeness requirement is met when the average percent of days with valid ambient monitoring data is greater than 90 percent, and no single year has less than 75 percent data completeness as determined in Appendix I of part 50.

reasonably available control technology (RACT). In recent years, control of NO_X emissions has increased in importance, both at the local and regional levels.

As part of the **S**outh**E**astern **M**odeling, **A**nalysis, and **P**lanning (SEMAP) project, Georgia Tech performed an analysis of the sensitivity of ozone concentrations in the Eastern U.S. to reductions in emissions of both NO_X and VOC's. This analysis was based off of the 2007 and 2018 SEMAP modeling which used CMAQ version 5.01 with updates to the vertical mixing coefficients and land-water interface. The entire "ozone season" was modeled (May 1 – September 30) using a 12-km modeling grid that covered the Eastern U.S.

Sensitivities were modeled relative to 2018 emissions to evaluate the impact of NO_X and VOC reductions on daily 8-hour maximum ozone concentrations. Each emission sensitivity run reduced the 2018 anthropogenic NO_X or VOC emissions (point, area, mobile, nonroad, marine/aircraft/rail) within a specific geographic region by 30%. The NO_X and VOC sensitivities were evaluated at every ozone monitor in the domain.

In the Southeast United States, the SEMAP project determined that NO_X emissions are the primary emissions source for the production of ground-level ozone. Thus, lowering NO_X emissions is more effective in controlling ozone formation than lowering VOC emissions. Stated another way, ozone formation in the Southeast United States is NO_X limited, meaning that changes in the VOC concentration result in little to no change in ozone concentration. This is due to high biogenic (naturally occurring from vegetation) VOC emissions compared to anthropogenic (human caused) VOC emissions in the Southeast United States. The modeling demonstated that anthropogenic NO_X emission reductions are much more effective at reducing 8-hour maximum ozone concentrations in the Knoxville area compared to anthropogenic VOC emission reductions.

Figure 2-1 shows all ozone monitors located in the Knoxville area.[2] Figure 2-2 shows the current Knoxville maintenance area.

[2] The following air quality monitors are operated in the Knoxville area: a) monitors located in Knox county are operated by the Knoxville Department of Air Quality Management; b) monitors in Blount and Sevier counties are operated by the National Park Service; and c) monitors located in Anderson, Jefferson, and Loudon counties are operated by TDEC.

Figure 2-1: Knoxville, Tennessee Area Monitor Locations

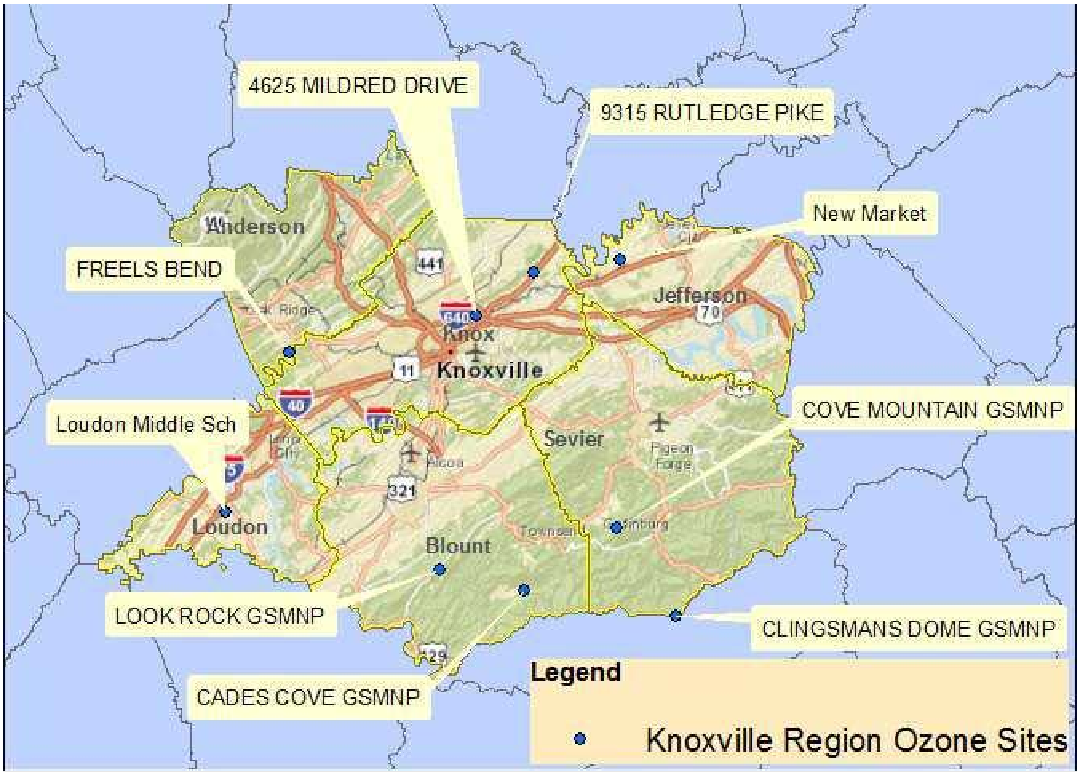
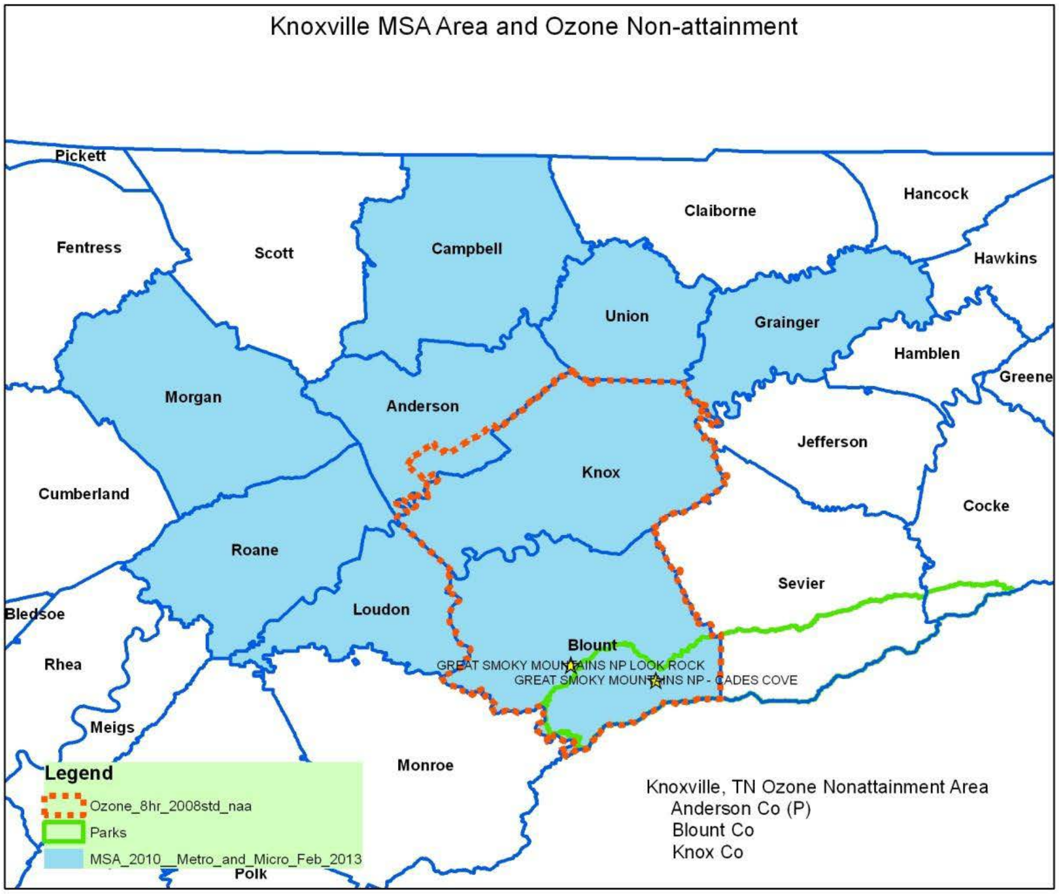


Figure 2-2: Knoxville, Tennessee Ozone Maintenance Area

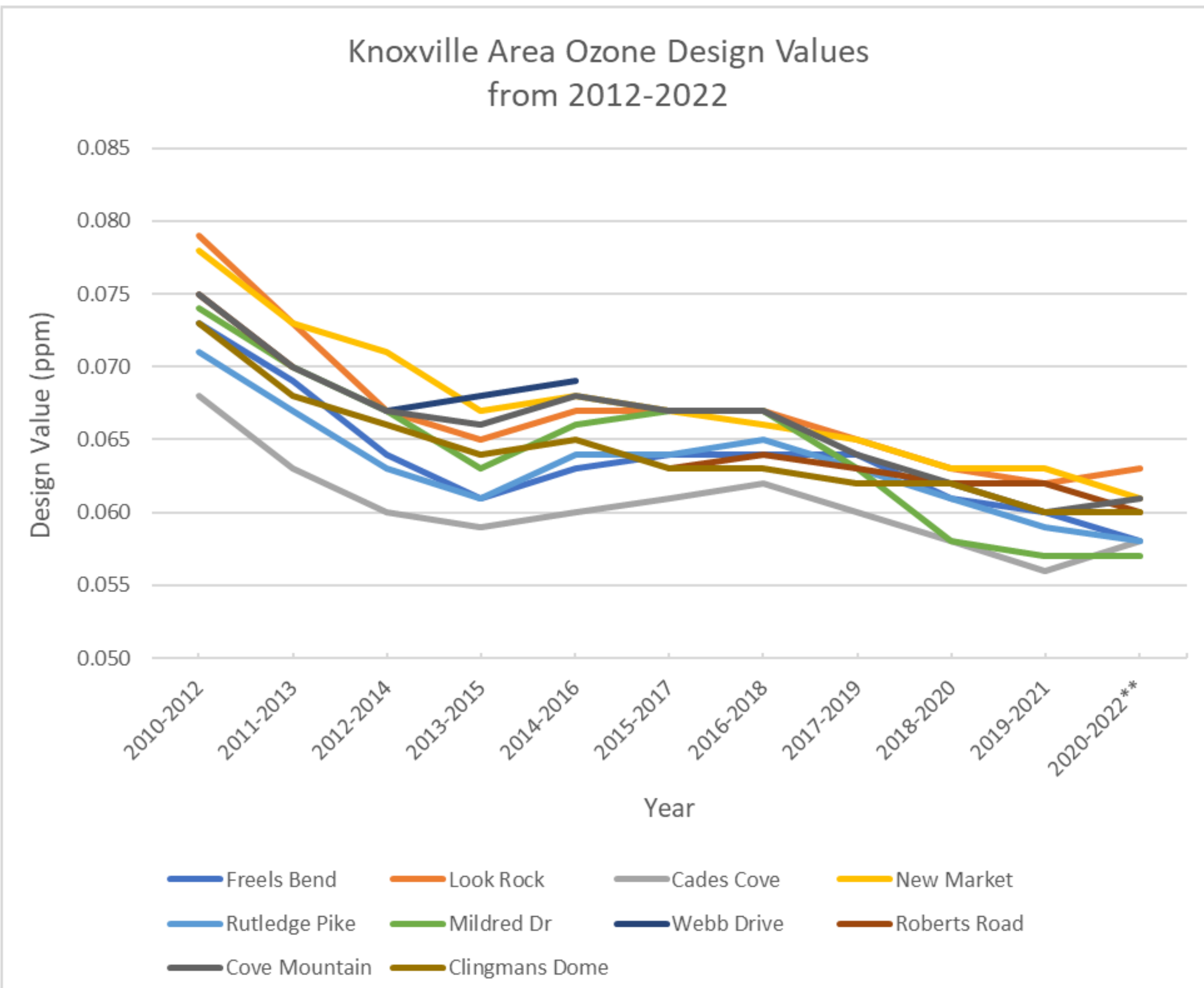


Monitoring data was obtained from the EPA Aerometric Information Retrieval System-Air Quality System (AIRS-AQS) database. Table 2-1 contains the Knoxville area ozone design values (in parts per million (ppm)) from 2012 to 2022. Design values are reported as the average of the annual fourth max ozone concentration averaged over three years. The design value for the three years 2010, 2011, and 2012 is referred to as the 2012 design value. The design values for all of the Knoxville area monitors for 2013 to 2022 are all equal to or below 0.075 ppm, which is the level of the 2008 ozone NAAQS. The design values for 2015 to 2022 are all equal to or below 0.070 ppm, which is the level of the 2015 ozone NAAQS. Figure 2-3 graphically shows that ozone design values in the Knoxville area have been decreasing from 2012 through 2022.

Table 2-1: Knoxville Area Ozone Design Values (in ppm)

Site ID	County	Site Name	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019	2018-2020	2019-2021	2020-2022
47-001-0101	Anderson	Freels Bend	0.073	0.069	0.064	0.061	0.063	0.064	0.064	0.064	0.061	0.060	0.058
47-009-0101	Blount	Look Rock	0.079	0.073	0.067	0.065	0.067	0.067	0.067	0.065	0.063	0.062	0.063
47-009-0102	Blount	Cades Cove	0.068	0.063	0.060	0.059	0.060	0.061	0.062	0.060	0.058	0.056	0.058
47-089-0002	Jefferson	New Market	0.078	0.073	0.071	0.067	0.068	0.067	0.066	0.065	0.063	0.063	0.061
47-093-0021	Knox	Rutledge Pike	0.071	0.067	0.063	0.061	0.064	0.064	0.065	0.063	0.061	0.059	0.058
47-093-1020	Knox	Mildred Dr	0.074	0.070	0.067	0.063	0.066	0.067	0.067	0.063	0.058	0.057	0.057
47-105-0108	Loudon	Webb Drive			0.067	0.068	0.069						
47-105-0109	Loudon	Roberts Road	0.075	0.070				0.063	0.064	0.063	0.062	0.062	0.060
47-155-0101	Sevier	Cove Mountain	0.075	0.070	0.067	0.066	0.068	0.067	0.067	0.064	0.062	0.060	0.061
47-155-0102	Sevier	Clingmans Dome	0.073	0.068	0.066	0.064	0.065	0.063	0.063	0.062	0.062	0.060	0.060

Figure 2-3: Knoxville Area Ozone Design Values



3 Permanent and Enforceable Reductions

Measured reductions in ozone design values in the Knoxville Metropolitan Statistical Area (MSA) are largely attributable to permanent and enforceable reductions from mobile emission sources. Mobile source reductions, reflected in part by the emissions inventories, are attributable primarily to federal measures. Across the country, federal trading programs have decreased NO_X emissions. Also, NO_X emissions from electric generating units (EGUs) in Tennessee have decreased due to a court settlement. The significant permanent and enforceable measures implemented around the region will continue to lower emissions levels in the region. Additionally, new emissions control programs for fuels and motor vehicles will help to ensure a continued decrease in emissions throughout the region.

3.1 Federal EGU and Industrial Unit Trading Programs

The CAA requires each upwind state to ensure that it does not interfere with either the attainment of a NAAQS or continued compliance with a NAAQS at any downwind monitor. This section of the CAA, §110(a)(2)(D)(i)(I), is called the "Good Neighbor" provision. The EPA has implemented a number of rules enforcing the Good Neighbor provision for a variety of NAAQS.

The EPA finalized Cross-State Air Pollution Rule (CSAPR) on August 8, 2011 (76 FR 48208). This rule required 28 states to reduce sulfur dioxide (SO_2), annual NO_X, and ozone season NO_X from fossil fuel-fired EGUs in support of the 1997 and 2006 fine particulate matter ($PM_{2.5}$) NAAQS and the 1997 ozone NAAQS. CSAPR relied on a trading program to achieve these reductions, which became effective January 1, 2015, as set forth in an October 23, 2014, decision by the U.S. Court of Appeals for the D.C. Circuit. Phase 1 of the program began January 2015 for annual programs and May 2015 for the ozone season program. Phase 2 began January 2017 for the annual programs and May 2017 for the ozone season program. Total emissions allowed in each compliance period under CSAPR equals the sum of the affected state emission budgets in the program. The 2017 budgets for these programs, exclusive of new unit set asides and tribal budgets, are:

- Annual NO_X – 1.21 million tons, and
- Ozone Season NO_X – 586,000 tons

EPA published revised CSAPR ozone season NO_X budgets to address the 2008 ozone NAAQS on October 26, 2016 (81 FR 74504). This rule, called the CSAPR Update, reduced state budgets for NO_X during the ozone season to 325,645 tons in 2017 and 330,526 tons in 2018 and later years, exclusive of new unit set asides and tribal budgets. This rule requires NO_X emissions reductions from fossil fuel-fired EGUs. The U.S. Court of Appeals for the D.C. Circuit remanded, but did not vacate, the CSAPR Update to EPA to address the court's holding that the rule unlawfully allows significant contributions to continue beyond downwind attainment deadlines. The amended CSAPR Update Rule was published in the Federal Register on April 30, 2021. EPA issued new or amended Federal Implementation Plans (FIPs) for 12 states to replace their existing CSAPR NO_X Ozone Season Group 2 emissions budgets for EGUs with revised budgets under a new CSAPR NO_X Ozone Season Group 3 Trading Program. Implementation of the revised emission budgets began with the 2021 ozone season. The final rule includes state-by-state adjusted ozone season emission budgets for 2021 through 2024. Emission reductions are required at power plants in the 12 states based on optimization of existing, already-installed selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR) controls beginning in the 2021 ozone season, and installation or upgrade of state-of-the-art NO_X combustion controls beginning in the 2022 ozone season. EPA estimates the Revised CSAPR Update will reduce summertime NO_X emissions from power plants in the 12 linked upwind states by 17,000 tons in 2021 compared to projections without the rule.

On March 15, 2023, the EPA issued its final Good Neighbor Plan to address the 2015 ozone NAAQS. As of the 2023 ozone season, EPA included power plants in 22 states in a revised and strengthened Group 3 Cross-State Air Pollution Rule (CSAPR) ozone season trading program. To achieve emissions reductions as soon as possible, EPA set the initial control stringency based on the level of reductions achievable through immediately available measures, including consistently operating emissions controls already installed at power plants.

3.2 Tennessee Valley Authority

The largest source of SO_2 and NO_X emissions in Tennessee is EGU's, which are all owned by the Tennessee Valley Authority (TVA). The TVA entered into a court settlement in 2011 for previous violations of the Clean Air Act. This settlement required shutdowns, new controls, and a switch from coal to natural gas at certain facilities. Specifically, the following changes have been implemented:

- Shutdown of the TVA Allen coal plant in Shelby County, which was replaced by a natural gas combined cycle plant (equipped with SCR controls) on the same site. The coal-fired units were retired on March 31, 2018.
- Shutdown of the TVA John Sevier coal plant in Hawkins County, which was replaced by a natural gas combined cycle plant. Units 1 and 2 were retired on December 31, 2012 and Units 3 and 4 were retired on June 25, 2014.
- Shutdown of the TVA Johnsonville coal plant in Humphreys County. Units 5-10 were retired on December 31, 2015, and Units 1-4 were retired on December 31, 2017. This plant currently consists of twenty natural gas or oil-fired combustion turbines, four natural gas preheaters, a combined heat and power (CHP) unit that provides steam to an off-site customer, and two natural gas auxiliary boilers that are backup steam generators for the CHP unit. In August 2022, the TDEC-APC issued a permit to construct ten new simple-cycle natural gas combustion turbines and shut down sixteen of the existing simple-cycle units.
- Addition of selective catalytic reduction (SCR) controls at the TVA Gallatin coal plant in Sumner County. All SCRs were installed and operational by December 2017.
- The terms of the Consent Decree required continuous operation of all SO_2 and NO_X control devices at all of the coal plants.

In addition to the settlement agreement, the TVA has started producing electricity from Watts Bar 2 nuclear plant in Rhea County in October 2016, which could decrease power production from the TVA fossil fuel-fired facilities. The TVA Bull Run coal plant in Anderson County permanently retired on December 1, 2023. In two Federal Register notices, the TVA has announced plans to retire all of the coal-fired units at TVA Cumberland and TVA Kingston. On May 11, 2021 (86 FR 25933), the TVA proposed the retirement of one unit at TVA Cumberland as early as 2026 but no later than 2030, and the remaining unit as early as 2028 but no later than 2033. On June 15, 2021 (86 FR 31780), the TVA proposed the retirement of three units at TVA Kingston as early as 2026, but no later than 2031, and the remaining six units as early as 2027, but no later than 2033.

After the Federal Register notice, TVA Cumberland submitted a permit application to construct two natural gas-fired combined-cycle electric generating units and permanently shut down the two coal-fired electric generating units. A construction permit was issued for this modification on June 20, 2023. As part of the permit, TVA Cumberland agreed to permanently shut down the two coal-fired EGU by December 31, 2028. Table 3-1 provides a summary of the coal plant retirements and NO_X controls in Tennessee.

Table 3-1: Summary of TVA Coal-fired Power Plants

Facility	County	Emission Unit	Current NO_x Emission Control	Status
TVA Allen	Shelby	1	N/A	Retired March 31, 2018
		2	N/A	Retired March 31, 2018
		3	N/A	Retired March 31, 2018
TVA Bull Run	Anderson	1	SCR	Retired on December 1, 2023
TVA Cumberland	Stewart	1	SCR	SCR started in 2003
		2	SCR	SCR started in 2004
TVA Gallatin	Sumner	1	SCR	SCR started in 2017
		2	SCR	SCR started in 2017
		3	SCR	SCR started in 2017
		4	SCR	SCR started in 2017
TVA John Sevier	Hawkins	1	N/A	Retired December 31, 2012
		2	N/A	Retired December 31, 2012
		3	N/A	Retired June 25, 2014
		4	N/A	Retired June 25, 2014
TVA Johnsonville	Humphreys	1	N/A	Retired December 31, 2017
		2	N/A	Retired December 31, 2017
		3	N/A	Retired December 31, 2017
		4	N/A	Retired December 31, 2017
		5	N/A	Retired December 31, 2015
		6	N/A	Retired December 31, 2015
		7	N/A	Retired December 31, 2015
		8	N/A	Retired December 31, 2015
		9	N/A	Retired December 31, 2015

		10	N/A	Retired December 31, 2015
TVA Kingston	Roane	1	SCR	SCR started in 2004
		2	SCR	SCR started in 2004
		3	SCR	SCR started in 2004
		4	SCR	SCR started in 2004
		5	SCR	SCR started in 2005
		6	SCR	SCR started in 2005
		7	SCR	SCR started in 2004
		8	SCR	SCR started in 2004
		9	SCR	SCR started in 2006

Figure 3-1 shows the total NO_X emissions for all of TVA's coal and natural gas plants in Tennessee from 2010 to 2022. The figure shows a decrease in NO_X emissions from 31,343 tons/yr in 2010 to 8,369 tons/yr in 2022 (a 73.3% reduction). All of the emission data comes from the EPA's Clean Air Markets Division.

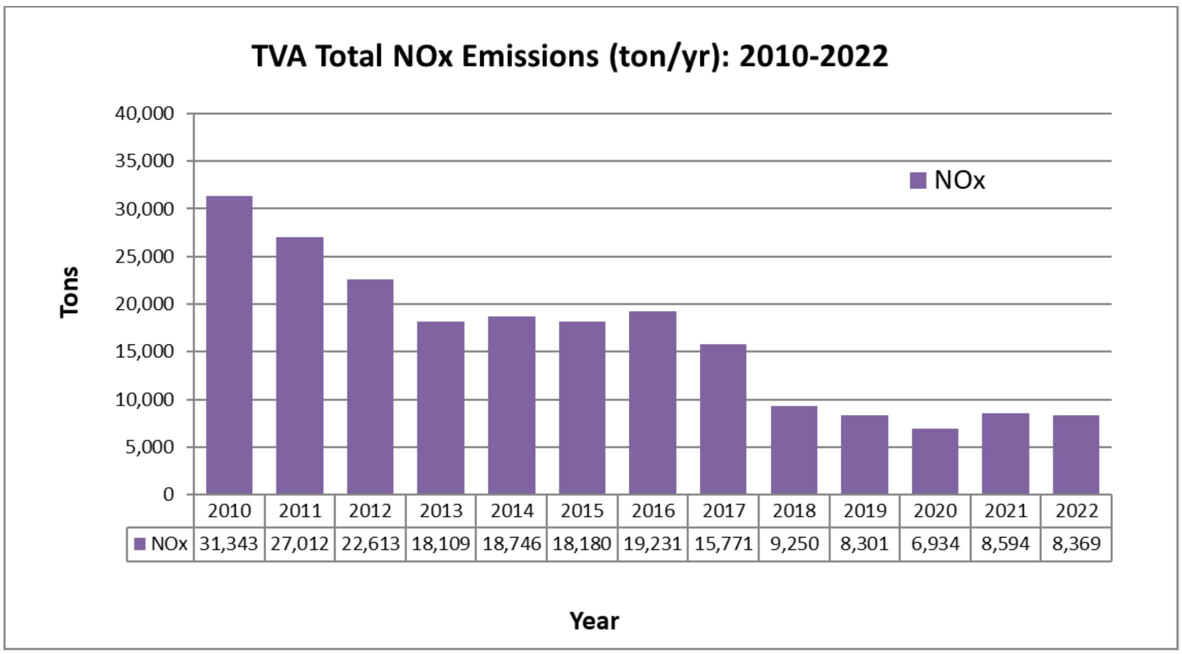


Figure 3-1 TVA NO_x Emissions from coal and natural gas plants in Tennessee

3.3 Onroad Mobile Sources

Federal standards for National Low Emission Vehicles (NLEV) began in 1999 and implemented through 2001 for new light duty cars and trucks. EPA has since implemented further reductions from onroad mobile sources; the Federal Tier 2 vehicle emission standards. Federal Tier 2 vehicle emission standards require all passenger vehicles in a manufacturer's fleet, including light-duty trucks and Sport Utility

Vehicles (SUVs), to meet an average standard of 0.07 grams of oxides of nitrogen (NO_X) per mile in 2007[3]. The Tier 2 standards also cover passenger vehicles over 8,500 pounds gross vehicle weight rating (the larger pickup trucks and SUVs), which are not covered by the Tier 1 regulations. For these vehicles, the standards were phased in beginning in 2008, with full compliance in 2009. The new standards require vehicles to be 77% to 95% cleaner than those manufactured to meet Tier 1 standards. The Tier 2 rule also reduced the sulfur content of gasoline to 30 parts-per-million (ppm) starting in January of 2006. Most gasoline sold in Tennessee prior to January 2006 had a sulfur content of up to 300 ppm. Sulfur occurs naturally in gasoline, but interferes with the operation of catalytic converters on vehicles resulting in higher NO_X emissions. The combination of lower-sulfur gasoline and the Tier 2 engine emissions standards are necessary to achieve the Tier 2 vehicle emission standards.

The EPA promulgated a Tier 3 rule designed to reduce air pollution from new passenger cars and trucks. Beginning in 2017, Tier 3 emissions standards lowered the sulfur content of gasoline further and lowered the emissions standards for light duty passenger cars and trucks[4]. Benefits from Tier 3 vehicles will help the area to continue to assure maintenance of the national ambient air quality standards.

New EPA standards designed to reduce NO_X and VOC emissions from heavy-duty gasoline and diesel highway vehicles began to take effect in 2004. A second phase of standards and testing procedures, beginning in 2007, reduced particulate matter (PM) from heavy-duty highway engines, and also reduced highway diesel fuel sulfur content to 15 ppm, allowing for additional emission control devices. The total program, when fully implemented, is expected to achieve a 90% reduction in PM emissions and a 95% reduction in NO_X emissions for these new engines using ultra-low sulfur diesel, compared to existing engines using higher sulfur content diesel[5]. The multiple phases of these rules were expected to be fully implemented by 2010.

On January 24, 2023, EPA finalized[6] new standards that will reduce NO_X emissions from the heavy-duty truck fleet by approximately 48 percent in 2045 and result in widespread air quality improvements across the U.S. The final program includes new, more stringent emissions standards that cover a wider range of heavy-duty engine operating conditions compared to today's standards, and it requires these more stringent emissions standards to be met for a longer period. The potential emissions reductions from this rulemaking are not included in this analysis as these emissions reductions are not yet included in EPA's Motor Vehicle Emission Simulator (MOVES) model. However, these expected emissions reductions will help to ensure continued maintenance of the ozone NAAQS.

Effective in 2005, the Tennessee Air Pollution Control Board promulgated a statewide motor vehicle anti-tampering rule. This rule, defined in Chapter 1200-3-36, Motor Vehicle Tampering, was

---

[3]Environmental Protection Agency, *Federal Register***,** Vol. 65, No. 28, February 10, 2000.
[4]Environmental Protection Agency, *Control of Air Pollution From Motor Vehicles: Tier 3 Motor Vehicle Emission and Fuel Standards; Final Rule. Federal Register,* Vol. 79, No. 81, April 28, 2014.
[5]Environmental Protection Agency, *Federal Register*, Vol. 66, No. 12, January 18, 2001.
[6]Environmental Protection Agency, *Control of Air Pollution From New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards; Final Rule. Federal Register*, Vol 88, No. 15, January 24, 2023.

promulgated to reduce the air pollution caused by tampering with a motor vehicle's emissions control system. The area of applicability for this rule is statewide. Chapter 1200-3-36 defines tampering as modifying, removing, or rendering inoperative any air pollution emission control device, which results in an increase in emissions beyond established federal motor vehicle standards. Additionally, the rule identifies what is specifically prohibited, for example, removing a catalytic converter.

Tennessee has also promulgated rules for Stage I Gasoline Vapor Recovery for several counties throughout Tennessee, including Anderson, Blount, Jefferson, Knox, Loudon, and Sevier Counties in the greater Knoxville area. Gasoline dispensing stations in these counties that were existing sources on December 29, 2004, were required to comply with this rule by May 1, 2006.

With respect to ozone, air quality alerts are typically called on hot, sunny, muggy days with little wind, when ground-level ozone concentrations are predicted to approach unhealthy levels and the ozone NAAQS could be exceeded[7]. Once the air quality forecast is issued, the media is able to release these alerts in a timely fashion, and air quality alert days are announced to the public through television, radio, and other electronic media. Many businesses subscribe to the alerts and conduct their own activities to help reduce emissions that are precursors to ozone on air quality alert days.

Smart Boards located on Knoxville interstates have been used to notify drivers of program recommendations on air quality alert days. Efforts are underway to continue the use of this medium in conjunction with Tennessee Department of Transportation's (TDOT) 511 information program.

3.4 Nonroad Mobile Sources

EPA has promulgated a series of control programs in 40 CFR Part 89, Part 90, Part 91, Part 92, and Part 94 that implement limitations on compression ignition engines, spark-ignition nonroad engines, marine engines, and locomotive engines. Environmental benefits continue into the future as older engines are replaced with newer engines that have improved fuel economy and more stringent emissions standards. These regulations also require the use of cleaner fuels.

4 Maintenance Demonstration and Emission Inventory

An emission inventory was prepared to estimate base year (2017) NO_X and VOC emissions in the Knoxville maintenance area, with emissions projections for the years 2020, 2023, 2026, 2029, 2032, and 2035. The year 2035 was chosen as the final year since it is twenty years after the effective date that the Knoxville area was redesignated from a nonattainment area to a maintenance area. This emission inventory includes all anthropogenic NO_X and VOC sources for all of Blount and Knox Counties, as well as the partial Anderson County area included in the maintenance area.

[7] https://www.airnow.gov (Last accessed 4/10/23).

4.1 Point Sources

Point source emissions are emissions from individual sources having a fixed location. Generally, these sources must have permits to operate, and their emissions are inventoried on a regular schedule. Large sources emitting at least 100 tons per year (tpy) of a criteria pollutant are inventoried every three years. The largest sources are inventoried annually. The base year emission data for point sources was taken from the EPA Emission Inventory System (EIS) Gateway 2017 National Emission Inventory (NEI) data. The growth factors were developed using the methodology in the Metro4/ Southeastern States Air Resource Managers (SESARM) document prepared by AMEC Environment & Infrastructure, Inc., "Development of the 2018 Projection Point Source Emission Inventory in the SESARM Region," dated February 11, 2014, which is included in Appendix A. Seasonal adjustment factors (SAF) were developed from EPA's 2017 emissions modeling platform. A further explanation of the SAF is included in Appendix B. The point source emissions and growth factors are included in Appendix C. Future year emissions were calculated using the following formula:

(2020 Emissions) = (2017 Emissions) x (Growth Factor)

A few adjustments were made to the emission inventory based on known retirements, control equipment additions, and NEI errors. The TVA Bull Run coal plant in Anderson County permanently retired on December 1, 2023. Thus, emissions for TVA Bull Run were set to zero after 2023. In 2018, Cemex in Knox County added a selective noncatalytic reduction (SNCR) control, which lowered NO_X emissions. The 2020 NO_X emission value in the inventory was set equal to the actual 2020 NO_X value of 633.9 TPY and the growth factor was applied to years 2023 and after. The 2017 NEI had a NO_X value of 805 TPY and VOC value of 44.3 TPY for Skier's Choice in Blount County (Source Classification Code (SCC)=1020063). The 2020 NEI had a NO_X value of 1.27 TPY and VOC value of 0.07 TPY for Skier's Choice in Blount County (SCC=1020063). This facility has a small combustion source for building heating so the 2017 NEI values are clearly in error. Thus, the 2017 and 2020 NO_X and VOC emission values in the inventory were set equal to 1.27 TPY and 0.07 TPY, respectively, and the growth factor was applied to years 2023 and after.

Appendix C contains all emission data from point sources. Table 4-1 shows a summary of the NO_X emissions (in ton/day) from point sources for 2017 to 2035 for a typical July day. Table 4-2 shows a summary of the VOC emissions (in ton/day) from point sources for 2017 to 2035 for a typical July day.

Table 4-1: NO_X Emissions from Point Sources for 2017-2035

	NOx, Typical Summer Day, July (tons/day)						
County	2017	2020	2023	2026	2029	2032	2035
Anderson (partial)	4.56	5.88	7.59	0.00	0.00	0.00	0.00
Blount	0.44	0.53	0.68	0.94	1.45	2.58	5.18
Knox	4.32	2.06	2.60	3.28	4.14	5.24	6.64
Total Emissions	9.32	8.47	10.87	4.22	5.59	7.82	11.82

Table 4-2: VOC Emissions from Point Sources for 2017-2035

	VOC, Typical Summer Day, July (tons/day)						
County	2017	2020	2023	2026	2029	2032	2035
Anderson (partial)	0.12	0.15	0.19	0.00	0.00	0.00	0.00
Blount	1.10	1.30	1.54	1.84	2.22	2.71	3.37
Knox	1.71	2.33	3.16	4.30	5.86	7.99	10.90
Total Emissions	2.93	3.78	4.89	6.14	8.08	10.70	14.27

4.2 Nonpoint Sources

Nonpoint sources are those sources whose individual emissions are relatively small, but due to the large number of these sources, the collective emissions from the source category could be significant (e.g., dry cleaners, service stations, combustion of fuels for heating, and agricultural sources). Emissions are estimated by multiplying an emission factor by some known indicator of collective activity, such as fuel usage, number of households, or population. Biogenic sources are natural sources of emissions like trees, crops, grasses, and natural decay of plants. Biogenic sources were included in the emission inventory as part of the area sources in the first maintenance plan. Area sources are now referred to as nonpoint sources. Biogenic sources are not included in the emission inventory for this second maintenance plan. Biogenic VOC emissions make up more than half of the total VOC emission inventory.

To begin the nonpoint source inventory, the 2014 Knoxville Ozone Maintenance Plan (KOMP) document was examined to evaluate the nonpoint source inventory development prepared for that document. EPA updates SCC generally annually, so the SCCs cited in the 2014 KOMP were compared to the EPA's current list of SCCs to find those that remain valid and those that have been retired by EPA, and to identify replacement SCCs for those that have been retired. Then, the EPA list of SCC expected pollutants was examined to find all nonpoint SCCs that have NO_X and VOC as an expected pollutant. Then, the 2017 nonpoint inventory for the three counties of concern, Anderson, Blount, and Knox, was downloaded with all reported NO_X and VOC data by SCC from the EPA Emissions Inventory System (EIS). By comparison of these four lists of SCCs, a group of 53 SCCs was selected for this nonpoint emissions inventory. All of the 53 selected SCCs trace back to the 2014 KOMP, have NO_X and/or VOC as expected pollutants, and are present in the EPA 2017 nonpoint emissions inventory for the three counties of concern.

The nonpoint emissions inventory was developed using the NO_X and VOC data downloaded from EPA's 2017 nonpoint emissions inventory for the three counties of concern as the base year (2017) emissions data. The data was projected for the out year and the interim years specified for this inventory (2020, 2023, 2026, 2029, 2032, 2035). Metro 4/SESARM was contacted asking about an updated version of the file, "SEMAP Region Area and Nonroad Projection Year Inventories Final Report," October 2012, cited in the 2014 KOMP. Metro 4/SESARM stated there was not an updated version of that document. Metro 4/SESARM directed TDEC-APC to the Georgia Department of Natural Resources (DNR) to obtain any updates to the SEMAP work. From there, the GA DNR provided a link to an EPA emissions modeling data file titled "county_sector_2016v2_summary_fj.xlsx" from which growth factors were developed in conjunction with data from the U.S. Energy Information Administration (EIA) State Energy Data System (SEDS), the US Census Bureau County Business Patterns (CBP) data, and US Census Bureau population data for the three counties of concern. Anderson County emissions were reduced to 23% of the total emissions since only part of the county is included the maintenance area. The percentage (23%) is the same used for the onroad sector.

Appendix D contains all of the nonpoint data, which includes the following:

- Sectors and SCCs included in the nonpoint emission inventory. The sectors included are listed. The SCCs included and which sector each belong to is listed along with a month of July Weighting Fraction carried forward from the 2014 KOMP. A uniform 12-month distribution of emissions and then a daily uniform distribution of emissions was examined and found to give very slightly lower daily emissions from that provided by use of the month of July Weighting Fractions. The higher emissions estimates were chosen for this nonpoint emission inventory assuming a worst-case scenario.
- The nonpoint emission inventory data (tons/year) for each pollutant, each SCC, and each county of concern based on the 2017 nonpoint emission inventory data used as a Base Year.
- Summary data with a table for each pollutant, NO_X and VOC, for each year specified for this maintenance plan with ton/day totals for each county of concern including the sum of all with yearly percentage increases from the Base Year 2017.

Table 4-3 shows a summary of the NO_X emissions (in ton/day) from nonpoint sources for 2017 to 2035 for a typical July day. Table 4-4 shows a summary of the VOC emissions (in ton/day) from nonpoint sources for 2017 to 2035 for a typical July day.

Table 4-3: NO_X Emission from Nonpoint Sources for 2017-2035

	NOx, Typical Summer Day , July, (ton/day)						
County	2017	2020	2023	2026	2029	2032	2035
Anderson (partial)	0.09	0.10	0.09	0.09	0.09	0.09	0.10
Blount	0.46	0.48	0.52	0.55	0.59	0.64	0.68
Knox	1.15	1.34	1.51	1.69	1.88	2.07	2.25
Total Emissions	1.70	1.92	2.12	2.33	2.56	2.80	3.03

Table 4-4: VOC Emission from Nonpoint Sources for 2017-2035

	VOC, Typical Summer Day , July, (ton/day)						
County	2017	2020	2023	2026	2029	2032	2035
Anderson (partial)	0.58	0.62	0.64	0.67	0.69	0.72	0.75
Blount	3.79	3.96	4.13	4.29	4.46	4.64	4.86
Knox	11.64	12.55	13.53	14.52	15.51	16.61	17.80
Total Emissions	16.01	17.13	18.30	19.48	20.66	21.97	23.41

4.3 Nonroad Mobile Sources

Non-road mobile sources are equipment that can move but do not use the roadways, such as construction equipment, railroad locomotives, commercial marine vessels, and lawn equipment. The emissions from these sources, like nonpoint sources, are estimated at the county level. The nonroad mobile sources are split into two sections. The nonroad mobile sources from ten SCC categories are detailed in Section 4.3.1. The nonroad mobile sources from commercial marine, aircraft, and rail (MAR) are detailed in Section 4.3.2. Anderson County emissions were reduced to 23% of the total emissions since only part of the county is included the maintenance area. The percentage (23%) is the same used for the onroad sector.

4.3.1 Nonroad Mobile Sources (excluding Commercial Marine, Aircraft, and Rail)

The nonroad mobile source data was developed using the MOVES3.0 model. The nonroad mobile sector includes the following ten SCC categories:

- Agricultural Equipment
- Airport Support Equipment
- Commercial Equipment
- Construction and Mining Equipment
- Industrial Equipment
- Lawn and Garden Equipment
- Logging Equipment
- Pleasure Craft
- Railroad Equipment
- Recreational Equipment

Appendix E contains all of the emission data for the nonroad mobile sources. Table 4-5 shows a summary of the NO_X emissions (in ton/day) from nonroad mobile sources (excluding MAR) for 2017 to 2035 for a typical July day. Table 4-6 shows a summary of the VOC emissions (in ton/day) from nonroad mobile sources (excluding MAR) for 2011 to 2035 for a typical July day.

Table 4-5: NO_X Emissions from Nonroad Mobile Sources (excluding MAR) for 2017-2035

	NOx, Typical Summer Day, July, (ton/day)						
County	2017	2020	2023	2026	2029	2032	2035
Anderson (partial)	0.37	0.31	0.26	0.21	0.18	0.15	0.12
Blount	1.60	1.33	1.10	0.92	0.76	0.64	0.53
Knox	2.10	1.75	1.46	1.21	1.01	0.84	0.70
Total Emissions	4.07	3.39	2.82	2.34	1.95	1.63	1.35

Table 4-6: VOC Emissions from Nonroad Mobile Sources (excluding MAR) for 2017-2035

	VOC, Typical Summer Day, July, (ton/day)						
County	2017	2020	2023	2026	2029	2032	2035
Anderson (partial)	0.37	0.32	0.28	0.24	0.20	0.18	0.15
Blount	2.00	1.72	1.47	1.27	1.09	0.93	0.80
Knox	2.21	1.90	1.63	1.40	1.21	1.04	0.89
Total Emissions	4.58	3.94	3.38	2.91	2.50	2.15	1.84

4.3.2 Commercial Marine, Aircraft, and Rail Sources

The base year emission data for commercial marine, aircraft, and rail sources was taken from the EPA Emission Inventory System (EIS) Gateway 2017 NEI data. The growth factors were developed using the methodology in the Metro4/SESARM document prepared by AMEC Environment and Infrastructure, Inc., "Development of the 2018 Projection Point Source Emission Inventory in the SESARM Region," dated February 11, 2014. Seasonal adjustment factors (SAF) were developed from EPA's 2017 emissions modeling platform. A further explanation of the SAF is included in Appendix B.

Appendix F contains all of the emission data from commercial marine, aircraft, and rail sources. Table 4-7 shows a summary of the NO_X emissions (in ton/day) from aircraft, commercial marine, and locomotive sources for 2017 to 2035 for a typical July day. Table 4-8 shows a summary of the VOC emissions (in ton/day) from aircraft, commercial marine, and locomotive sources for 2017 to 2035 for a typical July day.

Table 4-7: NO_X Emissions from Commercial Marine, Aircraft, and Rail for 2017-2035

	NOx, Typical Summer Day, July, (ton/day)						
County	2017	2020	2023	2026	2029	2032	2035
Anderson (partial)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blount	0.69	0.79	0.95	1.18	1.52	2.02	2.78
Knox	0.29	0.24	0.20	0.17	0.14	0.12	0.10
Total Emissions	0.98	1.03	1.15	1.35	1.66	2.14	2.88

Table 4-8: VOC Emissions from Commercial Marine, Aircraft, and Rail for 2017-2035

	VOC, Typical Summer Day, July, (ton/day)						
County	2017	2020	2023	2026	2029	2032	2035
Anderson (partial)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blount	0.32	0.35	0.39	0.45	0.54	0.66	0.85
Knox	0.04	0.04	0.03	0.03	0.03	0.03	0.03
Total Emissions	0.36	0.39	0.42	0.48	0.57	0.69	0.88

4.4 Onroad Mobile Sources

Onroad mobile sources as an emissions source category comprises a large number of individual sources. Onroad mobile sources are all vehicles certified for onroad use; including, for example, cars, motorcycles, pickup trucks, buses, delivery trucks and long-haul trucks (18 wheelers). As a group, onroad vehicles contribute significant amounts of certain air pollutants. Emissions from onroad sources are estimated through the use of locally gathered information on the vehicle population and the miles driven in each county, as well as a number of other inputs, combined with EPA's Motor Vehicle Emissions Simulator (MOVES) model. Details on the development of the onroad emissions are contained in Appendix G.

The emissions inventory for onroad sources was developed in conjunction with the Knoxville Regional Transportation Planning Organization (TPO), the Knox County Department of Air Quality Management and TDOT. Development of the onroad emission inventory followed EPA's Technical Guidance on the use of MOVES for State Implementation Plan (SIP) inventory development[8]. Onroad emissions are developed using locally gathered data applied to EPA's MOVES model. Some of the locally developed data includes vehicles miles travelled (VMT) and vehicle population. Table 4-9 and Table 4-10 summarize the VMT and vehicle population in the maintenance area. Note that these estimates include only the partial area of Anderson County that has been designated maintenance.

[8]*Using MOVES to Prepare Emissions Inventories for State Implementation Plans and Transportation Conformity*, US EPA, EPA-420-B-20-052, November 2020.

Table 4-9 Ozone Maintenance Area July Weekday Vehicle Miles Traveled (VMT) for 2017 and 2035.

	July Weekday Vehicle Miles Traveled	
County	**2017**	**2035**
Anderson (partial)	718,634	806,878
Blount	3,698,677	4,609,740
Knox	17,611,314	21,845,364
Total:	22,028,625	27,261,982

Table 4-10 Vehicle Population in the Maintenance Area in 2017 and 2035.

		Anderson (partial)	**Blount**	**Knox**	**Anderson (partial)**	**Blount**	**Knox**
Vehicle Type	**MOVES sourceType ID**		**2017**			**2035**	
Motorcycle	11	578	4,979	9,003	610	5,817	10,456
Passenger Car	21	7,427	58,825	179,418	7,832	68,723	208,380
Passenger Truck	31	9,258	69,482	190,664	9,763	81,173	221,441
Light Commercial Truck	32	427	9,055	16,731	479	11,518	20,556
Intercity Bus	41	3	9	95	-	1	8
Transit Bus	42	-	-	154	-	-	177
School Bus	43	20	164	449	19	172	536
Refuse Truck	51	8	33	213	9	38	245
Single Unit Short-haul Truck	52	229	1,731	8,408	260	2,043	10,004
Single Unit Long-haul Truck	53	13	68	381	12	63	360
Motor Home	54	30	148	825	68	408	2,207
Combination Short-haul Truck	61	83	338	2,986	124	365	4,017
Combination Long-haul Truck	62	155	388	4,737	144	409	4,599
Total:		18,231	145,220	414,064	19,320	170,730	482,986

EPA's MOVES model, version 3.1.0 with the 20221007 default database was used to estimate emissions from onroad mobile sources in the maintenance area. Onroad emissions of VOC and NO_X are contained in Table 4-11 and Table 4-12.

Table 4-11 Maintenance Area Onroad VOC Emissions[a].

	2017	2020	2023	2026	2029	2032	2035
County	----- VOC (tons/day) -----						
Anderson (partial)	0.48	0.42	0.37	0.31	0.25	0.20	0.14
Blount	2.66	2.38	2.09	1.81	1.53	1.24	0.96
Knox	8.58	7.67	6.76	5.85	4.94	4.03	3.12
Total	11.72	10.47	9.22	7.97	6.72	5.47	4.22

[a]Emissions for 2020, 2023, 2026, 2029 and 2032 are interpolated between 2017 and 2035.

Table 4-12 Maintenance Area Onroad NO_X Emissions[a].

	2017	2020	2023	2026	2029	2032	2035
County	----- NO_x (tons/day) -----						
Anderson (partial)	0.69	0.59	0.49	0.39	0.28	0.18	0.08
Blount	3.75	3.26	2.77	2.29	1.80	1.31	0.82
Knox	18.66	16.51	14.37	12.22	10.07	7.93	5.78
Total	23.10	20.36	17.63	14.90	12.15	9.42	6.68

[a]Emissions for 2020, 2023, 2026, 2029 and 2032 are interpolated between 2017 and 2035.

4.5 Total Emissions

Table 4-13 shows the total NO_X emissions for 2017 to 2035 for a typical July day (in tons/day). Table 4-14 shows total VOC emissions for 2017 to 2035 for a typical July day (in tons/day). For NO_X, the total emissions in 2017 (39.17 ton/day) are greater than the total emissions in 2035 (25.76 ton/day). This is a decrease of 13.41 ton/day from 2017 to 2035. For VOC, the total emissions in 2017 (35.60 ton/day) are less than the total emissions in 2035 (44.62 ton/day). This is an increase of 9.02 ton/day from 2017 to 2035.

Table 4-13: Total NO_X Emissions for 2017-2035

	NOx, Typical Summer Day, July (ton/day)						
Sector	2017	2020	2023	2026	2029	2032	2035
Point	9.32	8.47	10.87	4.22	5.59	7.82	11.82
MAR	0.98	1.03	1.15	1.35	1.66	2.14	2.88
Nonroad, excluding MAR	4.07	3.39	2.82	2.34	1.95	1.63	1.35
Nonpoint	1.70	1.92	2.12	2.33	2.56	2.80	3.03
Onroad	23.10	20.36	17.63	14.90	12.15	9.42	6.68
Total	39.17	35.17	34.59	25.14	23.91	23.81	25.76

Table 4-14: Total VOC Emissions for 2017-2035

	VOC, Typical Summer Day, July (ton/day)						
Sector	2017	2020	2023	2026	2029	2032	2035
Point	2.93	3.78	4.89	6.14	8.08	10.70	14.27
MAR	0.36	0.39	0.42	0.48	0.57	0.69	0.88
Nonroad, excluding MAR	4.58	3.94	3.38	2.91	2.50	2.15	1.84
Nonpoint	16.01	17.13	18.30	19.48	20.66	21.97	23.41
Onroad	11.72	10.47	9.22	7.97	6.72	5.47	4.22
Total	35.60	35.71	36.21	36.98	38.53	40.98	44.62

While there is an increase in VOC emissions from 2017 to 2035, this increase is expected to have minimal impacts on ambient ozone concentrations. As stated in Section 2, the SEMAP project demonstrated that the Knoxville area is NO_x-limited, meaning that anthropogenic NO_X emission reductions are much more effective at reducing ozone concentrations compared to anthropogenic VOC emission reductions. Going from 2017 to 2035, the decrease in NO_X will result in a decrease in ozone, while the increase in VOC emissions is expected to result in little to no increase in ozone. The ozone benefit from NO_X emissions reductions is expected to be much greater than any small increase in ozone resulting from higher VOC emissions. As stated in Section 2, design values in 2022 at monitoring sites in the Knoxville area range between 57 ppb and 63 ppb. The highest monitoring design value is 63 ppb, which is well below the 2008 NAAQS of 75 ppb. Thus, maintenance is demonstrated since there is a decrease in NO_X emissions from 2017 to 2035, the Knoxville area is NO_X-limited, and monitoring design values are well below the 2008 NAAQS of 75 ppb.

4.6 Motor Vehicle Emissions Budget (MVEB):

Onroad mobile source emissions were projected using a combination of output from computer programs that predict mobile emission factors and traffic volumes. These traffic volume projections and emissions projections are discussed in more detail in Appendix G.

The daily vehicle miles traveled (DVMT) projections, based on data provided by TDOT and the Knoxville Regional TPO, are presented earlier in Table 4-9. The 2017 DVMT was developed from traffic counts conducted by TDOT; the DVMT for 2035 was forecast by the Knoxville Regional TPO's travel demand model.

Detailed information on other MOVES inputs is contained in Appendix G. Onroad emissions totals by county are summarized in Table 4-11 and Table 4-12. Table 4-11 and Table 4-12 illustrate significant reductions in NO_X and VOC emissions from onroad mobile sources projected to occur between 2017 and 2035.

Between 2017 and 2035 onroad emissions, in the maintenance area, of NO_X are projected to decrease over 70 percent. Onroad emissions of NO_X in 2017 are approximately 23 tons/day, which is expected to decrease over time to approximately 7 tons/day in 2035. Similarly, substantial reductions in VOCs are projected to occur between 2017 and 2035. VOCs are expected to decrease from onroad motor vehicles from approximately 12 tons/day in 2017 to approximately 4 tons/day in 2035; a reduction of over 60 percent. These substantial reduction in oxides of nitrogen and volatile organic compounds are largely attributable to the EPA Federal Motor Vehicle Control Programs.

Transportation Conformity, as established in the Clean Air Act, is intended to ensure that federally funded or approved transportation projects, plans or programs conform to the applicable State Implementation Plan (SIP). This requirement is achieved through the establishment of a motor vehicle emissions budget (MVEB) for the applicable pollutant or pollutant precursors.

Pursuant to the EPA's transportation conformity rule in 40 CFR Part 93, specific emission budgets are hereby defined for the onroad mobile sources portion of the emissions inventory. These budgets are to be used by the transportation authorities to assure that transportation plans, programs, and projects are consistent with, and conform to, the maintenance of acceptable air quality in the Knoxville area. The last year of this maintenance plan (2035) is a year which must have a defined MVEB. These MVEBs include the total onroad emissions for that year, plus an allocation from the available NO_X safety margin. This allocation from the safety margin accounts for uncertainty in the projections and is available due to reductions in NO_X that are projected to occur primarily from onroad mobile sources. The available NO_x safety margin is illustrated in Table 4-15.

Table 4-15: Total NO_x Emissions with Safety Margins.

	Nonpoint	Nonroad	Commercial Marine, Aircraft and Rail	Onroad	Point	Total	Safety Margin
	----- NO_x Emissions (tons/day) -----						
2017	1.70	4.07	0.98	23.10	9.32	39.17	
2020	1.92	3.39	1.03	20.36	8.47	35.17	4.00
2023	2.12	2.82	1.15	17.63	10.87	34.59	4.58
2026	2.33	2.34	1.35	14.90	4.22	25.14	14.03
2029	2.56	1.95	1.66	12.15	5.59	23.91	15.26
2032	2.80	1.63	2.14	9.42	7.82	23.81	15.36
2035	3.03	1.35	2.88	6.68	11.82	25.76	13.41

Under 40 CFR 93.101, the term safety margin is the difference between the attainment level (from all sources) and the projected level of emissions (from all sources) in the maintenance plan. The safety margin, or portion of the safety margin, can be allocated to the transportation sector. A 75% portion of the available 2035 safety margin is allocated to the NO_x MVEB. Specifically, 10.06 tons/day of the available NO_x safety margin is allocated to the 2035 MVEB; the remaining safety margin for NO_x for 2035 is 3.35 tons/day. Combining the total NOx safety margin with the 2035 onroad emissions results in a NOx MVEB of 16.74 tons/day. An additional 3.00 tons/day is added to the onroad VOC emissions to result in a 2035 MVEB for VOCs of 7.22 tons/day since VOCs are expected to have minimal impacts on ozone in this area. The Motor Vehicle Emissions Budgets are contained in Table 4-16.

Table 4-16: Knoxville Area Motor Vehicle Emissions Budgets (MVEB).

	2035
Pollutant	**-- tons/day --**
VOC	7.22
NO_x	16.74

The MVEBs are consistent with the plan for maintaining the 2008 8-hour ozone NAAQS through the year 2035. By submission of this maintenance plan, TDEC is requesting EPA remove the previously established[9] MVEBs for the 2008 8-hour ozone NAAQS for calendar year 2026 and leave in place the MVEBs established for calendar year 2011. For future conformity determinations, transportation authorities should rely on the above MVEBs unless this maintenance plan is revised.

5 Ambient Air Quality Monitoring

Tennessee will continue air quality monitoring in accordance with 40 CFR 58. If Tennessee chooses to discontinue a SLAMS monitor, a network modification plan and schedule will be developed in accordance with 40 CFR 58.14.

6 Contingency Measures

The contingency plan provisions of the CAA are designed to result in prompt correction or prevention of NAAQS violations that might occur after re-designation of an area to attainment of the NAAQS. Section 175A of the CAA requires that a maintenance plan include such contingency measures as EPA deems necessary to assure that the State will promptly correct a NAAQS violation that might occur after re-designation. The maintenance plan must identify the contingency measures to be considered for possible adoption, a schedule for adoption and implementation of the selected contingency measures, and a time limit for action by the State. In accordance with §175A(d) of the Clean Air Act, Tennessee will implement any measures which exist in the current SIP for ozone. No measures in the SIP have been discontinued or moved to the maintenance plan.

The two main elements of the contingency plan are triggering mechanisms to determine when contingency measures are needed and a process of developing and adopting appropriate control measures. The primary trigger of the contingency plan will be a quality assured/quality controlled violating design value (DV) of the 8-hour 2008 ozone NAAQS at any monitor in the maintenance area. Upon activation of the trigger, the TDEC-APC, in conjunction with the Knox County Department of Air Quality Management (DAQM), will commence an analysis to determine what additional measures will be necessary to attain or maintain the 8-hour ozone standard. In addition to the primary trigger indicated above, the TDEC-APC and Knox County DAQM will monitor regional emissions through the Air Emissions Reporting Requirements (AERR). If the AERR results indicate that the projected emissions in this maintenance plan are significantly less than the AERR reveals (more than 10 percent), the TDEC-APC and Knox County DAQM will investigate the differences and develop an appropriate strategy for addressing these differences. In addition, if ambient monitoring data indicates that a violation of the three-year design value may be imminent, the TDEC-APC and Knox County DAQM will evaluate existing control measures to determine whether further emission reduction measures should be implemented.

[9] Environmental Protection Agency, Approval and Promulgation of Implementation Plans and Designation of Areas for Air Quality Planning Purposes; Tennessee; Redesignation of the Knoxville 2008 8-Hour Ozone Nonattainment Area to Attainment; Final Rule. Federal Register, Vol. 80, No. 133, July 13, 2015.

A trigger level response will consist of a study to determine whether the ozone value indicates a trend toward higher ozone concentrations or whether emissions appear to be increasing. The study will evaluate whether the trend, if any, is likely to continue and, if so, the control measures necessary to reverse the trend, taking into consideration ease and timing for implementation, as well as economic and social considerations. If new emission control measures are already promulgated and scheduled to be implemented at the Federal or State level, and if those measures are determined to be sufficient to address the increase in peak ozone concentrations, additional local measures may be unnecessary. The State will submit to the EPA an analysis to assess whether the proposed emission control measures are adequate to reverse the increase in peak ozone concentrations and to maintain the 8- hour ozone standard in the area.

The TDEC-APC and the Knox County DAQM will implement the appropriate contingency measures needed to assure future attainment of the ozone NAAQS within eighteen to twenty-four months of the monitored violation. TDEC and the Knox County DAQM will complete sufficient analyses and provide those to the EPA. If determined necessary (recent or soon to be effective new enforceable requirements will not be adequate), the adoption of rules for ensuring attainment and maintenance of the 8-hour ozone NAAQS will begin. Contingency measures would be adopted and implemented as expeditiously as possible, but no later than eighteen to twenty-four months after the triggering event.[10] If the area returns to attainment prior to implementation of the contingency measure(s), the contingency measure(s) may not be implemented. The proposed schedule for these actions would be as follows:

- Six months to identify appropriate contingency measures, including identification of emission sources and appropriate control technologies;
- Between three and six months to initiate a stakeholder process; and
- Between nine and twelve months to implement the contingency measures. This step would include the time required to draft rules or SIP amendments, complete the rulemaking process, and submit the final plans to EPA.

The selection of emission control measures will be based on cost-effectiveness, emission reduction potential, economic and social considerations, or other factors that the State deems to be appropriate. Selected emission control measures will be subject to public review, and the State will seek public input prior to selecting new emission control measures.

The measures that will be considered for adoption upon a trigger of the contingency plan include the following:

- Implementation of diesel retrofit programs, including incentives for performing retrofits

[10] If quality assured/quality controlled (QA/QC) data indicates a violating design value for the 8-hour 2008 ozone NAAQS, then the triggering event will be the date of the design value violation, and not the final QA/QC date. However, if initial monitoring data indicates a possible design value violation but later QA/QC indicates that a NAAQS violation did not occur, then a triggering event will not have occurred, and contingency measures will not need to be implemented.

- Reasonable Available Control Technology (RACT) for NO_X sources in nonattainment counties
- Programs or incentives to decrease motor vehicle use, including employer-based programs, additional park and ride services, enhanced transit service and encouragement of flexible work hours/compressed work week/telecommuting
- Trip reduction ordinances
- Additional emissions reductions on stationary sources
- Enhanced stationary source inspection to ensure that emissions control equipment is functioning properly
- Voluntary fuel programs, including incentives for alternative fuels
- Construction of high-occupancy vehicle (HOV) lanes, or restriction of certain roads or lanes for high-occupancy vehicles
- Programs for new construction and major reconstruction of bicycle and pedestrian facilities, including shared use paths, sidewalks, and bicycle lanes.
- Expand Air Quality Action Day activities/Clean Air Partners public education outreach
- Expansion of E-government services at State and local level
- Additional enforcement or outreach on driver observance of reduced speed limits
- Additional transportation policies
- Promotion of non-motorized transportation
- Promotion of tree-planting standards that favor trees with low VOC biogenic emissions
- Promotion of energy saving plans for local government
- Gas can and lawnmower replacement programs
- Seasonal open burning ban in nonattainment counties
- Evaluation of anti-idling rules and/or policy
- Additional controls in upwind areas, if necessary

Other control measures, not included in the above list, will be considered if new control programs are deemed more advantageous for this area.

Appendix A

AMEC Environment & Infrastructure, Inc.,

"Development of the 2018 Projection Point Source Emission Inventory in the SESARM Region"

Metro 4, Inc. – SESARM
The Southeastern Local Air Pollution Control Agencies — Southeastern States Air Resource Managers, Inc.

Development of the 2018 Projection Point Source Emission Inventory in the SESARM Region

(Version 1.0)

Prepared for:

John Hornback
Executive Director, Southeastern States Air Resource Managers, Inc.
526 Forest Parkway, Suite F
Forest Park, GA 30297-6140.
(404) 361-4000, FAX (404) 361-2411
hornback@metro4-sesarm.org

Prepared by:

AMEC Environment & Infrastructure, Inc.

404 SW 140th Terrace
Newberry, FL 32669

(352) 333-6617, FAX (352) 333-6622
bill.barnard@ AMEC.com

Mark Diblin
Senior Principal

William R. Barnard
Senior Principal

AMEC Project No.: 6066-09-0326.02
Contract No.: S-2009-06-02

February 11, 2014

Table of Contents

List of Exhibits

List of Appendices

List of Acronyms and Abbreviations

Acronym	**Description**
AMEC	AMEC Environment & Infrastructure, Inc.
CAMD	Clean Air Markets Division of EPA
CAP	Criteria Air Pollutant
CE	Control Equipment (NIF table)
CO	Carbon Monoxide
EGU	Electric Generating Unit
EP	Emission Process (NIF table)
EPA	U.S. Environmental Protection Agency
EU	Emission Unit (NIF table)
NAAQS	National Ambient Air Quality Standards
NEI	National Emission Inventory
NH_3	Ammonia
NIF	National Emission Inventory Input Format
NODA	Notice of Data Availability
non-EGU	Non Electric Generating Unit
NO_x	Oxides of Nitrogen
PM	Particulate Matter
PM-CON	Primary PM, Condensable portion only (all < 1 micron)
PM10-FIL	Primary PM10, Filterable portion only
PM10-PRI	Primary PM10, includes filterables and condensables, PM10-PRI = PM0-FIL + PM-CON
PM25-FIL	Primary $PM_{2.5}$, Filterable portion only
PM25-PRI	Primary $PM_{2.5}$, includes filterables and condensables PM25-PRI = PM25-FIL + PM-CON
QA	Quality Assurance
SCC	Source Classification Code
SEMAP	Southeastern Modeling, Analysis, and Planning
SESARM	Southeastern State Air Resource Managers, Inc.
S/L	State/Local
SO_2	Sulfur Dioxide
TR	Transport Rule
TSD	Technical Support Document
VOC	Volatile Organic Compounds

1.0 ANNUAL 2018 PROJECTION INVENTORY FOR POINT SOURCES

1.1 INTRODUCTION

In 2009, the Southeastern State Air Resource Managers, Inc. (SESARM) initiated a new Southeastern Modeling, Analysis, and Planning (SEMAP) project. The SEMAP project addresses the next phase of ozone, fine particle, and regional haze assessment obligations through funding from two grants awarded by the U.S. Environmental Protection Agency (EPA).

This technical support document (TSD) explains the data sources, methods, and results for preparing the 2018 criteria air pollutant (CAP) and ammonia (NH_3) projected emission inventory for point sources for the Southeastern U.S. The region includes Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. In general, point sources in this inventory are sources classified as major sources under the Title V permitting program and sources required to submit hourly emissions data to EPA under various Clean Air Act programs. Some State and local agencies included smaller sources in the 2007 point source base year inventory, which was used as the basis for developing the emission projections for 2018. The inventory includes annual emissions for sulfur dioxide (SO_2), oxides of nitrogen (NO_x), volatile organic compounds (VOC), carbon monoxide (CO), ammonia (NH_3), and five components of particulate matter (PM).

Included in the PM emissions are emissions categorized as filterable, condensable, or total. Filterable emissions are generally considered to be the particles that are trapped by the glass fiber filter in the front half of a Reference Method 5 or Method 17 sampling train. Vapors and particles less than 0.3 microns pass through the filter. Condensable particulate matter is material that is emitted in the vapor state which later condenses to form homogeneous and/or heterogeneous aerosol particles. The PM species in the inventory are categorized as: all filterable and condensable particles with an aerodynamic diameter less than or equal to a nominal 10 and 2.5 micrometers (i.e., PM10-PRI and PM25-PRI, respectively); filterable particles with an aerodynamic diameter less than or equal to a nominal 10 and 2.5 micrometers (i.e., PM10-FIL and PM25-FIL, respectively); and condensable particles (PM-CON). Note that PM10-PRI equals the sum of PM10-FIL and PM-CON, and PM25-PRI equals the sum of PM25-FIL and PM-CON.

The EPA has provided guidance on developing emission inventories to be used with models and other analyses for demonstrating attainment of air quality goals for ozone, fine particles, and regional haze (EPA 2005, EPA 2007). According to the EPA guidance, there are potentially two different base year emissions inventories. One is the base case inventory which represents the actual emissions for the meteorological period that is being modeled. This inventory is generally used for model performance evaluations. The second potential base year inventory is called the baseline inventory, which is generally used as the basis for projecting emissions to the future. The base case inventory may include day specific information (e.g. hourly continuous emission monitoring data for point sources) that EPA considers not appropriate for using in future year projections. Therefore, the baseline inventory may need to replace the day specific emissions with average or “typical” emissions (for certain types of sources). However, while a “typical” electric generating unit (EGU) inventory was prepared and submitted to SEMAP for review and comment, it was never finalized. As a consequence, for the 2007 SEMAP point source inventory, the base case and baseline inventories are identical and are what were used as the basis for development of the 2018 projection inventory.

The 2018 projection inventory went through several rounds of quality assurance (QA) reviews by State and local (S/L) agencies, as well as a review by stakeholders. Corrections and improvements were made to the inventory. This document discusses the final 2018 projection inventory prepared for EGU and non-EGU point sources (SEMAP 2018 Point NIF V_1d_2013-10-25.mdb).

1.2 INITIAL DATA SOURCES AND QA REVIEW

Version 1.10b of the 2007 base year point source inventory was developed using data submitted by State and local agencies in the region, as well as data from the Clean Air Markets Division of EPA (CAMD) hourly emission monitoring database. That version of the 2007 base year inventory was used as the basis for the development of the 2018 projection year inventory. For non-EGU sources, the 2018 projection inventory was developed using growth factors, control factor files obtained from both the States and EPA and information on shutdowns. For EGU sources, data were obtained from

State and stakeholder review and updates to EGU sources, based on spreadsheets related to both controls and unit availability. The EGU spreadsheets were developed as part of the Eastern Regional Technical Advisory Committee (ERTAC) work to ascertain future year EGU controls, unit availability and new units. The data collected and reviewed as part of this effort are described in the sections below.

1.3 NON-EGU PROJECTIONS

The general equation for preparing emission projections for the non-EGU sources was:

$$Emiss_{FY} = Emiss_{2007} \times GF \times [1 - [CE_{FY}/100][RE_{FY}/100][RP_{FY}/100]]$$

Where:

$Emiss_{FY}$ = emissions in forecast year (e.g., 2018);
$Emiss_{2007}$ = emissions in 2007 base year inventory;
GF = growth factor (ratio of forecast year to 2007 base year emission activity);
CE_{FY} = control equipment (CE) for forecast year relative to base year CE;
RE_{FY} = rule effectiveness (RE) for forecast year; and
RP_{FY} = rule penetration (RP) for forecast year relative to base year RP.

The source of each of these factors is described in the sections that follow.

1.3.1 Growth Factors

Growth factors for the development of the 2018 SEMAP non-EGU projection inventory were developed from data obtained from the Energy Information Administration (EIA) on either fuel use projections or industrial output projections. The information available from EIA for each sector is described below.

Fuel Use Projections. The EIA publishes the Annual Energy Outlook (AEO) each year that evaluates projections of energy use by fuel type for utility, industrial, and commercial operations. For this project both the 2012 AEO2012 (EIA 2012) and the 2010 AEO2010 (EIA 2010) were utilized. The AEO2010 data was only used to back-fill values for 2007 and 2008. The AEO2012 data started with the year 2009. AMEC Environment & Infrastructure, Inc. (AMEC) produced a melded data set from the two AEO data sets by taking projected fuel use values for each fuel type and category from the AEO2010 data and inserting it into the AEO2012 data. While there were slight differences in the methods used to produce the AEO2010 and AEO2012 data sets, SESARM states decided to use the combined data set to produce a cohesive data set that covered all required years (2007 to 2018).

The projections available from EIA are provided by US Census Division (see Exhibit 1). The South Atlantic region includes FL, GA, NC, SC, VA, and WV. The East South Central region includes AL, KY, MS, and TN. Although one might expect different growth rates in each of these States due to unique demographic and socioeconomic trends, the AEO assigns the same growth rates to all States within each region. Exhibits 2 and 4 summarize the growth factors for key fuels (coal, residual oil, distillate oil, natural gas) and point source sectors (utility, industrial, and commercial) and geographic area (South Atlantic, East South Central) for the years 2007 to 2035 using the melded data set prepared by AMEC. The melded data were provided to SESARM states for review and comment.

Based on comments received during the review process, SESARM decided to make slight changes to several of the growth factors primarily due to discontinuities observed as the result of the melded data. The following changes/assumptions were made for the following sectors and Census Divisions:

Utility sector:
Residual and Distillate - Set the growth factors to 1 (e.g., no growth). This applied to states in both Census Divisions.

Industrial sector:
Residual - Set the growth factors to 0.8. For AEO 2010 East South Central, AEO 2010 South Atlantic, and 2012 AEO South Atlantic the factors were all approximately 0.8 but went to zero for the 2012 East South Central Division. SESARM felt that the 0.8 value better represented what was actually occurring over the projection period. This value

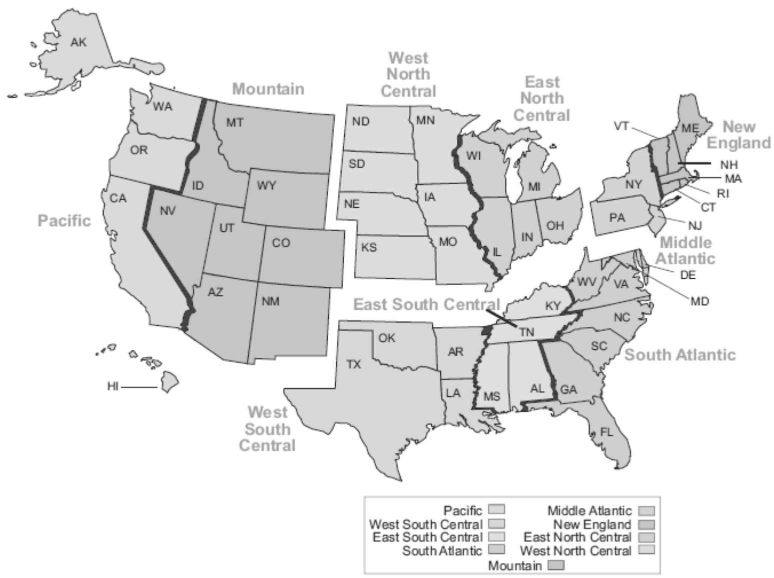
applied to states in both Census Divisions.

Commercial sector:
Residual and Coal - Set the growth factors to 1 (e.g., no growth). This applied to states in both Census Divisions.

All other fuel/sector combinations used the actual calculated growth factors from the melded data set. The growth factor was determined by taking the ratio of the 2018 value to the 2007 value (2018/2007 = growth factor). Exhibits 3 and 5 show the final growth factors developed after review by the States.

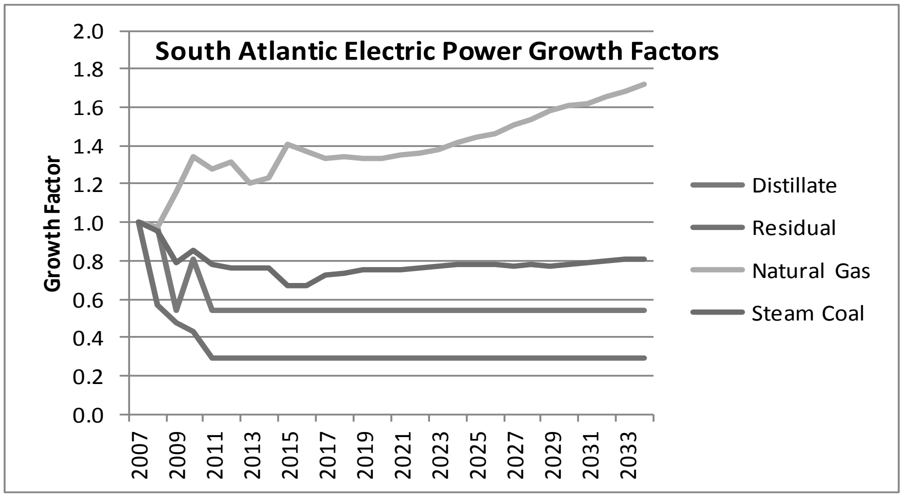
The fuel use growth factors were then matched with corresponding source classification codes (SCC) in order to project the 2007 base year values to 2018. The SCC identifies both the sub-sector (electric power SCCs begin with 1-01 and 2-01, industrial SCCs begin with 1-02 and 2-02, and commercial SCCs begin with 1-03 and 2-03) and the fuel type. For utility sources, only emission sources that were not providing power to the grid or existing sources with new controls or fuel switches were included in the growth-based projections.

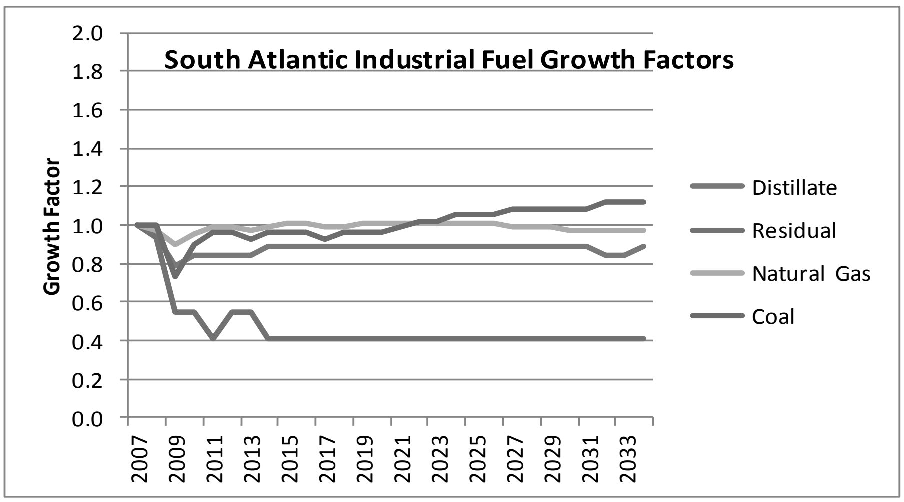
Exhibit 1. U.S. Census Divisions



Source: Energy Information Administration. Office of Integrated Analysis and Forecasting

Exhibit 2. Melded Fuel Consumption Growth Factors for South Atlantic Region 2007–2035 (FL, GA, NC, SC, VA, WV)


South Atlantic Electric Power Growth Factors
Growth Factor
Distillate
Residual
Natural Gas
Steam Coal


South Atlantic Industrial Fuel Growth Factors
Growth Factor
Distillate
Residual
Natural Gas
Coal

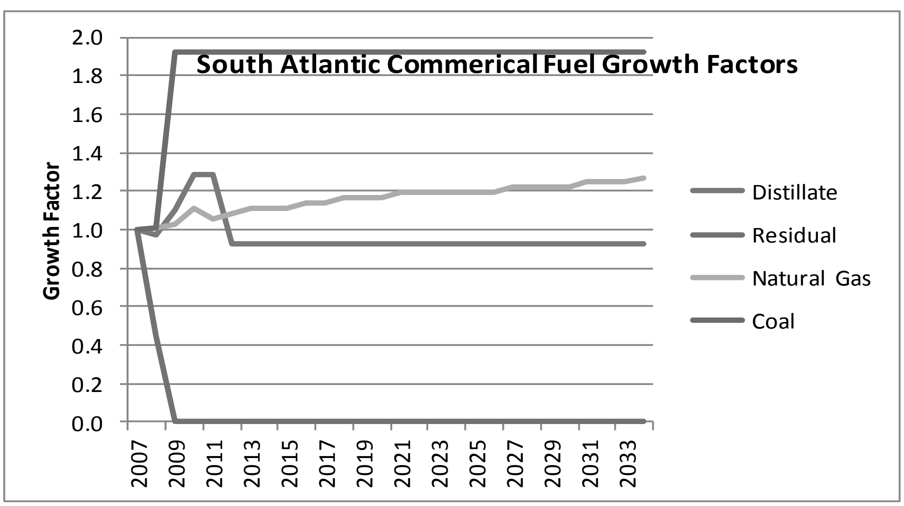
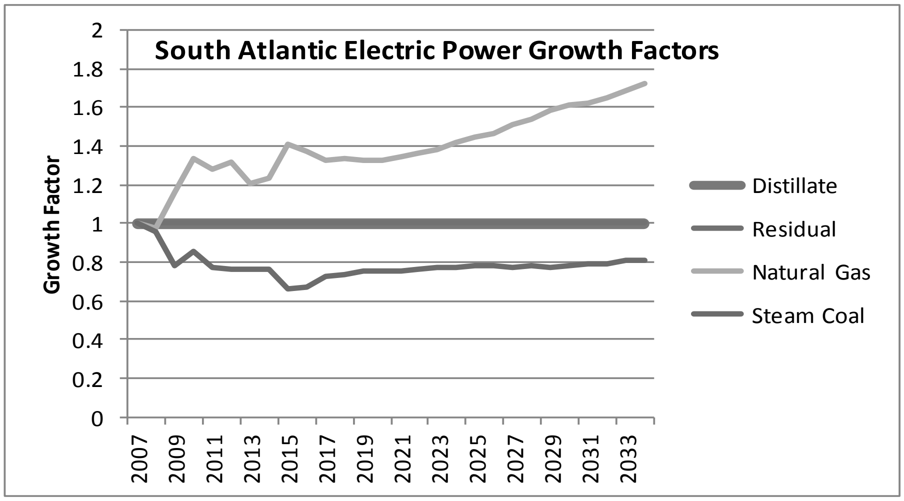
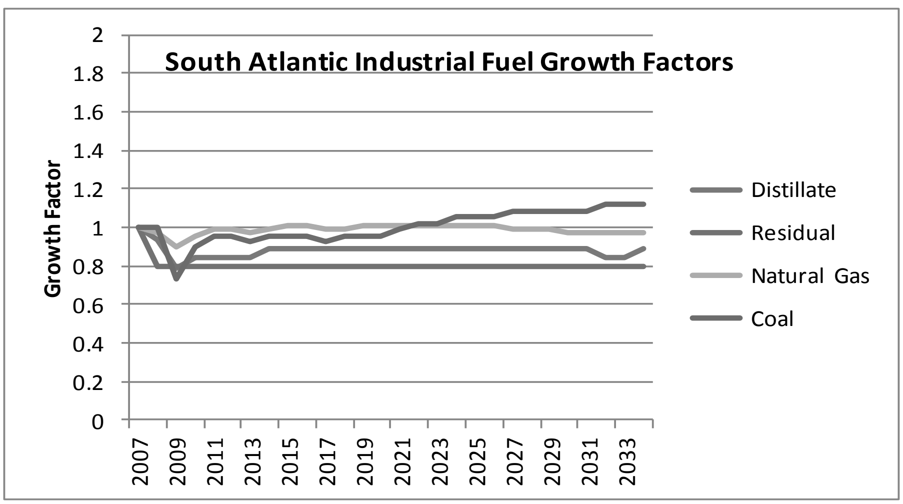

South Atlantic Commerical Fuel Growth Factors
Growth Factor
Distillate
Residual
Natural Gas
Coal

Exhibit 3. Final Fuel Consumption Growth Factors for South Atlantic Region 2007–2035 (FL, GA, NC, SC, VA, WV)





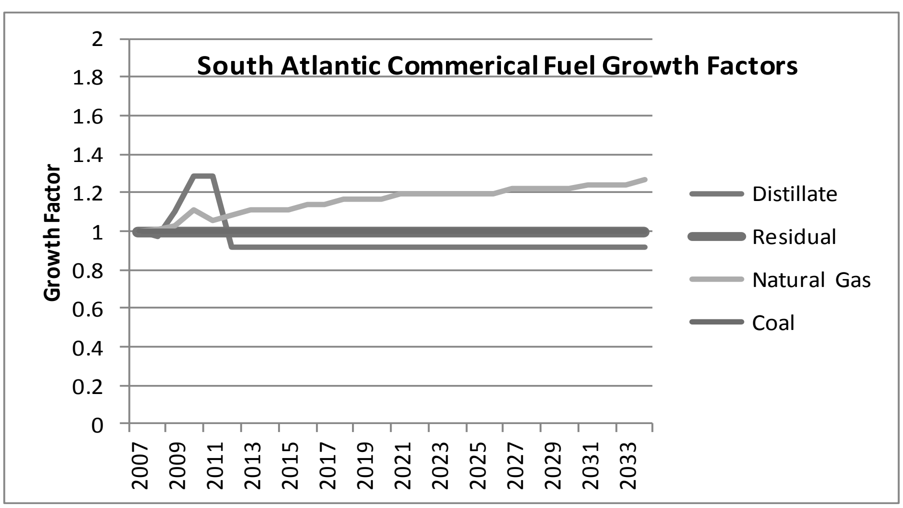
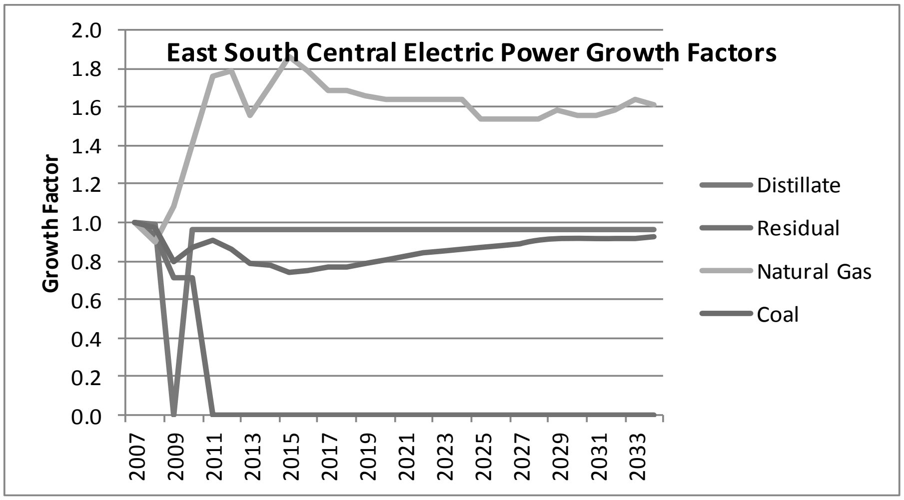
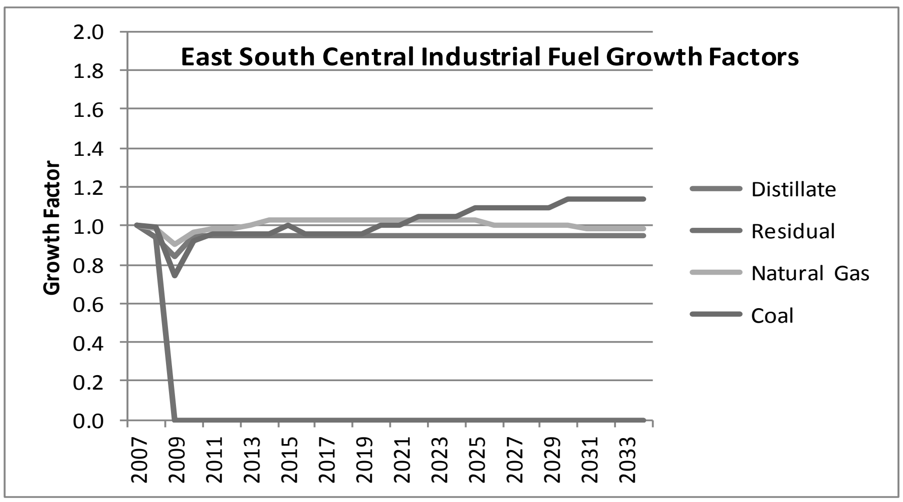


Exhibit 4. Melded Fuel Consumption Growth Factors for East South Central Region 2007–2035 (AL, KY, MS, TN)





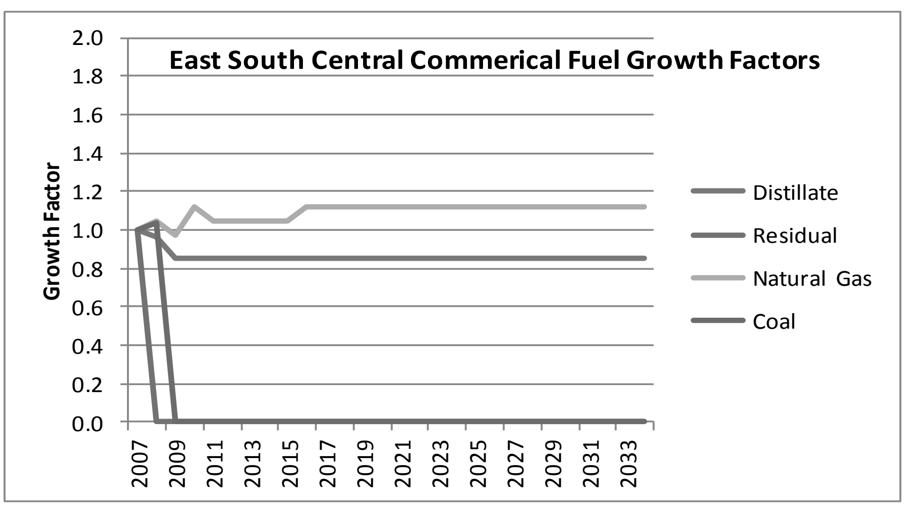
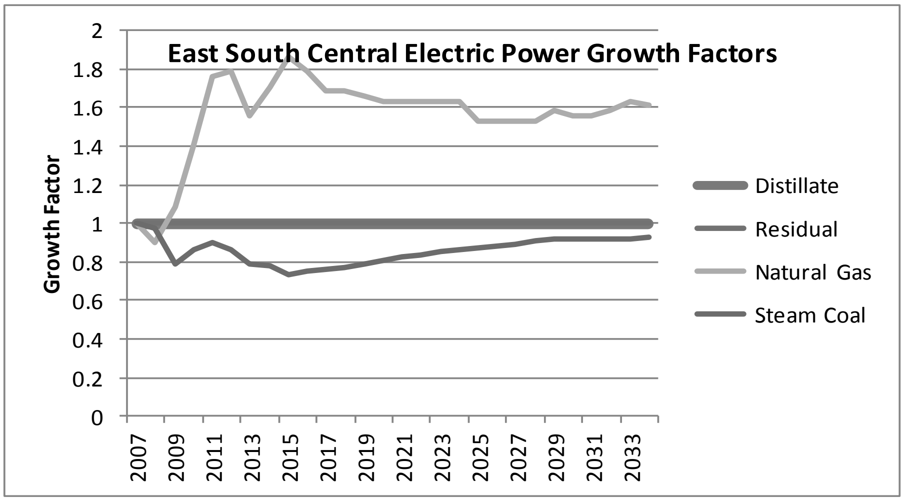
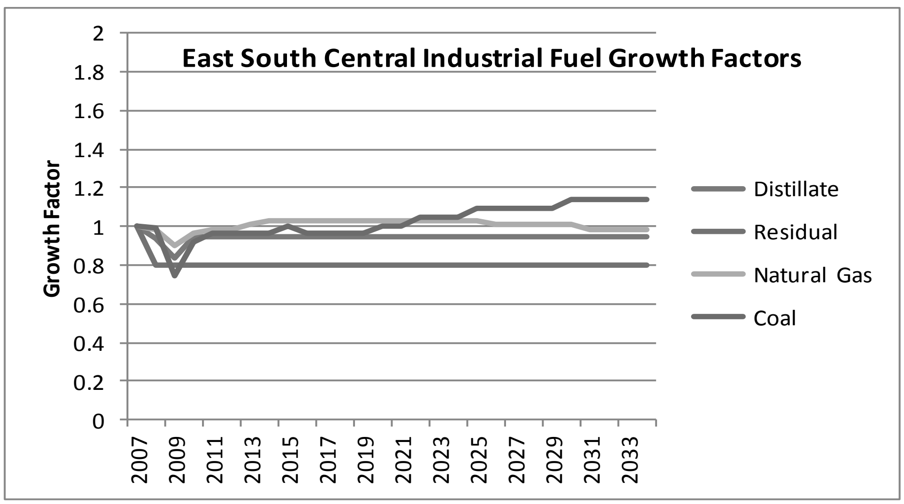
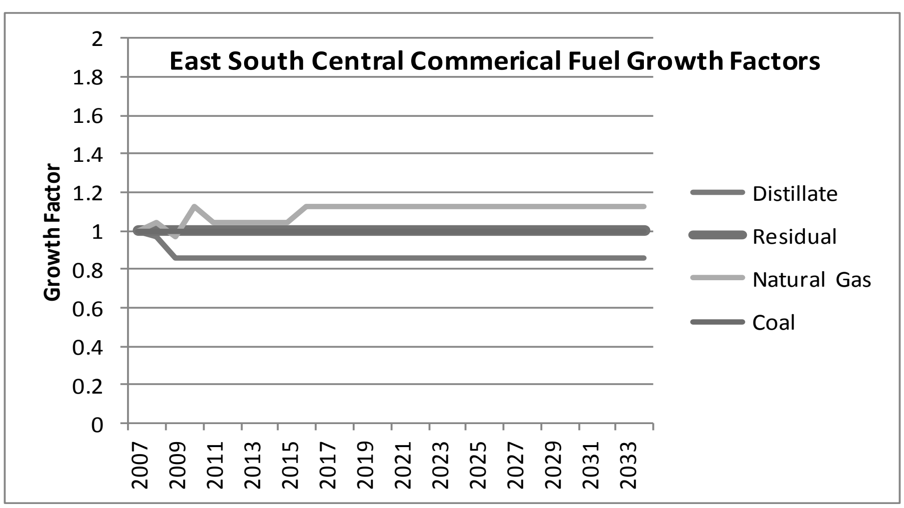


Exhibit 5. Final Fuel Consumption Growth Factors for East South Central Region 2007–2035 (AL, KY, MS, TN)







Industrial Output Projections. For non-energy consuming non-EGU source categories, we used data obtained for EPA's ongoing non-EGU stationary source projections improvement project, which uses socioeconomic projections from the AEO2010. Although the primary purpose of the AEO is forecasting energy sector demand/supply, AEO also develops socioeconomic projections that are used as key inputs to its energy forecasting models. The socioeconomic projections are provided by US Census Division (see Exhibit 1), but must be requested from EIA. We used the AEO projections of industrial output by North American Industry Classification System (NAICS) code. We computed ratios representing the projection year level of industrial output relative to 2007 levels of activity. The AEO2010 industrial output growth factors were used to project emissions from non-fuel consuming units based on the NAICS code of the facility.

For this work, information on revenue by industry type (REVIND) was obtained for the East South Central and South Atlantic Census Divisions. In most cases, the revenue based growth factors were based on 3 digit NAICS codes, although in some cases, the NAICS codes used were four or five digits.

The cross reference for each industrial revenue type to the corresponding NAICS code is shown in the Exhibit 4 below.

Exhibit 6. Socioeconomic Growth Factor/NAICS Code Cross Reference

Output Basis for Growth Factor	Applicable NAICS Codes
REVIND1 Food Products (Billions of Fixed 2000 Dollars)	311
REVIND2 Beverage and Tobacco Products (Billions of Fixed 2000 Dollars)	312
REVIND3 Textile Mills & Textile Products (Billions of Fixed 2000 Dollars)	313, 314
REVIND4 Apparel (Billions of Fixed 2000 Dollars)	315
REVIND5 Wood Products (Billions of Fixed 2000 Dollars)	321
REVIND6 Furniture and Related Products (Billions of Fixed 2000 Dollars)	337
REVIND7 Paper Products (Billions of Fixed 2000 Dollars)	322
REVIND8 Printing (Billions of Fixed 2000 Dollars)	323
REVIND9 Basic Inorganic Chemicals (Billions of Fixed 2000 Dollars)	32511, 32519
REVIND10 Basic Organic Chemicals (Billions of Fixed 2000 Dollars)	32512-32518
REVIND11 Plastic and Synthetic Rubber Materials (Billions of Fixed 2000 Dollars)	3252
REVIND12 Agricultural Chemicals (Billions of Fixed 2000 Dollars)	3253
REVIND13 Other Chemical Products (Billions of Fixed 2000 Dollars)	3254-3259
REVIND14 Petroleum Refineries (Billions of Fixed 2000 Dollars)	32411
REVIND15 Other Petroleum and Coal Products (Billions of Fixed 2000 Dollars)	32412, 32419
REVIND16 Plastics and Rubber Products (Billions of Fixed 2000 Dollars)	326
REVIND17 Leather and Allied Products (Billions of Fixed 2000 Dollars)	316
REVIND18 Glass & Glass Products (Billions of Fixed 2000 Dollars)	3272
REVIND19 Cement Manufacturing (Billions of Fixed 2000 Dollars)	32731
REVIND20 Other Nonmetallic Mineral Products (Billions of Fixed 2000 Dollars)	327 less 3272 & 32731
REVIND21 Iron & Steel Mills, Ferroalloy & Steel Products (Billions of Fixed 2000 Dollars)	3311, 3312
REVIND22 Alumina & Aluminum Products (Billions of Fixed 2000 Dollars)	3313
REVIND23 Other Primary Metals (Billions of Fixed 2000 Dollars)	3314, 3315
REVIND24 Fabricated Metal Products (Billions of Fixed 2000 Dollars)	332
REVIND25 Machinery (Billions of Fixed 2000 Dollars)	333
REVIND26 Other Electronic & Electric Products (Billions of Fixed 2000 Dollars)	334

Output Basis for Growth Factor	Applicable NAICS Codes
REVIND27 Transportation Equipment (Billions of Fixed 2000 Dollars)	336
REVIND28 Measuring & Control Instruments (Billions of Fixed 2000 Dollars)	335
REVIND29 Miscellaneous Manufacturing (Billions of Fixed 2000 Dollars)	339
REVIND30 Crop Production (Billions of Fixed 2000 Dollars)	111
REVIND31 Other Agriculture, Forestry, Fishing & Hunting (Billions of Fixed 2000 Dollars)	112 - 115
REVIND32 Coal Mining (Billions of Fixed 2000 Dollars)	2121
REVIND33 Oil & Gas Extraction & Support Activities (Billions of Fixed 2000 Dollars)	211, 213
REVIND34 Other Mining & Quarrying (Billions of Fixed 2000 Dollars)	2122, 2123
REVIND35 Construction (Billions of Fixed 2000 Dollars)	23
TOTAL REVIND ESC	Any not covered by those listed above

Only one State (NC) requested changes to the growth factors. Those changes were to set furniture and printing facilities to “no growth” throughout the State. Thus for those records, the original growth reference would have been either REVIND6 or REVIND8 but the revised growth reference would have been “State Requested No Growth”.

1.3.2 Control Factors – Non-EGU Sector

Control factors for each non-EGU source were obtained from EPA’s FTP site. The control packets were those used to prepare the 2020 projections from the 2005 National Emission Inventory (NEI). The control packets can be found at: ftp://ftp.epa.gov/EmisInventory/2005v4/projection_control_packets in the file named 2005_to_2020_projection_control_packets.zip. The information contained in those control packet files included controls for the programs listed in the table below:

Here are the national control programs applied to the non-EGU sector:

Control Program
Industrial/Commercial/Institutional Boiler (ICI) PM Controls
Office of Enforcement and Compliance Assurance (OECA) Settlements
Reciprocating Internal Combustion Engines (RICE) Rule
Transport Rule Notice of Data Availability (NODA) Cement Controls
Transport Rule Notice of Data Availability (NODA) facility/unit closures

Details related to the control programs obtained from EPA can be found in Table 2 of the document readme_2020_2005v4CAP_BAMF.doc found in the root directory of the FTP site listed above.

In addition to the control programs included in the EPA data, AMEC also contacted each of the SESARM States to determine if there were additional facilities specified as closed by the States, whether or not there were controls instituted by State Consent Decrees, and finally if there were specific State supplied controls that should be used for particular facilities. Where those existed, they were applied.

Once all of these controls were compiled they were used to determine the control efficiency to be used for the future year. All controls provided were assumed to be replacement control efficiencies (e.g., control efficiencies in lieu of any other controls). Replacement control percentages would be the same as what the control would be if there were no controls in place and then the control came into place in the projection year. Where no previous controls existed, these controls were applied in full.

Where existing controls existed, incremental changes in control efficiencies were calculated and applied to the existing controls.

The three criteria for applying controls were as follows:

1. If no control existed in the 2007 base year inventory, then the full replacement control was applied for 2018 along with the appropriate growth factor.
2. If an existing control was found, the replacement control value was compared to the existing control. If the existing control was found to be equal to or larger than the replacement control, then no change was made and only growth was applied to the base year emissions.
3. If an existing control was found and the existing control was found to be less than the replacement control, then the difference between the two controls was calculated and applied to the base year emissions along with the appropriate growth factor.

Units listed as closures were maintained in the database but the emissions were zeroed out. Appendix A provides a list of facility/emission unit/processes that were marked as closed either as a result of being identified by the State as being scheduled for closure between 2007 and 2018 or as a result of Transport Rule NODA closure identification in the EPA control packet information.

1.3.2.1 Rule Penetration/Rule Effectiveness

The 2007 base year inventory contained no information on rule penetration (RP) and rule effectiveness (RE) in the data provided by the States. In the control packet information received from EPA, RE and RP data were only provided for the RICE rule and for the NODA cement controls. In both cases, both RP and RE were equal to 100. Thus the RE and RP terms in the equation in section 1.3 would both be equal to 1 and have no effect on the projected emissions. Thus emissions in the 2018 projection inventory essentially represent growth and any new controls (full or incremental) only.

1.3.2.2 Additional State Revisions

Only one state (WV) provided additional information relative to non-EGU modifications for the 2018 projection inventory. WV added units at Capital Cement (State Facility ID = 5400300006). Capital Cement had units listed for shut down in the Transport Rule NODA closures data received from EPA, however those units were replaced by newer units. WV supplied 2010 emissions from the new unit (Unit ID 042) that were replacing the closed units (Kilns #7, #8, and #9; Unit IDs 010, 011, and 012). AMEC calculated revised growth factors for that unit from 2010 to 2018 using the EIA data and applied those growth factors to the 2010 emissions to calculate 2018 emission estimates. No new controls were assumed on that unit.

1.3.2.3 Non-EGUs That Had Controls Applied for 2018

Appendix B provides a list of the non-EGU facility/emission unit/processes that had controls applied for the 2018 projection inventory.

1.4 EGU PROJECTIONS

As indicated above, ERTAC developed a pair of spreadsheets to collect information about existing and future controls for EGUs as well as potential fuel switches along with a spreadsheet that provided information about unit availability and new units.

Each SESARM State was provided an initial spreadsheet to review. The ERTAC versions of the spreadsheets used to provide control information only contained information related to NO_x and SO_2 controls. Prior to providing each State with the spreadsheet to review, AMEC modified each of the control spreadsheets to provide space for providing information related to all other criteria pollutants. Very few of the States provided information on pollutants other than NO_x or SO_2.

Data from those spreadsheets was used to update the existing 2007 base year inventory to reflect changes that would be in place for 2018. In the 2007 base year inventory, point sources were marked as non-EGU CAMD, non-EGU non-CAMD, EGU CAMD and EGU non-CAMD.

For the 2007 base year inventory, AMEC had added a flag to the NIF EP table to identify each unit according to the following classification scheme:

- **EGU-CAMD** are combustion units that report hourly emissions to the CAMD database and have been classified as EGUs by the S/L agency;

- **EGU-nonCAMD** are combustion units with SCC starting with 101 or 201 that are not contained in the CAMD database;

- **nonEGU-CAMD** are combustion units that report hourly emissions to the CAMD database and have been classified as non-EGUs by the S/L agency; and

- **nonEGU-nonCAMD** are all other point sources not classified above.

The above flags allow for sources to be categorized in different ways for emission projection and emission reporting purposes.

For the purposes of the EGU component of the 2018 projection inventory all of those classifications were maintained with one exception. All new EGUs were assumed to be CAMD units and thus are assumed to be units that will report hourly emissions to the CAMD database in 2018.

EGUs were processed in the following steps:

1. The control spreadsheets were evaluated for new controls on existing units. These controls were identified by evaluating the control start date to determine if it was put in place after 2007 (the base year). Once the post-2007 controls were identified, these units were evaluated to determine what the existing controls were by pollutant and whether or not the new controls exceeded what was listed in the 2007 base year inventory. If they were greater than any existing controls then the incremental improvement was applied and the emissions were grown using the utility fuel growth factors discussed in section 1.3. If they were new controls then they were put into place and the emissions were projected using those controls and the growth factors discussed in section 1.3.
2. After all potential controls were applied for existing sources, sources undergoing fuel switching were processed. Sources that had fuel switching were processed in one of two ways. First, if there was an existing process that corresponded to the fuel being switched to (normally natural gas), then all of the switched emissions were placed into that process. The emissions were estimated using the heat input information of the boiler and emission factors for the type of boiler that was being fired with the new fuel. In those cases where there was not a process already for the new fuel, the process that had been the major emission source (typically coal) was transferred to the new fuel and a new SCC was provided for that process that corresponded to the new fuel and boiler type. As with units with existing processes for the new fuel type, the emissions were estimated using the heat input capacity of the unit and the corresponding emission factor for that type boiler and fuel. Emissions were then grown to 2018 using the utility fuel growth factors described in section 1.3.
3. New units were added to the file based on the data provided for new units in the unit availability spreadsheet. In most cases, States provided estimates for the 2018 emissions or permit based emission limits. In the cases where permit limits were provided, AMEC maintained those values regardless of when the new unit came on-line. Those units were not grown from the year they came on-line if different than 2018.

1.4.1 Default PM Control Factors

In those cases where SO_2 controls were indicated as new controls for EGUs and a scrubber was the indicated control, AMEC also applied a default PM control if no PM control information was provided. For those sources that had new SO_2 scrubber controls and no PM controls a default value of 50% was applied to all PM emissions.

1.4.2 Revised and New Stack Information

On the ERTAC spreadsheets for unit availability, a spreadsheet tab was provided to allow the States to update and add stack information for any units that had changed (due to changed operations, fuel switching or the addition of a new unit). The information on stack information was provided by ORIS code and unit ID and included information on release point height (feet), release point diameter (feet), exit gas temperature (degrees F), and exit gas velocity (meters/sec). For new sources it also included estimates of the annual emissions of some or all of the criteria pollutants. In the cases of missing pollutants, emission factor ratios established to augment similar data for the base year inventory were used to estimate emissions based on the SCC assigned to each unit (which was based on boiler and fuel types).

1.5 STATE AND STAKEHOLDER REVIEW

In addition to review of the ERTAC spreadsheets prior to submittal to AMEC, States and stakeholders were provided the opportunity to review the estimates for EGUs following the completion of the projection inventory. A complete set of unit/process/pollutant level estimates was prepared and submitted to the SESARM States for review and comment and provided for stakeholder download. The files (provided as Excel spreadsheets) had separate sheets for existing units and new units so that those could be reviewed separately. The spreadsheets included the old and new control levels, the growth factors and an indicator of where the growth factor and the control information were obtained. This enabled the States and stakeholders to evaluate the source of the data used to prepare the emissions at the process level. AMEC used comments on the spreadsheets to prepare revised emissions estimates which then were incorporated into version 1.0 of the 2018 point source projection inventory.

1.6 EGU CLOSURES AND CONTROLLED SOURCES

Appendix C provides a table with the facility/emission unit/process ID of the EGUs that were indicated as closures by States and stakeholders. Where available (and applicable) the ORIS ID and ORIS Boiler ID are also included. The units indicated below were marked as closures between 2007 and 2018. Their records were maintained in the database but their emissions were set to zero.

Appendix D provides a list of those facility/emission unit/processes that indicated controls different than the 2007 base year inventory. Where available, the ORIS ID and ORIS Boiler ID are also included.

1.7 NEW EGU UNITS

Appendix E provides a list of the names, State Facility Identifier, Emission Unit ID, ORIS ID, ORIS Boiler ID and latitude and longitude for the new EGU units that were added to the 2018 emission inventory.

1.8 2018 POINT SOURCE EMISSION SUMMARY

This section presents State-level summaries of the annual point source emissions by pollutant in the 2007 SEMAP version 1.10b inventory base year inventory and compares the emissions to the 2018 version 1.0 projection inventory. For most States and pollutants, point source emissions have decreased from 2007 to 2018. The decrease is most substantial for those sources and pollutants that are subject to future major control programs (e.g., the Clean Air Interstate Rule [CAIR] or Cross-State Air Pollution Rule [CSAPR]). In particular, SO_2 and NO_x for EGU sources show significantly reduced emissions relative to the base year levels, since those pollutants are predominantly affected by those programs. SO_2 shows a 65% reduction compared to base year levels for 2018 for the SEMAP States as a whole. NO_x shows a 38% reduction over the same timeframe.

Exhibit 7 shows that CO emissions in the SEMAP region increase by roughly 1 percent between 2007 and 2018. Exhibit 8 shows that most of the point source CO emissions (about 81 percent) come from non-EGUs that are not required to report emissions to CAMD in 2018. These sources are not currently subject to any major control programs

Exhibit 9 shows that NH_3 emissions in the SEMAP region have increased approximately 9 percent over the period 2007 to 2018. The increase in NH_3 is predominantly related to growth with few if any new controls for future years. Exhibit 10 shows that most of the point source NH_3 emissions (about 93 percent) come from non-EGUs that are not required to report emissions to CAMD. This is true for all States except for Florida. Florida has most of its NH_3 emissions associated with EGU CAMD reporters.

Exhibit 11 shows that NO_x emissions have decreased by about 38 percent between 2007 and 2018. All States (except Mississippi, which did not provide data for the inventory effort and thus are mainly growth only projections) showed a decrease in NO_x emissions from point sources. Exhibit 12 shows that about 51 percent of the point source NO_x emissions come from EGUs that are required to report emissions to CAMD. Another 44 percent of the NO_x emissions result from non-EGUs that are not required to report emissions to CAMD.

Exhibit 13 shows that PM10-PRI emissions in the SEMAP region have decreased by about 14 percent between 2007 and 2018. Two States (Mississippi and Tennessee) showed modest (< 10 percent) increases for that same time period. Exhibit 14 shows that about 39 percent of the point source PM10-PRI emissions come from EGUs that are required to report emissions to CAMD. Another 60 percent of the PM10-PRI emissions result from non-EGUs that are not required to report emissions to CAMD.

Exhibit 15 shows that PM25-PRI emissions in the SEMAP region have decreased by about 12 percent between 2007 and 2018, with modest increases again in Mississippi and Tennessee. Exhibit 16 shows that about 40 percent of the point source PM25-PRI emissions come from EGUs that are required to report emissions to CAMD. Another 59 percent of the PM25-PRI emissions result from non-EGUs that are not required to report emissions to CAMD.

Exhibit 17 shows that SO_2 emissions in the SEMAP region have decreased by about 65 percent between 2007 and 2018 predominantly due to large Federal regulatory programs (CAIR/CSAPR). Georgia showed a decrease in SO_2 emissions of 90% relative to the 2007 base year values. Exhibit 18 shows that most of the point source SO_2 emissions (about 63 percent) come from EGUs that are required to report emissions to CAMD. Another 31 percent of the SO_2 emissions result from non-EGUs that are not required to report emissions to CAMD. In 2007 these values were 87 and 11 percent respectively. The switch to higher percentages associated with the non-EGU sector are consistent with large decreases in the EGU sector.

Exhibit 19 shows that VOC emissions in the SEMAP region have remained essentially flat from 2007 to 2018. Exhibit 20 shows that nearly all of the point source VOC emissions (about 97 percent) result from non-EGUs that are not required to report emissions to CAMD.

The reasons for the differences between 2007 and 2018 are many and vary by State, facility, and pollutant. In large part, however, the largest changes seen are the result of on-the-book controls associated with Federal regulatory programs such as CAIR/CSAPR and to some extent with changes in fuel usage due to fuel switching, particularly in the EGU sector. Some of the changes are also related to facility or emission unit closures.

Exhibit 7 – 2007 and 2018 Point Source CO Emissions by State (tons/year)

STATE	2007	2018	Change
Alabama	119,344	124,933	5%
Florida	111,280	108,288	-3%
Georgia	82,547	80,227	-3%
Kentucky	82,553	86,327	5%
Mississippi	40,294	41,845	4%
North Carolina	66,811	63,868	-4%
South Carolina	60,375	60,577	0%
Tennessee	51,185	47,766	-7%
Virginia	72,029	80,975	12%
West Virginia	65,230	66,860	2%
SEMAP	751,648	761,666	1%

Exhibit 8 – 2007 vs 2018 Point Source CO Emissions by Category (tons/year)

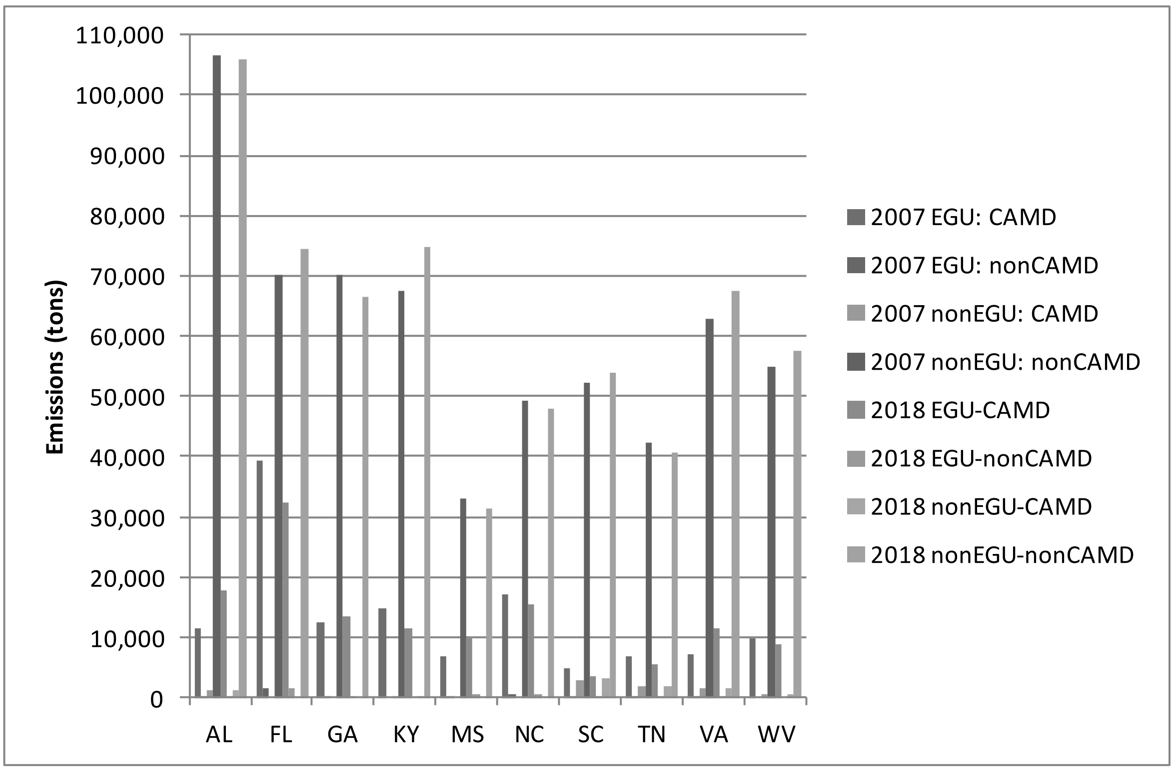


Exhibit 9 – 2007 and 2018 Point Source NH_3 Emissions by State (tons/year)

STATE	2007	2018	Change
Alabama	2,191	2,339	7%
Florida	1,661	2,700	62%
Georgia	6,046	6,192	2%
Kentucky	113	120	7%
Mississippi	1,640	1,806	10%
North Carolina	1,707	1,717	1%
South Carolina	1,125	1,276	14%
Tennessee	1,429	1,501	5%
Virginia	1,830	1,787	-2%
West Virginia	366	355	-3%
SEMAP	18,107	19,795	9%

Exhibit 10 – 2007 vs 2018 Point Source NH_3 Emissions by Category (tons/year)

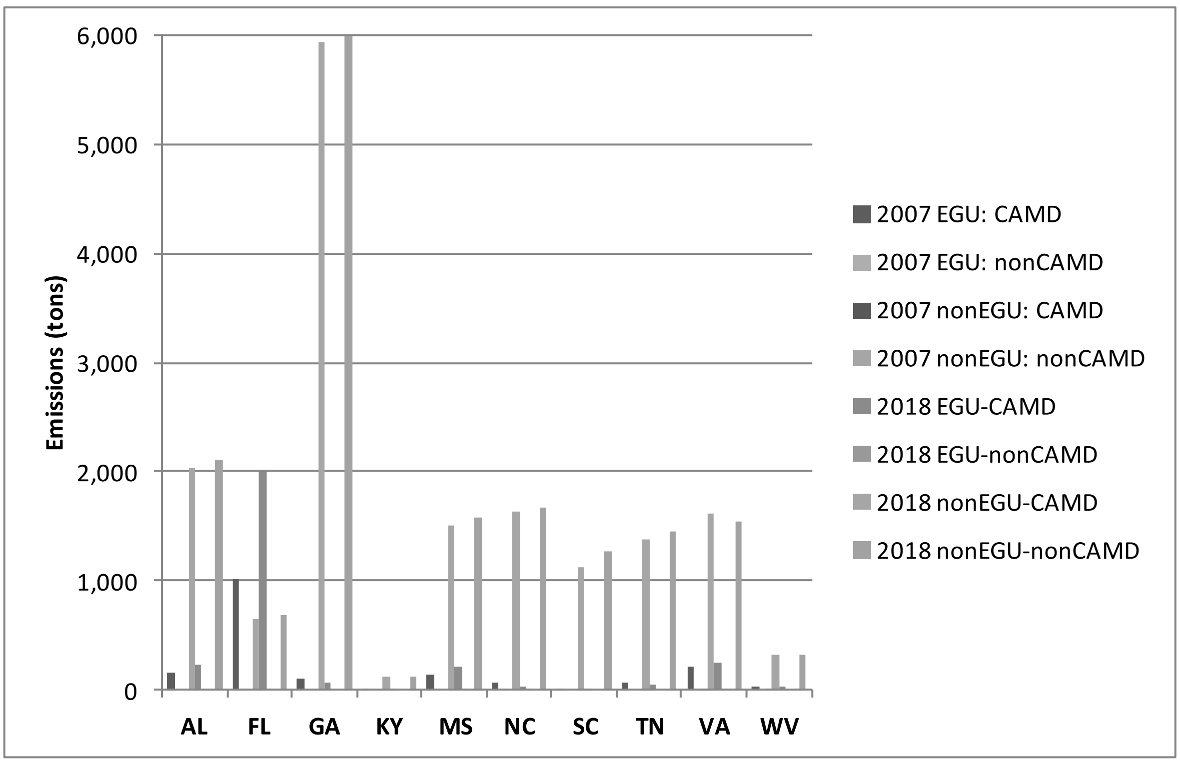


Exhibit 11 – 2007 and 2018 Point Source NO_x Emissions by State (tons/year)

STATE	2007	2018	Change
Alabama	197,963	114,552	-42%
Florida	237,473	128,629	-46%
Georgia	154,041	80,628	-48%
Kentucky	210,213	112,772	-46%
Mississippi	98,183	100,769	3%
North Carolina	100,379	67,504	-33%
South Carolina	81,220	55,928	-31%
Tennessee	144,763	119,858	-17%
Virginia	112,938	96,378	-15%
West Virginia	188,629	75,783	-60%
SEMAP	1,525,801	952,802	-38%

Exhibit 12 – 2007 vs 2018 Point Source NO_x Emissions by Category (tons/year)

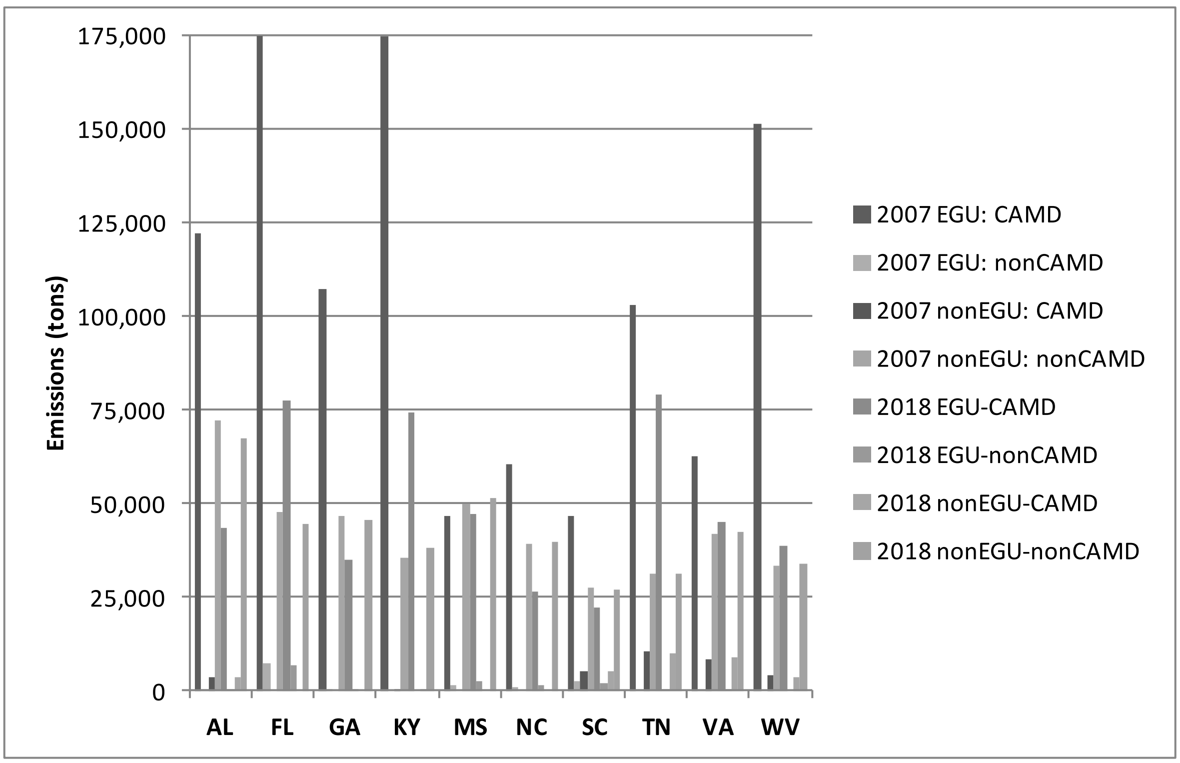


Exhibit 13 – 2007 and 2018 Point Source PM10-PRI Emissions by State (tons/year)

STATE	2007	2018	Change
Alabama	34,776	31,344	-10%
Florida	35,796	34,439	-4%
Georgia	30,225	22,662	-25%
Kentucky	30,678	28,986	-6%
Mississippi	12,368	12,797	3%
North Carolina	42,995	34,520	-20%
South Carolina	30,605	17,123	-44%
Tennessee	26,134	28,120	8%
Virginia	19,203	17,125	-11%
West Virginia	13,736	9,911	-28%
SEMAP	276,516	237,028	-14%

Exhibit 14 – 2007 vs 2018 Point Source PM10-PRI Emissions by Category (tons/year)

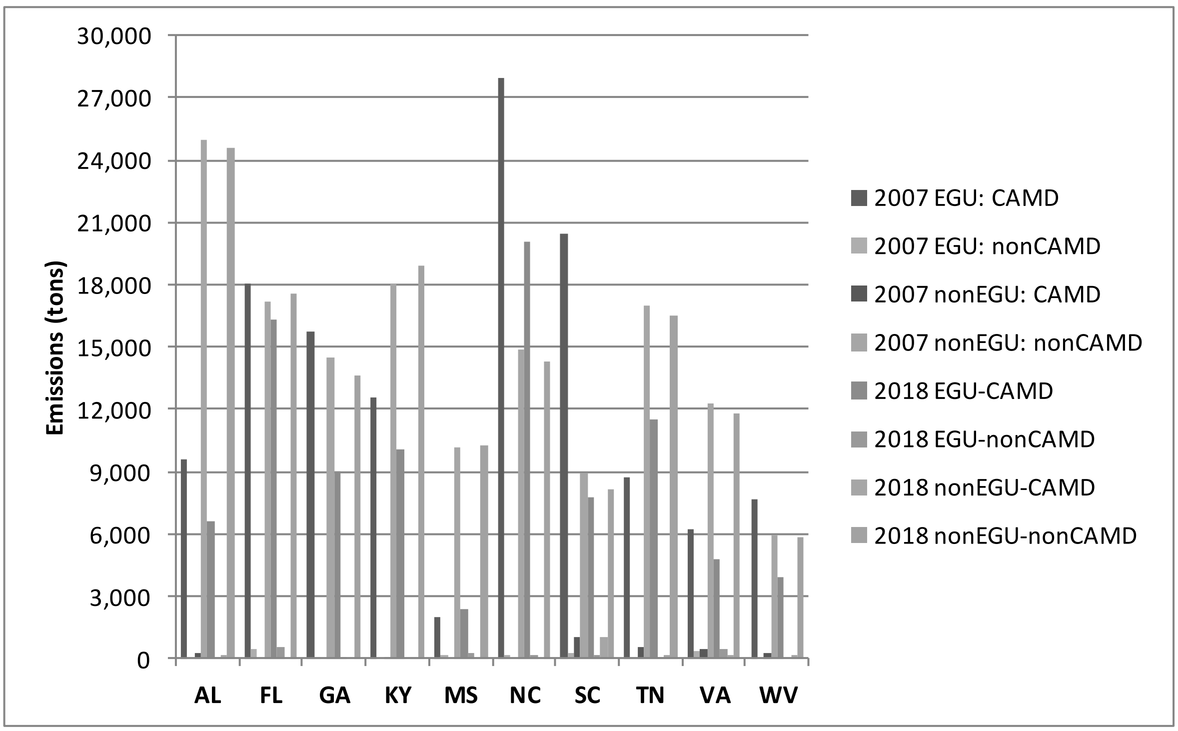


Exhibit 15 – 2007 and 2018 Point Source PM25-PRI Emissions by State (tons/year)

STATE	20077	2018	Change
Alabama	24,930	23,225	-7%
Florida	28,418	28,490	0%
Georgia	22,296	17,720	-21%
Kentucky	21,111	19,744	-6%
Mississippi	8,731	9,271	6%
North Carolina	33,444	26,978	-19%
South Carolina	23,493	13,404	-43%
Tennessee	20,403	23,137	13%
Virginia	14,875	13,510	-9%
West Virginia	9,173	6,327	-31%
SEMAP	206,874	181,807	-12%

Exhibit 16 – 2007 vs 2018 Point Source PM25-PRI Emissions by Category (tons/year)

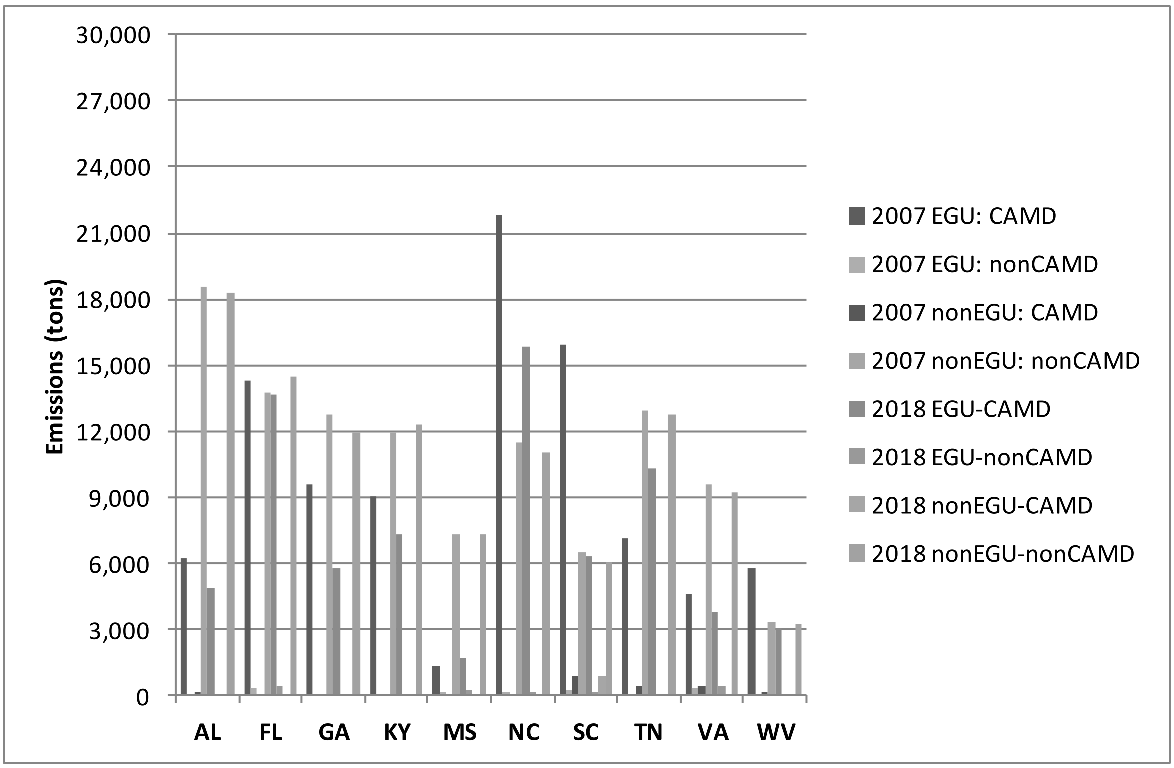


Exhibit 17 – 2007 and 2018 Point Source SO_2 Emissions by State (tons/year)

STATE	2007	2018	Change
Alabama	526,620	235,724	-55%
Florida	379,590	187,154	-51%
Georgia	683,358	65,827	-90%
Kentucky	410,414	162,427	-60%
Mississippi	94,978	80,173	-16%
North Carolina	420,438	73,762	-82%
South Carolina	216,125	101,527	-53%
Tennessee	287,668	166,627	-42%
Virginia	243,048	126,230	-48%
West Virginia	428,350	77,322	-82%
SEMAP	3,690,588	1,276,774	-65%

Exhibit 18 – 2007 vs 2018 Point Source SO_2 Emissions by Category (tons/year)

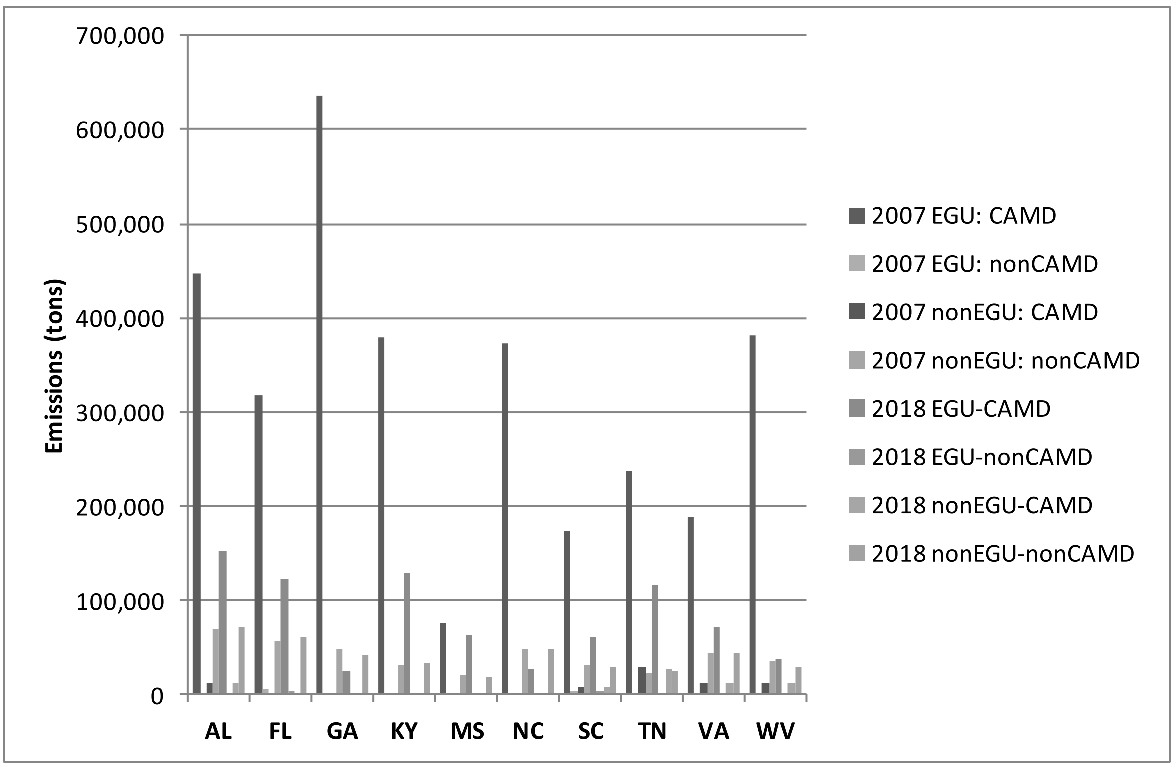
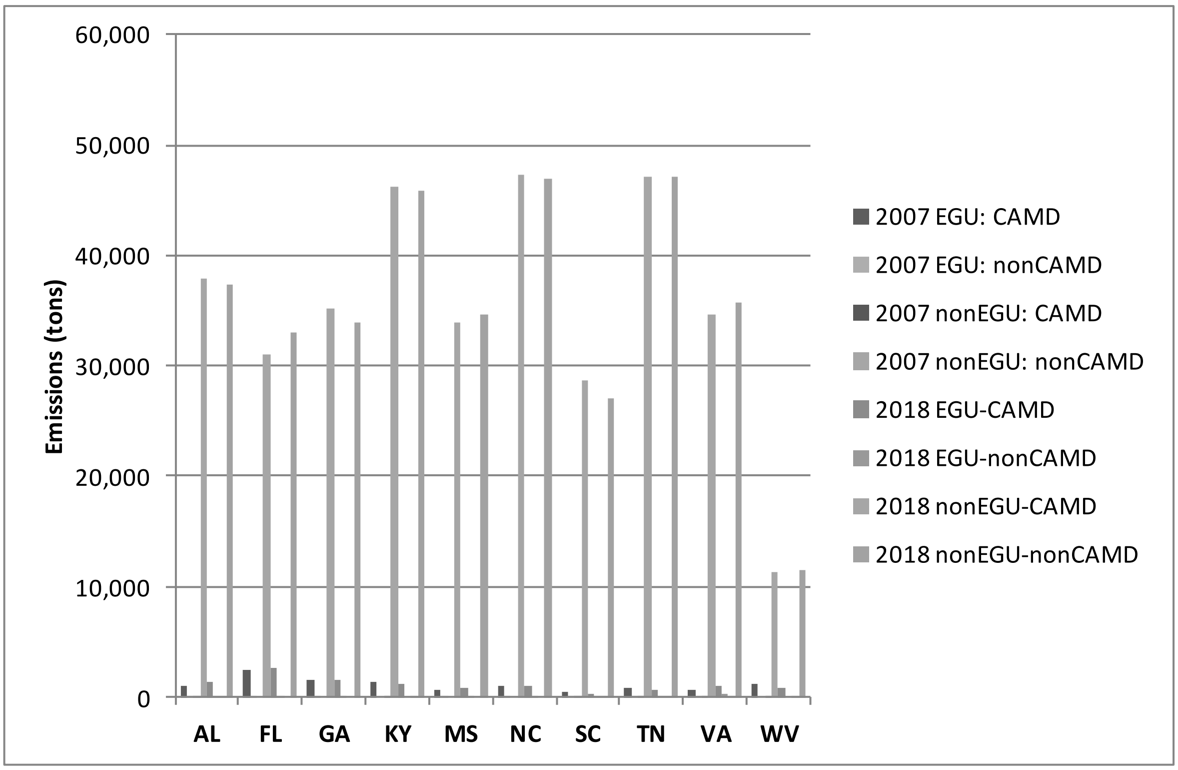


Exhibit 19 – 2007 and 2018 Point Source VOC Emissions by State (tons/year)

STATE	2007	2018	Change
Alabama	38,877	38,842	0%
Florida	33,683	35,751	6%
Georgia	36,717	35,449	-3%
Kentucky	47,679	47,018	-1%
Mississippi	34,587	35,441	2%
North Carolina	48,349	47,959	-1%
South Carolina	29,281	27,452	-6%
Tennessee	48,103	47,846	-1%
Virginia	35,618	36,976	4%
West Virginia	12,503	12,386	-1%
SEMAP	365,397	365,120	0%

Exhibit 20 – 2007 vs 2018 Point Source VOC Emissions by Category (tons/year)



1.9 DATA FILES

These files are accessible on the AMEC ftp site in the following location:

Address: ftp://semapprojections:projections@amftp.amec.com
Username - semapprojections
Password – projections

Folder: /semapprojections/2018 Projections Inventory
National Emission Inventory Input Format (NIF) ACCESS Database with the 8 NIF tables:
SEMAP 2018 Point NIF V_1d_2013-10-25.mdb

1.10 REFERENCES

EIA, 2010. Energy Information Administration, Department of Energy, *Annual Energy Outlook, 2010, with Projections through 2035,* DOE/EIA-0383(2010), Energy Information Administration, Office of Integrated Analysis and Forecasting, Washington, DC. May 11, 2010.

EIA, 2012. Energy Information Administration, Department of Energy, *Annual Energy Outlook, 2010, with Projections through 2035,* DOE/EIA-0383(2012), Energy Information Administration, Office of Integrated Analysis and Forecasting, Washington, DC. June 2012. http://www.eia.gov/forecasts/aeo/pdf/0383(2012).pdf

EPA 2005. U.S. Environmental Protection Agency. *Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations*. EPA-454/R-05-001. August 2005. http://www.epa.gov/ttn/chief/eidocs/eiguid/eiguidfinal_nov2005.pdf

EPA 2007. U.S. Environmental Protection Agency. *Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze.* EPA -454/B-07-002. April 2007. http://www.epa.gov/ttn/scram/guidance/guide/final-03-pm-rh-guidance.pdf

Appendix A: Non-EGU Unit Closures

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
01073	0107300290	101	1	TR NODA Closure
01073	0107300290	102	1	TR NODA Closure
01073	0107300290	103	1	TR NODA Closure
01073	0107300290	104	1	TR NODA Closure
01073	0107300290	105	1	TR NODA Closure
01073	0107300290	106	1	TR NODA Closure
01073	0107300290	107	1	TR NODA Closure
01073	0107300290	108	1	TR NODA Closure
01073	0107300290	109	1	TR NODA Closure
01073	0107300290	110	1	TR NODA Closure
01073	0107300290	111	1	TR NODA Closure
01073	0107300290	112	1	TR NODA Closure
01073	0107300290	113	1	TR NODA Closure
01073	0107300290	114	1	TR NODA Closure
01073	0107300290	115	1	TR NODA Closure
01073	0107300290	116	1	TR NODA Closure
01073	0107300290	118	1	TR NODA Closure
01073	0107300290	119	1	TR NODA Closure
01073	0107300290	120	1	TR NODA Closure
01073	0107300290	121	1	TR NODA Closure
01073	0107300290	122	1	TR NODA Closure
01073	0107300290	123	1	TR NODA Closure
01073	0107300290	126	1	TR NODA Closure
01073	0107300290	127	1	TR NODA Closure
01073	0107300290	128	1	TR NODA Closure
01073	0107300290	129	1	TR NODA Closure
01073	0107300290	130	1	TR NODA Closure
01073	0107300290	131	1	TR NODA Closure
01073	0107300290	134	1	TR NODA Closure
01073	0107300290	34	1	TR NODA Closure
01073	0107300290	35	1	TR NODA Closure
01073	0107300290	37	1	TR NODA Closure
01073	0107300290	38	1	TR NODA Closure
01073	0107300290	39	1	TR NODA Closure
12001	0010087	1	1	TR NODA Closure
12001	0010087	1	4	TR NODA Closure
12001	0010087	2	2	TR NODA Closure
12001	0010087	2	3	TR NODA Closure
12001	0010087	2	4	TR NODA Closure
12001	0010087	3	1	TR NODA Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
12001	0010087	3	2	TR NODA Closure
12001	0010087	3	3	TR NODA Closure
12001	0010087	3	4	TR NODA Closure
12001	0010087	3	5	TR NODA Closure
12001	0010087	4	1	TR NODA Closure
12001	0010087	4	2	TR NODA Closure
12001	0010087	5	1	TR NODA Closure
12001	0010087	5	2	TR NODA Closure
12001	0010087	5	3	TR NODA Closure
12001	0010087	5	4	TR NODA Closure
12001	0010087	6	1	TR NODA Closure
12001	0010087	6	2	TR NODA Closure
12001	0010087	7	2	TR NODA Closure
12001	0010087	8	1	TR NODA Closure
12053	0530010	11	2	TR NODA Closure
12053	0530010	12	1	TR NODA Closure
12053	0530010	13	1	TR NODA Closure
12053	0530010	14	4	TR NODA Closure
12053	0530010	15	1	TR NODA Closure
12053	0530010	16	1	TR NODA Closure
12053	0530010	17	1	TR NODA Closure
12053	0530010	18	1	TR NODA Closure
12053	0530010	19	1	TR NODA Closure
12053	0530010	2	1	TR NODA Closure
12053	0530010	21	1	TR NODA Closure
12053	0530010	22	1	TR NODA Closure
12053	0530010	23	1	TR NODA Closure
12053	0530010	24	1	TR NODA Closure
12053	0530010	25	1	TR NODA Closure
12053	0530010	26	1	TR NODA Closure
12053	0530010	3	5	TR NODA Closure
12053	0530010	31	1	TR NODA Closure
12053	0530010	32	3	TR NODA Closure
12053	0530010	4	1	TR NODA Closure
12053	0530010	5	1	TR NODA Closure
12053	0530010	6	1	TR NODA Closure
12053	0530010	8	1	TR NODA Closure
12053	0530010	9	1	TR NODA Closure
12053	0530021	20	1	TR NODA Closure
12053	0530021	20	2	TR NODA Closure
12053	0530021	20	3	TR NODA Closure
12053	0530021	20	5	TR NODA Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
12053	0530021	20	7	TR NODA Closure
12086	0250014	1	1	TR NODA Closure
12086	0250014	12	1	TR NODA Closure
12086	0250014	13	1	TR NODA Closure
12086	0250014	14	1	TR NODA Closure
12086	0250014	14	2	TR NODA Closure
12086	0250014	14	3	TR NODA Closure
12086	0250014	15	1	TR NODA Closure
12086	0250014	16	2	TR NODA Closure
12086	0250014	17	3	TR NODA Closure
12086	0250014	18	1	TR NODA Closure
12086	0250014	18	4	TR NODA Closure
12086	0250014	18	6	TR NODA Closure
12086	0250014	18	8	TR NODA Closure
12086	0250014	19	1	TR NODA Closure
12086	0250014	2	1	TR NODA Closure
12086	0250014	20	1	TR NODA Closure
12086	0250014	21	1	TR NODA Closure
12086	0250014	22	1	TR NODA Closure
12086	0250014	23	1	TR NODA Closure
12086	0250014	25	1	TR NODA Closure
12086	0250014	26	1	TR NODA Closure
12086	0250014	27	1	TR NODA Closure
12086	0250014	3	1	TR NODA Closure
12086	0250014	4	1	TR NODA Closure
12086	0250014	5	1	TR NODA Closure
12086	0250014	6	1	TR NODA Closure
12086	0250020	10	3	TR NODA Closure
12086	0250020	12	3	TR NODA Closure
12086	0250020	13	3	TR NODA Closure
12086	0250020	14	2	TR NODA Closure
12086	0250020	15	2	TR NODA Closure
12086	0250020	16	2	TR NODA Closure
12086	0250020	22	2	TR NODA Closure
12086	0250020	23	1	TR NODA Closure
12086	0250020	24	2	TR NODA Closure
12086	0250020	25	2	TR NODA Closure
12086	0250020	26	2	TR NODA Closure
12086	0250020	27	2	TR NODA Closure
12086	0250020	28	2	TR NODA Closure
12086	0250020	28	3	TR NODA Closure
12086	0250020	29	1	TR NODA Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
12086	0250020	30	1	TR NODA Closure
12121	1210465	1	3	TR NODA Closure
12121	1210465	2	1	TR NODA Closure
12121	1210465	3	1	TR NODA Closure
12121	1210465	4	1	TR NODA Closure
12121	1210465	4	3	TR NODA Closure
12121	1210465	4	4	TR NODA Closure
12121	1210465	4	6	TR NODA Closure
12121	1210465	5	1	TR NODA Closure
12121	1210465	6	1	TR NODA Closure
12121	1210465	7	1	TR NODA Closure
12121	1210465	8	1	TR NODA Closure
12121	1210465	9	1	TR NODA Closure
13051	05100152	MWCA	1	State Closure
13051	05100152	MWCB	1	State Closure
13063	06300020	E1B	1A	State Closure
13063	06300020	E1B	1B	State Closure
13063	06300020	E1B	1C	State Closure
13063	06300020	E1C	1A	State Closure
13063	06300020	E1C	1B	State Closure
13063	06300020	E1C	1C	State Closure
13063	06300020	E1D	1	State Closure
13063	06300020	E1E	1	State Closure
13063	06300020	E2C	1A	State Closure
13063	06300020	E2C	1B	State Closure
13063	06300020	E2C	1C	State Closure
13063	06300020	E2C	1D	State Closure
13063	06300020	E2C	1E	State Closure
13063	06300020	F1	1	State Closure
13089	08900086	E1	1	State Closure
13089	08900086	E2	1	State Closure
13089	08900086	E3	1	State Closure
13089	08900086	E4	1	State Closure
13089	08900086	E5	1	State Closure
13089	08900086	E6	1	State Closure
13089	08900086	E7	1	State Closure
13089	08900086	E8	1	State Closure
13089	08900086	E9	1	State Closure
13089	08900086	F1	1	State Closure
13089	08900086	F1	2	State Closure
13089	08900086	F11	1	State Closure
13089	08900086	F11	2	State Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
13089	08900086	F14	1	State Closure
13089	08900086	F14	2	State Closure
13089	08900086	F15	1	State Closure
13089	08900086	F15	2	State Closure
13089	08900086	F2	1	State Closure
13089	08900086	F2	2	State Closure
13089	08900086	F3	1	State Closure
13089	08900086	F3	2	State Closure
13089	08900131	0001	1	State Closure
13089	08900131	0001	2	State Closure
13089	08900131	0002	1	State Closure
13089	08900131	0002	2	State Closure
13089	08900131	0003	1	State Closure
13089	08900131	0003	2	State Closure
13089	08900131	0004	1	State Closure
13089	08900131	0004	2	State Closure
13089	08900131	0005	1	State Closure
13089	08900131	0005	2	State Closure
13089	08900131	0006	1	State Closure
13089	08900131	0006	2	State Closure
13089	08900131	0011	1	State Closure
13089	08900131	0011	2	State Closure
13089	08900131	0012	1	State Closure
13089	08900131	0012	2	State Closure
13089	08900131	0013	1	State Closure
13089	08900131	0013	2	State Closure
13089	08900131	0014	1	State Closure
13089	08900131	0014	2	State Closure
13089	08900131	0015	1	State Closure
13089	08900131	0015	2	State Closure
13089	08900131	1511	1	State Closure
13089	08900131	1511	2	State Closure
13089	08900131	1723	1	State Closure
13089	08900131	1723	2	State Closure
13089	08900131	5599	1	State Closure
13089	08900131	5599	2	State Closure
13089	08900131	5601	1	State Closure
13089	08900131	5601	2	State Closure
13089	08900131	5602	1	State Closure
13089	08900131	5602	2	State Closure
13089	08900131	5631	1	State Closure
13089	08900131	5631	2	State Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
13089	08900131	APC1A	1	State Closure
13089	08900131	APC1B	1	State Closure
13089	08900131	APC2A	1	State Closure
13089	08900131	APC2B	1	State Closure
13089	08900131	LR1	1	State Closure
13089	08900131	LR2	1	State Closure
13095	09500003	E1	1	State Closure
13095	09500003	E2	1	State Closure
13095	09500003	E3	1	State Closure
13095	09500003	E3	2	State Closure
13095	09500003	E4	1	State Closure
13095	09500003	F1	1	State Closure
13095	09500003	F1	2	State Closure
13095	09500003	F2	1	State Closure
13095	09500003	F2	2	State Closure
13095	09500003	M1	1	State Closure
13095	09500003	M1	2	State Closure
13095	09500003	M2	1	State Closure
13095	09500003	M3	1	State Closure
13095	09500003	M4	1	State Closure
13095	09500003	M5	1	State Closure
13095	09500003	M6	1	State Closure
13095	09500003	M7	1	State Closure
13095	09500003	M8	1	State Closure
13095	09500003	M8	2	State Closure
13095	09500003	M9	1	State Closure
13121	12100004	K30A	K30A	State Closure
13121	12100004	K30B	K30B	State Closure
13153	15300003	1530	1625	TR NODA Closure
13153	15300003	1531	1625	TR NODA Closure
13153	15300003	1532	1625	TR NODA Closure
13153	15300003	1600	1255	TR NODA Closure
13153	15300003	1602	1255	TR NODA Closure
13153	15300003	1605	1605	TR NODA Closure
13153	15300003	1607	1616	TR NODA Closure
13153	15300003	387	373	TR NODA Closure
13153	15300003	400	560	TR NODA Closure
13153	15300003	400	560A	TR NODA Closure
13153	15300003	5080	517	TR NODA Closure
13153	15300003	601	606	TR NODA Closure
13153	15300003	695	690	TR NODA Closure
13153	15300003	716	727	TR NODA Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
13153	15300003	722	728	TR NODA Closure
13153	15300003	F01	F01	TR NODA Closure
13153	15300003	F02	F02	TR NODA Closure
13153	15300003	F03	F03	TR NODA Closure
13153	15300003	F04	F04	TR NODA Closure
13153	15300003	F06	F06	TR NODA Closure
13153	15300003	F07	F07	TR NODA Closure
13153	15300003	F08	F08	TR NODA Closure
13159	15900011	E1	1	State Closure
13159	15900011	E2	1	State Closure
13159	15900011	F1	1	State Closure
13159	15900011	F1B	1	State Closure
13159	15900011	F2	1	State Closure
13159	15900011	F3	1	State Closure
13159	15900011	F4	1	State Closure
13159	15900011	F4B	1	State Closure
13159	15900011	F5	1	State Closure
13159	15900011	F5B	1	State Closure
13159	15900011	F6	1	State Closure
13159	15900011	F6B	1	State Closure
13159	15900011	F7	1	State Closure
13159	15900011	F7B	1	State Closure
13159	15900011	F8	1	State Closure
13159	15900011	F8B	1	State Closure
13159	15900011	M1	1	State Closure
13197	19700008	BO01	1	State Closure
13197	19700008	DP01	DP01	State Closure
13197	19700008	DP02	1	State Closure
13197	19700008	LB01	1	State Closure
13197	19700008	LB02	1	State Closure
13197	19700008	LB03	1	State Closure
13197	19700008	LB04	1	State Closure
13197	19700008	LB05	1	State Closure
13197	19700008	LB06	1	State Closure
13197	19700008	OV01A	1	State Closure
13197	19700008	OV01B	1	State Closure
13197	19700008	OV02A	1	State Closure
13197	19700008	OV02B	1	State Closure
13197	19700008	OV03A	1	State Closure
13197	19700008	OV03B	1	State Closure
13197	19700008	OV04A	1	State Closure
13197	19700008	OV04B	1	State Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
13197	19700008	OV05A	1	State Closure
13197	19700008	OV05B	1	State Closure
13197	19700008	OV06A	1	State Closure
13197	19700008	OV06B	1	State Closure
13197	19700008	OV07A	1	State Closure
13197	19700008	OV07B	1	State Closure
13197	19700008	RB01	1	State Closure
13197	19700008	RB02	1	State Closure
13197	19700008	SB01	1	State Closure
13197	19700008	SB02	1	State Closure
13197	19700008	SL01	1	State Closure
13197	19700008	SL02	1	State Closure
13197	19700008	SL03	1	State Closure
13197	19700008	ST01	1	State Closure
13197	19700008	ST02	1	State Closure
13197	19700008	ST03	1	State Closure
13197	19700008	SWB1	17	State Closure
13197	19700008	SWB1	18	State Closure
13197	19700008	TB01	1	State Closure
13197	19700008	TB02	1	State Closure
13197	19700008	WDS1	18	State Closure
13197	19700008	WDS1	19	State Closure
13197	19700008	WSB1	1	State Closure
13255	25500035	BLEACH	BLEACH	State Closure
13255	25500035	BLRHWH	BLRHWH	State Closure
13255	25500035	DYE	DYE	State Closure
13261	26100005	B182	1	State Closure
13261	26100005	B183	1	State Closure
13261	26100005	DSL	2	State Closure
13261	26100005	P354	1	State Closure
13261	26100005	PGS1	1	State Closure
13261	26100005	PGS3	1A	State Closure
13261	26100005	PGS4	1	State Closure
13261	26100005	VSTACK	WIPE	State Closure
13275	27500002	A	1	State Closure
13275	27500002	AA	1	State Closure
13275	27500002	B	1	State Closure
13275	27500002	B1	1	State Closure
13275	27500002	B6	1	State Closure
13275	27500002	B7	1	State Closure
13275	27500002	BB	1	State Closure
13275	27500002	C1	1	State Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
13275	27500002	C1	2	State Closure
13275	27500002	C12	1	State Closure
13275	27500002	C13	1	State Closure
13275	27500002	C14	1	State Closure
13275	27500002	C17	1	State Closure
13275	27500002	C20	1	State Closure
13275	27500002	C21	1	State Closure
13275	27500002	C22	1	State Closure
13275	27500002	C24	1	State Closure
13275	27500002	C25	1	State Closure
13275	27500002	C26	1	State Closure
13275	27500002	C27	1	State Closure
13275	27500002	C4	1	State Closure
13275	27500002	C7	1	State Closure
13275	27500002	C7	2	State Closure
13275	27500002	C8	1	State Closure
13275	27500002	D	1	State Closure
13275	27500002	D10	1	State Closure
13275	27500002	D12	1	State Closure
13275	27500002	D15	1	State Closure
13275	27500002	D16	1	State Closure
13275	27500002	D17	1	State Closure
13275	27500002	D18A	1	State Closure
13275	27500002	D21	1	State Closure
13275	27500002	D22	1	State Closure
13275	27500002	D5	1	State Closure
13275	27500002	D6	1	State Closure
13275	27500002	D7	1	State Closure
13275	27500002	D9	1	State Closure
13275	27500002	E1	1	State Closure
13275	27500002	E1	2	State Closure
13275	27500002	E2	1	State Closure
13275	27500002	E3	1	State Closure
13275	27500002	F	1	State Closure
13275	27500002	F10	1	State Closure
13275	27500002	F11	1	State Closure
13275	27500002	F12	1	State Closure
13275	27500002	F14	1	State Closure
13275	27500002	F3	1	State Closure
13275	27500002	F5	1	State Closure
13275	27500002	F7	1	State Closure
13275	27500002	F9	1	State Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
13275	27500002	G	1	State Closure
13275	27500002	G3	1	State Closure
13275	27500002	G4	1	State Closure
13275	27500002	G6	1	State Closure
13275	27500002	G7	1	State Closure
13275	27500002	G8	1	State Closure
13275	27500002	G9	1	State Closure
13275	27500002	GG	1	State Closure
13275	27500002	GGG	1	State Closure
13275	27500002	H	1	State Closure
13275	27500002	H2	1	State Closure
13275	27500002	H5	1	State Closure
45007	0200-0005	001	1	State Closure
45007	0200-0005	001	2	State Closure
45007	0200-0005	002	1	State Closure
45007	0200-0005	002	2	State Closure
45007	0200-0005	003	1	State Closure
45007	0200-0005	004	1	State Closure
45007	0200-0005	005	1	State Closure
45007	0200-0005	006	1	State Closure
45007	0200-0005	007	1	State Closure
45007	0200-0005	009	1	State Closure
45007	0200-0005	011	1	State Closure
45007	0200-0005	012	1	State Closure
45007	0200-0005	016	1	State Closure
45007	0200-0005	017	1	State Closure
45007	0200-0005	N02	1	State Closure
45007	0200-0005	N02	2	State Closure
45007	0200-0005	N02	3	State Closure
45007	0200-0005	N02	4	State Closure
45011	0300-0014	002	1	State Closure
45011	0300-0014	002	2	State Closure
45011	0300-0014	002	3	State Closure
45011	0300-0014	002	4	State Closure
45011	0300-0014	002	5	State Closure
45011	0300-0014	002	6	State Closure
45011	0300-0014	003	1	State Closure
45011	0300-0014	003	2	State Closure
45011	0300-0014	003	3	State Closure
45011	0300-0014	003	4	State Closure
45011	0300-0014	003	5	State Closure
45011	0300-0014	003	6	State Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
45011	0300-0014	003	7	State Closure
45011	0300-0014	003	8	State Closure
45011	0300-0014	003	9	State Closure
45011	0300-0014	004	1	State Closure
45011	0300-0014	005	1	State Closure
45011	0300-0014	005	2	State Closure
45011	0300-0014	006	1	State Closure
45011	0300-0014	006	2	State Closure
45011	0300-0014	IA1	1	State Closure
45011	0300-0014	IA2	1	State Closure
45011	0300-0014	IA3	1	State Closure
45011	0300-0014	IA4	1	State Closure
45011	0300-0014	IA5	1	State Closure
45011	0300-0014	IA6	1	State Closure
45011	0300-0014	IA7	1	State Closure
45011	0300-0014	IA8	1	State Closure
45013	0360-0048	IA1	1	State Closure
45013	0360-0048	IA2	1	State Closure
45013	0360-0048	IA3	1	State Closure
45013	0360-0048	IA4	1	State Closure
45019	0560-0196	001	1	State Closure
45019	0560-0196	001	2	State Closure
45019	0560-0196	002	1	State Closure
45019	0560-0196	002	2	State Closure
45019	0560-0196	003	1	State Closure
45019	0560-0196	004	1	State Closure
45019	0560-0196	005	1	State Closure
45019	0560-0196	006	1	State Closure
45019	0560-0305	IA1	1	State Closure
45027	0680-0021	001	1	State Closure
45027	0680-0021	003	1	State Closure
45027	0680-0021	004	1	State Closure
45027	0680-0021	005	1	State Closure
45027	0680-0021	008	1	State Closure
45027	0680-0021	009	1	State Closure
45027	0680-0021	010	1	State Closure
45027	0680-0021	011	1	State Closure
45027	0680-0021	012	1	State Closure
45027	0680-0021	013	1	State Closure
45027	0680-0021	014	1	State Closure
45027	0680-0021	015	1	State Closure
45027	0680-0021	016	1	State Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
45027	0680-0021	017	1	State Closure
45027	0680-0021	030	1	State Closure
45027	0680-0021	031	1	State Closure
45027	0680-0021	032	1	State Closure
45027	0680-0021	033	1	State Closure
45027	0680-0021	034	1	State Closure
45027	0680-0021	035	1	State Closure
45027	0680-0021	044	1	State Closure
45035	0900-0080	001	1	State Closure
45035	0900-0080	001	2	State Closure
45035	0900-0080	001	3	State Closure
45035	0900-0080	001	7	State Closure
45035	0900-0080	002	2	State Closure
45035	0900-0080	003	6	State Closure
45035	0900-0080	N01	1	State Closure
45035	0900-0080	N02	1	State Closure
45039	1000-0018	001	1	State Closure
45039	1000-0018	001	2	State Closure
45039	1000-0018	001	3	State Closure
45039	1000-0018	002	1	State Closure
45039	1000-0018	002	2	State Closure
45039	1000-0018	002	3	State Closure
45039	1000-0018	002	4	State Closure
45041	1040-0086	001	1	State Closure
45041	1040-0086	001	2	State Closure
45041	1040-0086	001	3	State Closure
45041	1040-0086	002	1	State Closure
45041	1040-0086	002	2	State Closure
45041	1040-0086	002	3	State Closure
45041	1040-0086	IAA	1	State Closure
45041	1040-0086	IAB	1	State Closure
45041	1040-0086	IAF	1	State Closure
45041	1040-0086	IAG	1	State Closure
45041	1040-0086	IAH	1	State Closure
45041	1040-0086	IAI	1	State Closure
45041	1040-0086	IAJ	1	State Closure
45041	1040-0086	IAK	1	State Closure
45041	1040-0086	IAL	1	State Closure
45041	1040-0086	IAM	1	State Closure
45041	1040-0086	IAN	1	State Closure
45041	1040-0086	IAO	1	State Closure
45041	1040-0086	IAP	1	State Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
45041	1040-0086	IAQ	1	State Closure
45045	1200-0414	001	1	State Closure
45045	1200-0414	001	2	State Closure
45045	1200-0414	001	3	State Closure
45047	1240-0009	001	1	State Closure
45047	1240-0009	001	2	State Closure
45047	1240-0009	001	3	State Closure
45047	1240-0009	001	4	State Closure
45047	1240-0009	001	5	State Closure
45047	1240-0009	001	8	State Closure
45047	1240-0009	002	1	State Closure
45047	1240-0009	002	2	State Closure
45047	1240-0009	003	1	State Closure
45047	1240-0009	003	2	State Closure
45047	1240-0009	003	3	State Closure
45047	1240-0009	004	11	State Closure
45047	1240-0009	004	2	State Closure
45047	1240-0009	004	4	State Closure
45047	1240-0009	004	5	State Closure
45047	1240-0009	004	6	State Closure
45047	1240-0009	005	1	State Closure
45047	1240-0009	005	2	State Closure
45047	1240-0009	005	3	State Closure
45047	1240-0009	005	4	State Closure
45047	1240-0009	005	6	State Closure
45047	1240-0009	006	1	State Closure
45047	1240-0009	006	2	State Closure
45047	1240-0009	006	3	State Closure
45047	1240-0009	0CS	1	State Closure
45047	1240-0009	0CS	2	State Closure
45047	1240-0009	IAD	1	State Closure
45047	1240-0009	IAF	1	State Closure
45047	1240-0009	IAG	1	State Closure
45047	1240-0009	IAH	1	State Closure
45047	1240-0009	IAI	1	State Closure
45047	1240-0009	IAJ	1	State Closure
45047	1240-0009	IAK	1	State Closure
45047	1240-0009	IAK	2	State Closure
45047	1240-0009	IAN	1	State Closure
45047	1240-0009	IAR	1	State Closure
45047	1240-0009	IAT	1	State Closure
45047	1240-0009	N01	6	State Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
45047	1240-0009	N01	7	State Closure
45047	1240-0009	N02	1	State Closure
45047	1240-0009	N02	2	State Closure
45055	1380-0032	001	1	State Closure
45055	1380-0032	001	2	State Closure
45055	1380-0032	001	3	State Closure
45055	1380-0032	001	4	State Closure
45055	1380-0032	IA1	1	State Closure
45055	1380-0032	IA2	1	State Closure
45055	1380-0032	IA2	2	State Closure
45055	1380-0032	IA3	1	State Closure
45057	1460-0002	001	1	State Closure
45057	1460-0002	001	3	State Closure
45057	1460-0002	001	5	State Closure
45057	1460-0002	001	9	State Closure
45057	1460-0002	002	1	State Closure
45057	1460-0002	002	6	State Closure
45057	1460-0002	002	8	State Closure
45057	1460-0002	003	1	State Closure
45057	1460-0002	003	2	State Closure
45057	1460-0002	003	3	State Closure
45057	1460-0002	003	4	State Closure
45057	1460-0002	003	7	State Closure
45057	1460-0002	004	1	State Closure
45057	1460-0002	004	2	State Closure
45057	1460-0002	004	3	State Closure
45057	1460-0002	004	4	State Closure
45057	1460-0002	004	5	State Closure
45057	1460-0002	004	6	State Closure
45057	1460-0002	004	8	State Closure
45057	1460-0002	005	1	State Closure
45057	1460-0002	006	1	State Closure
45057	1460-0002	006	2	State Closure
45057	1460-0002	007	1	State Closure
45057	1460-0002	007	2	State Closure
45057	1460-0002	IAB	1	State Closure
45057	1460-0002	IAC	1	State Closure
45071	1780-0031	001	1	State Closure
45071	1780-0031	001	2	State Closure
45071	1780-0031	001	3	State Closure
45071	1780-0031	001	4	State Closure
45071	1780-0031	002	2	State Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
45071	1780-0031	002	3	State Closure
45071	1780-0031	003	1	State Closure
45071	1780-0031	003	2	State Closure
45071	1780-0031	003	4	State Closure
45071	1780-0031	003	5	State Closure
45071	1780-0031	003	6	State Closure
45071	1780-0031	003	7	State Closure
45071	1780-0031	IAA	1	State Closure
45071	1780-0031	IAB	1	State Closure
45071	1780-0031	IAC	1	State Closure
45071	1780-0031	IAD	1	State Closure
45071	1780-0031	IAE	1	State Closure
45071	1780-0043	001	1	State Closure
45071	1780-0043	002	1	State Closure
45071	1780-0043	003	1	State Closure
45071	1780-0043	004	1	State Closure
45071	1780-0043	004	2	State Closure
45071	1780-0043	005	1	State Closure
45071	1780-0043	006	1	State Closure
45071	1780-0043	007	1	State Closure
45071	1780-0043	008	1	State Closure
45071	1780-0043	008	2	State Closure
45071	1780-0043	008	3	State Closure
45071	1780-0043	IAB	1	State Closure
45071	1780-0043	IAE	1	State Closure
45075	1860-0038	001	1	State Closure
45075	1860-0038	001	2	State Closure
45075	1860-0038	001	3	State Closure
45075	1860-0038	001	4	State Closure
45075	1860-0038	002	1	State Closure
45075	1860-0038	002	4	State Closure
45075	1860-0038	003	1	State Closure
45075	1860-0038	003	10	State Closure
45075	1860-0038	003	2	State Closure
45075	1860-0038	003	3	State Closure
45075	1860-0038	003	4	State Closure
45075	1860-0038	003	5	State Closure
45075	1860-0038	003	6	State Closure
45075	1860-0038	003	7	State Closure
45075	1860-0038	003	8	State Closure
45075	1860-0038	003	9	State Closure
45075	1860-0038	004	1	State Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
45075	1860-0038	004	2	State Closure
45075	1860-0038	004	3	State Closure
45075	1860-0038	004	4	State Closure
45075	1860-0038	004	5	State Closure
45075	1860-0038	004	6	State Closure
45075	1860-0038	004	7	State Closure
45075	1860-0038	005	1	State Closure
45075	1860-0038	005	2	State Closure
45075	1860-0038	005	3	State Closure
45075	1860-0038	005	4	State Closure
45075	1860-0038	005	5	State Closure
45075	1860-0038	005	6	State Closure
45075	1860-0038	005	7	State Closure
45075	1860-0038	005	8	State Closure
45075	1860-0038	005	9	State Closure
45075	1860-0038	006	2	State Closure
45075	1860-0038	006	3	State Closure
45079	1900-0150	001	1	State Closure
45079	1900-0150	002	1	State Closure
45079	1900-0150	003	1	State Closure
45079	1900-0150	004	1	State Closure
45079	1900-0150	005	1	State Closure
45079	1900-0150	IAA	1	State Closure
45079	1900-0213	001	3	State Closure
45079	1900-0213	002	1	State Closure
45079	1900-0213	003	1	State Closure
45079	1900-0213	004	1	State Closure
45079	1900-0213	IAA	1	State Closure
45083	2060-0035	001	1	State Closure
45083	2060-0035	002	1	State Closure
45083	2060-0035	003	1	State Closure
45083	2060-0035	004	1	State Closure
45083	2060-0035	005	1	State Closure
45083	2060-0035	006	1	State Closure
45083	2060-0035	006	2	State Closure
45083	2060-0035	007	1	State Closure
45083	2060-0035	008	1	State Closure
45083	2060-0035	009	1	State Closure
45083	2060-0035	010	1	State Closure
45083	2060-0035	IA3	1	State Closure
45083	2060-0035	IA4	1	State Closure
45083	2060-0035	IA5	1	State Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
45083	2060-0035	IA6	1	State Closure
45083	2060-0035	IA7	1	State Closure
45083	2060-0035	IAA	1	State Closure
45083	2060-0035	IAB	1	State Closure
45083	2060-0035	IAC	1	State Closure
45083	2060-0035	IAD	1	State Closure
45083	2060-0035	IAD	2	State Closure
45083	2060-0035	IAD	3	State Closure
45083	2060-0035	IAD	4	State Closure
45083	2060-0035	IAD	5	State Closure
45083	2060-0035	IAD	6	State Closure
45083	2060-0035	IAD	7	State Closure
45083	2060-0035	IAD	8	State Closure
45087	2180-0005	001	1	State Closure
45087	2180-0005	001	2	State Closure
45087	2180-0005	001	3	State Closure
45087	2180-0005	001	4	State Closure
45087	2180-0005	002	1	State Closure
45087	2180-0005	003	1	State Closure
45087	2180-0005	004	1	State Closure
45087	2180-0005	005	1	State Closure
45087	2180-0005	006	1	State Closure
45087	2180-0005	006	2	State Closure
45087	2180-0005	007	1	State Closure
45087	2180-0005	008	1	State Closure
45087	2180-0005	009	1	State Closure
45087	2180-0005	010	1	State Closure
45087	2180-0005	011	1	State Closure
45087	2180-0005	011	2	State Closure
45087	2180-0005	012	1	State Closure
45091	2440-0103	001	1	State Closure
45091	2440-0103	001	2	State Closure
45091	2440-0103	001	3	State Closure
45091	2440-0103	002	1	State Closure
54003	5400300006	010	1	TR NODA Closure
54003	5400300006	010	2	TR NODA Closure
54003	5400300006	010	3	TR NODA Closure
54003	5400300006	010	4	TR NODA Closure
54003	5400300006	011	1	TR NODA Closure
54003	5400300006	011	2	TR NODA Closure
54003	5400300006	012	1	TR NODA Closure
54003	5400300006	012	2	TR NODA Closure

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
54003	5400300006	012	3	TR NODA Closure
54003	5400300006	012	4	TR NODA Closure

Appendix B: Non-EGU Units That Had Controls Applied in 2018

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
01001	0001	014	01	ICI PM Controls
01015	0023	034	01	RICE 2014
01015	0023	034	02	RICE 2014
01015	0023	034	03	RICE 2014
01015	0023	034	04	RICE 2014
01015	0023	034	05	RICE 2014
01015	0023	034	06	RICE 2014
01015	0023	034	07	RICE 2014
01015	0023	034	08	RICE 2014
01015	0023	034	09	RICE 2014
01015	0023	034	10	RICE 2014
01015	0023	034	11	RICE 2014
01015	0023	034	12	RICE 2014
01015	0023	034	13	RICE 2014
01015	0023	034	14	RICE 2014
01015	0023	034	15	RICE 2014
01015	0023	034	16	RICE 2014
01015	0023	034	17	RICE 2014
01015	0023	034	18	RICE 2014
01015	0023	034	19	RICE 2014
01015	0023	057	01	RICE 2014
01015	0023	057	02	RICE 2014
01015	0023	057	03	RICE 2014
01015	0023	057	04	RICE 2014
01015	0023	057	05	RICE 2014
01015	0023	057	06	RICE 2014
01015	0023	057	07	RICE 2014
01015	0023	059	01	RICE 2014
01015	0023	061	01	RICE 2014
01015	0023	062	01	RICE 2014
01015	0023	063	01	RICE 2014
01015	0023	064	01	RICE 2014
01015	0023	065	01	RICE 2014
01015	0023	066	01	RICE 2014
01015	0023	068	01	RICE 2014
01015	0023	069	01	RICE 2014
01015	0023	070	01	RICE 2014
01015	0023	071	01	RICE 2014
01015	0023	073	01	RICE 2014
01015	0023	074	01	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
01015	0023	075	01	RICE 2014
01015	0033	001	01	RICE 2014
01015	0033	002	01	RICE 2014
01015	0033	003	01	RICE 2014
01015	0033	004	01	RICE 2014
01015	0033	005	01	RICE 2014
01015	0033	007	01	RICE 2014
01015	0033	008	01	RICE 2014
01017	0018	030	88	RICE 2014
01021	0009	010	01	RICE 2014
01023	0002	004	01	RICE 2014
01023	0002	007	01	RICE 2014
01023	0017	005	01	RICE 2014
01029	0002	001	01	RICE 2014
01029	0002	002	01	RICE 2014
01029	0002	004	01	RICE 2014
01033	0010	001	88	ICI PM Controls
01035	0011	003	01	RICE 2014
01035	0011	004	01	RICE 2014
01035	0011	011	01	RICE 2014
01035	0011	012	01	RICE 2014
01035	0011	013	01	RICE 2014
01035	0011	015	01	RICE 2014
01035	0011	016	01	RICE 2014
01035	0011	017	01	RICE 2014
01035	0011	018	01	RICE 2014
01035	0011	019	01	RICE 2014
01035	0011	021	01	RICE 2014
01035	0011	022	01	RICE 2014
01035	0011	023	01	RICE 2014
01035	0011	024	01	RICE 2014
01035	0011	026	01	RICE 2014
01035	0017	006	01	RICE 2014
01035	0018	005	01	RICE 2014
01035	0018	006	01	RICE 2014
01035	0018	007	01	RICE 2014
01035	0018	008	01	RICE 2014
01035	0018	009	01	RICE 2014
01035	0018	011	01	RICE 2014
01035	0018	013	01	RICE 2014
01035	0018	015	01	RICE 2014
01035	0018	024	01	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
01035	0018	025	01	RICE 2014
01035	0018	027	01	RICE 2014
01035	0018	029	01	RICE 2014
01035	0018	032	01	RICE 2014
01035	0019	031	01	RICE 2014
01037	0009	004	01	RICE 2014
01045	0008	019	01	RICE 2014
01045	0008	019	02	RICE 2014
01045	0008	019	03	RICE 2014
01045	0008	019	04	RICE 2014
01047	0021	001	01	RICE 2014
01047	0021	002	01	RICE 2014
01051	0006	005	01	RICE 2014
01051	0006	006	01	RICE 2014
01051	0006	007	01	RICE 2014
01051	0006	008	01	RICE 2014
01051	0006	009	01	RICE 2014
01051	0008	001	01	RICE 2014
01053	0005	006	01	RICE 2014
01053	0005	007	01	RICE 2014
01053	0007	005	01	RICE 2014
01053	0007	006	01	RICE 2014
01053	0007	007	01	RICE 2014
01053	0007	008	01	RICE 2014
01053	0007	009	01	RICE 2014
01053	0007	010	01	RICE 2014
01053	0064	002	01	RICE 2014
01053	0064	003	01	RICE 2014
01053	0077	002	01	RICE 2014
01053	0077	003	88	RICE 2014
01053	0077	004	01	RICE 2014
01053	0077	007	01	RICE 2014
01053	0077	007	02	RICE 2014
01053	0077	008	01	RICE 2014
01053	0077	009	01	RICE 2014
01053	0087	001	01	RICE 2014
01053	0089	002	01	RICE 2014
01055	0002	001	88	ICI PM Controls
01057	0011	003	01	RICE 2014
01063	0001	001	88	ICI PM Controls
01065	0003	004	01	RICE 2014
01065	0003	005	01	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
01065	0003	006	01	RICE 2014
01065	0003	007	01	RICE 2014
01065	0003	008	01	RICE 2014
01069	0020	001	01	ICI PM Controls
01069	0020	003	01	ICI PM Controls
01069	0020	006	01	ICI PM Controls
01069	0021	002	01	RICE 2014
01069	0021	002	02	RICE 2014
01069	0021	002	03	RICE 2014
01069	0021	002	04	RICE 2014
01069	0021	002	05	RICE 2014
01069	0021	002	06	RICE 2014
01069	0021	003	01	RICE 2014
01069	0021	003	02	RICE 2014
01071	0008	001	88	ICI PM Controls
01073	0107300010	101	1	ICI PM Controls
01073	0107300010	102	1	ICI PM Controls
01073	0107300010	107	1	ICI PM Controls
01073	0107300010	108	1	ICI PM Controls
01073	0107300011	111	1	ICI PM Controls
01073	0107300011	112	1	ICI PM Controls
01073	0107300011	113	1	ICI PM Controls
01073	0107300011	115	1	ICI PM Controls
01073	0107300011	116	1	ICI PM Controls
01073	0107300011	117	1	ICI PM Controls
01073	0107300011	6	1	ICI PM Controls
01073	0107300340	4	1	RICE 2014
01073	0107300370	112	1	RICE 2014
01073	0107300374	2	1	RICE 2014
01073	0107300395	4	1	RICE 2014
01073	010730045	012	01	RICE 2014
01073	0107300455	4	1	RICE 2014
01073	0107300472	11	1	RICE 2014
01073	0107300489	4	1	RICE 2014
01073	010730057	002	01	ICI PM Controls
01073	010730143	001	01	ICI PM Controls
01073	010730162	003	01	ICI PM Controls
01073	010730162	004	01	ICI PM Controls
01073	010730269	001	01	ICI PM Controls
01073	010730344	001	01	RICE 2014
01073	010730344	002	01	RICE 2014
01073	010730344	004	01	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
01073	010730345	001	01	RICE 2014
01073	010730362	005	01	RICE 2014
01073	010730386	002	01	RICE 2014
01073	010730417	001	01	RICE 2014
01073	010730417	002	01	RICE 2014
01073	010730417	003	01	RICE 2014
01073	010730419	001	01	RICE 2014
01073	010730419	002	01	RICE 2014
01073	010730448	001	01	ICI PM Controls
01073	010730448	002	01	ICI PM Controls
01073	010730448	003	01	ICI PM Controls
01073	010730448	004	01	ICI PM Controls
01073	010730448	005	01	ICI PM Controls
01073	010730448	006	01	ICI PM Controls
01073	010730448	007	01	ICI PM Controls
01073	010730448	008	01	ICI PM Controls
01073	010730448	009	01	ICI PM Controls
01073	010730448	010	01	ICI PM Controls
01073	010730448	011	01	ICI PM Controls
01073	010730456	001	01	RICE 2014
01073	010730456	002	01	RICE 2014
01073	010730456	003	01	RICE 2014
01073	010730456	004	01	RICE 2014
01073	010730456	005	01	RICE 2014
01073	010730456	006	01	RICE 2014
01073	010730528	001	01	RICE 2014
01073	010730535	001	01	RICE 2014
01073	010730538	001	01	RICE 2014
01073	010730538	003	01	RICE 2014
01073	010730539	004	01	RICE 2014
01073	010730540	001	01	RICE 2014
01073	010730541	001	01	RICE 2014
01073	010730541	004	01	RICE 2014
01073	010730541	005	01	RICE 2014
01073	010730543	001	01	RICE 2014
01073	010730543	002	01	RICE 2014
01073	010730543	005	01	RICE 2014
01073	010730544	001	01	RICE 2014
01073	010730544	002	01	RICE 2014
01073	010730545	002	01	RICE 2014
01075	0004	001	01	RICE 2014
01075	0009	001	01	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
01075	0009	002	01	RICE 2014
01075	0009	003	01	RICE 2014
01075	0009	004	01	RICE 2014
01075	0009	005	01	RICE 2014
01075	0009	006	01	RICE 2014
01077	0029	001	01	RICE 2014
01077	0029	001	02	RICE 2014
01083	0015	001	01	ICI PM Controls
01089	0007	060	01	RICE 2014
01089	0007	060	02	RICE 2014
01089	0007	060	03	RICE 2014
01089	0007	060	04	RICE 2014
01089	0007	093	01	RICE 2014
01089	0007	095	01	RICE 2014
01089	0007	095	02	RICE 2014
01089	0007	095	03	RICE 2014
01089	0007	095	04	RICE 2014
01089	0007	095	05	RICE 2014
01089	0007	095	06	RICE 2014
01089	0007	096	01	RICE 2014
01089	0007	103	01	RICE 2014
01089	0014	035	01	RICE 2014
01091	0001	006	01	ICI PM Controls
01091	0002	017	01	TR NODA Cement
01091	0002	017	02	TR NODA Cement
01091	0002	017	03	TR NODA Cement
01091	0002	017	04	TR NODA Cement
01091	0002	017	05	TR NODA Cement
01091	0002	017	06	TR NODA Cement
01091	0007	001	01	RICE 2014
01091	0007	002	01	RICE 2014
01091	0007	003	01	RICE 2014
01091	0007	005	01	RICE 2014
01091	0007	006	01	RICE 2014
01091	0007	007	01	RICE 2014
01091	0007	008	01	RICE 2014
01091	0007	009	01	RICE 2014
01091	0007	010	01	RICE 2014
01091	0007	011	01	RICE 2014
01091	0007	012	01	RICE 2014
01091	0007	013	01	RICE 2014
01091	0007	014	01	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
01091	0007	015	01	RICE 2014
01091	0007	016	01	RICE 2014
01091	0007	021	01	RICE 2014
01091	0007	022	01	RICE 2014
01091	0007	023	01	RICE 2014
01091	0007	028	01	RICE 2014
01091	0007	029	01	RICE 2014
01091	0007	033	01	RICE 2014
01093	0018	002	01	ICI PM Controls
01093	0019	008	01	RICE 2014
01093	0019	010	01	RICE 2014
01093	0019	011	01	RICE 2014
01093	0019	012	01	RICE 2014
01093	0019	013	01	RICE 2014
01093	0026	002	01	ICI PM Controls
01095	0047	001	01	RICE 2014
01097	0010	001	01	RICE 2014
01097	0010	002	01	RICE 2014
01097	0010	004	01	RICE 2014
01097	0010	007	01	RICE 2014
01097	0010	008	01	RICE 2014
01097	0010	013	01	RICE 2014
01097	0010	017	01	RICE 2014
01097	0010	018	01	RICE 2014
01097	0010	019	01	RICE 2014
01097	0010	020	01	RICE 2014
01097	0012	001	01	RICE 2014
01097	0012	002	01	RICE 2014
01097	0012	003	01	RICE 2014
01097	0012	004	01	RICE 2014
01097	0012	005	01	RICE 2014
01097	0013	001	01	RICE 2014
01097	0013	002	01	RICE 2014
01097	0013	003	01	RICE 2014
01097	0013	004	01	RICE 2014
01097	0013	005	01	RICE 2014
01097	0016	001	01	RICE 2014
01097	0016	002	01	RICE 2014
01097	0016	004	01	RICE 2014
01097	0016	005	01	RICE 2014
01097	0025	001	01	RICE 2014
01097	0025	002	01	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
01097	0025	003	01	RICE 2014
01097	0025	004	01	RICE 2014
01097	0025	005	01	RICE 2014
01097	0046	008	01	RICE 2014
01097	0053	002	01	RICE 2014
01097	0096	001	01	RICE 2014
01097	1001	001	88	ICI PM Controls
01097	2012	008	88	ICI PM Controls
01097	2022	007	01	RICE 2014
01097	2022	007	02	RICE 2014
01097	2022	008	01	RICE 2014
01097	2022	008	02	RICE 2014
01097	3028	001	01	RICE 2014
01097	3028	002	01	RICE 2014
01097	3028	003	01	RICE 2014
01097	3028	004	01	RICE 2014
01097	3028	005	01	RICE 2014
01097	3028	006	01	RICE 2014
01097	3045	004	01	RICE 2014
01097	4004	005	01	RICE 2014
01097	4004	006	01	RICE 2014
01097	4004	007	01	RICE 2014
01097	4004	008	01	RICE 2014
01097	4004	009	01	RICE 2014
01097	4004	010	01	RICE 2014
01097	4004	020	01	RICE 2014
01097	4004	022	01	RICE 2014
01097	4005	005	01	RICE 2014
01097	4005	006	01	RICE 2014
01097	4005	007	01	RICE 2014
01097	4005	008	01	RICE 2014
01097	4005	020	01	RICE 2014
01097	4005	021	01	RICE 2014
01097	4019	001	01	RICE 2014
01097	4019	002	01	RICE 2014
01097	4019	003	01	RICE 2014
01097	8026	038	01	TR NODA Cement
01097	8026	038	02	TR NODA Cement
01097	8026	038	03	TR NODA Cement
01097	8026	042	01	TR NODA Cement
01099	0021	005	01	RICE 2014
01099	0021	007	01	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
01099	0030	001	01	RICE 2014
01099	0030	002	01	RICE 2014
01099	0030	003	01	RICE 2014
01099	0030	004	01	RICE 2014
01099	0030	005	01	RICE 2014
01099	0030	005	02	RICE 2014
01099	0030	006	01	RICE 2014
01099	0030	007	01	RICE 2014
01099	0030	013	01	RICE 2014
01099	0030	015	01	RICE 2014
01099	0033	001	01	RICE 2014
01099	0033	002	01	RICE 2014
01099	0033	005	01	RICE 2014
01103	0010	014	01	ICI PM Controls
01103	0010	015	01	ICI PM Controls
01103	0010	016	01	ICI PM Controls
01103	0010	017	01	ICI PM Controls
01103	0039	013	01	OECA Settlement
01103	0039	014	01	OECA Settlement
01103	0039	015	01	OECA Settlement
01103	0039	017	01	OECA Settlement
01103	0039	018	01	OECA Settlement
01103	0039	026	01	ICI PM Controls
01103	0039	026	01	OECA Settlement
01103	0039	031	01	OECA Settlement
01103	0039	032	01	OECA Settlement
01103	0039	033	01	OECA Settlement
01103	0039	034	01	OECA Settlement
01103	0039	037	01	OECA Settlement
01103	0039	038	01	OECA Settlement
01103	0039	047	88	OECA Settlement
01107	0009	001	01	RICE 2014
01107	0009	002	01	RICE 2014
01107	0009	004	01	RICE 2014
01107	0009	005	01	RICE 2014
01107	0009	006	01	RICE 2014
01107	0009	007	01	RICE 2014
01107	0009	008	01	RICE 2014
01107	0009	009	01	RICE 2014
01107	0009	010	01	RICE 2014
01107	0009	011	01	RICE 2014
01107	0009	012	01	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
01107	0009	013	01	RICE 2014
01111	0014	013	01	RICE 2014
01111	0014	018	01	RICE 2014
01111	0014	019	01	RICE 2014
01111	0014	020	01	RICE 2014
01111	0014	021	01	RICE 2014
01111	0014	022	01	RICE 2014
01111	0014	023	01	RICE 2014
01111	0014	024	01	RICE 2014
01111	0014	025	01	RICE 2014
01111	0014	027	01	RICE 2014
01111	0014	029	01	RICE 2014
01111	0014	030	01	RICE 2014
01111	0014	031	01	RICE 2014
01111	0014	032	01	RICE 2014
01111	0014	033	01	RICE 2014
01111	0014	034	01	RICE 2014
01113	0023	001	01	RICE 2014
01113	0023	002	01	RICE 2014
01115	0002	002	01	TR NODA Cement
01115	0014	003	01	RICE 2014
01115	0CAN	002	01	RICE 2014
01115	0CAN	003	01	RICE 2014
01117	0004	187	01	TR NODA Cement
01117	0005	001	88	ICI PM Controls
01117	0023	002	01	ICI PM Controls
01121	0006	007	01	ICI PM Controls
01121	0006	008	01	ICI PM Controls
01121	0006	009	01	ICI PM Controls
01121	0006	010	01	ICI PM Controls
01123	0011	003	88	ICI PM Controls
01125	0007	001	01	OECA Settlement
01125	0007	002	01	OECA Settlement
01125	0007	003	01	OECA Settlement
01125	0007	004	01	OECA Settlement
01125	0007	005	01	OECA Settlement
01125	0007	006	01	OECA Settlement
01125	0007	007	01	OECA Settlement
01125	0007	008	01	OECA Settlement
01125	0007	009	01	OECA Settlement
01125	0007	010	01	OECA Settlement
01125	0007	011	01	OECA Settlement

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
01125	0007	012	01	OECA Settlement
01125	0007	013	01	OECA Settlement
01125	0007	014	01	OECA Settlement
01125	0007	015	01	OECA Settlement
01125	0007	016	01	OECA Settlement
01125	0007	017	01	OECA Settlement
01125	0007	018	01	OECA Settlement
01125	0007	019	01	OECA Settlement
01125	0007	020	01	OECA Settlement
01125	0007	021	01	OECA Settlement
01125	0007	022	01	OECA Settlement
01125	0007	023	01	OECA Settlement
01125	0007	024	01	OECA Settlement
01125	0007	025	01	OECA Settlement
01125	0007	026	01	OECA Settlement
01125	0007	027	01	OECA Settlement
01125	0007	028	01	OECA Settlement
01125	0007	030	01	OECA Settlement
01125	0007	031	01	OECA Settlement
01125	0007	032	01	OECA Settlement
01125	0007	033	01	OECA Settlement
01125	0007	034	01	OECA Settlement
01125	0007	035	01	OECA Settlement
01125	0007	041	01	OECA Settlement
01125	0007	042	01	OECA Settlement
01125	0007	043	01	OECA Settlement
01125	0007	044	01	OECA Settlement
01125	0007	046	01	OECA Settlement
01125	0007	047	01	OECA Settlement
01125	0007	048	01	OECA Settlement
01125	0007	049	01	OECA Settlement
01125	0007	051	01	OECA Settlement
01125	0007	052	01	OECA Settlement
01125	0007	053	01	OECA Settlement
01125	0028	001	01	RICE 2014
01125	0028	002	01	RICE 2014
01125	0043	002	01	RICE 2014
01125	0043	006	01	RICE 2014
01125	0043	007	88	RICE 2014
01125	0043	008	01	RICE 2014
01125	0044	007	01	RICE 2014
01125	0044	008	01	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
01125	0045	001	01	RICE 2014
01125	0045	010	88	RICE 2014
01125	0045	012	01	RICE 2014
01125	0046	012	01	RICE 2014
01125	0046	014	01	RICE 2014
01125	0047	001	01	RICE 2014
01125	0047	002	01	RICE 2014
01125	0049	004	01	RICE 2014
01125	0049	005	01	RICE 2014
01125	0051	003	01	RICE 2014
01125	0052	005	88	RICE 2014
01125	0060	003	01	RICE 2014
01125	0060	004	01	RICE 2014
01125	0060	005	01	RICE 2014
01125	0061	006	01	RICE 2014
01125	0061	007	01	RICE 2014
01125	0061	008	01	RICE 2014
01125	0065	011	01	RICE 2014
01125	0067	002	01	RICE 2014
01125	0077	002	01	RICE 2014
01125	0077	004	01	RICE 2014
01125	0078	001	01	RICE 2014
01125	0078	002	01	RICE 2014
01125	0085	001	01	RICE 2014
01125	0085	002	01	RICE 2014
01125	0085	003	01	RICE 2014
01125	0085	004	01	RICE 2014
01125	0085	006	01	RICE 2014
01125	0086	001	01	RICE 2014
01125	0086	002	01	RICE 2014
01125	0086	005	01	RICE 2014
01125	0086	006	01	RICE 2014
01125	0086	007	01	RICE 2014
01125	0086	009	01	RICE 2014
01125	0086	010	01	RICE 2014
01125	0092	003	01	RICE 2014
01125	0099	006	01	RICE 2014
01125	0100	002	01	RICE 2014
01125	0CS1	008	01	RICE 2014
01125	0LN1	006	01	RICE 2014
01125	BWT6	001	01	RICE 2014
01127	0001	001	88	ICI PM Controls

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
01129	0001	001	88	ICI PM Controls
01129	0003	015	01	ICI PM Controls
01129	0003	015	03	ICI PM Controls
01129	0003	019	04	ICI PM Controls
01129	0003	019	07	ICI PM Controls
01129	0003	019	09	ICI PM Controls
01129	0003	026	01	ICI PM Controls
01129	0003	026	02	ICI PM Controls
01129	0003	026	03	ICI PM Controls
01129	0003	026	04	ICI PM Controls
01129	0003	026	05	ICI PM Controls
01129	0009	004	01	RICE 2014
01129	0009	005	01	RICE 2014
01129	0009	009	01	RICE 2014
01129	0009	010	01	RICE 2014
01129	0009	011	01	RICE 2014
01129	0009	012	01	RICE 2014
01129	0009	013	01	RICE 2014
01129	0009	014	01	RICE 2014
01129	0009	015	01	RICE 2014
01129	0009	016	01	RICE 2014
01129	0009	017	01	RICE 2014
01129	0009	018	01	RICE 2014
01129	0009	019	01	RICE 2014
01129	0009	028	01	RICE 2014
01129	0009	029	01	RICE 2014
01129	0018	001	88	ICI PM Controls
01131	0001	005	01	ICI PM Controls
01133	0011	002	01	ICI PM Controls
12001	7775240	2	2	RICE 2014
12001	7775271	3	2	RICE 2014
12005	0050009	16	4	ICI PM Controls
12005	0050071	2	2	RICE 2014
12005	7770062	2	7	RICE 2014
12007	0070012	1	3	RICE 2014
12007	7770037	3	3	RICE 2014
12009	0090005	58	1	RICE 2014
12009	0090005	62	2	RICE 2014
12009	0090051	78	1	RICE 2014
12009	0090051	87	1	RICE 2014
12009	0090106	1	2	RICE 2014
12009	0090106	2	2	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
12011	0110069	39	1	RICE 2014
12011	0110351	2	1	RICE 2014
12011	0112410	1	1	RICE 2014
12011	0112410	2	1	RICE 2014
12015	0150036	2	1	RICE 2014
12015	0150079	1	2	RICE 2014
12021	0210031	14	1	RICE 2014
12021	0210031	4	1	RICE 2014
12021	0210031	8	1	RICE 2014
12021	0210031	9	1	RICE 2014
12031	0310010	9	1	RICE 2014
12031	0310213	18	2	RICE 2014
12031	0310215	99	1	RICE 2014
12031	7770242	2	2	RICE 2014
12031	7775041	2	2	RICE 2014
12033	0330042	33	3	ICI PM Controls
12033	0330042	37	3	ICI PM Controls
12033	0330082	44	2	RICE 2014
12033	0330114	3	5	RICE 2014
12033	0330114	5	3	RICE 2014
12033	0330114	9	1	RICE 2014
12039	0390029	1	2	RICE 2014
12039	0390029	2	2	RICE 2014
12039	0390029	3	2	RICE 2014
12039	0390029	4	2	RICE 2014
12039	0390029	5	2	RICE 2014
12043	0430018	1	1	RICE 2014
12043	0430018	3	1	RICE 2014
12049	0490343	1	1	RICE 2014
12049	0490344	2	1	RICE 2014
12053	0530017	3	2	RICE 2014
12053	0530021	18	3	ICI PM Controls
12053	0530050	8	2	RICE 2014
12053	0530050	9	2	RICE 2014
12055	0550012	3	2	RICE 2014
12057	0570021	1	2	RICE 2014
12057	0570089	3	1	RICE 2014
12057	0570223	101	1	RICE 2014
12057	0570223	104	1	RICE 2014
12057	0570286	5	2	RICE 2014
12057	0570324	2	5	RICE 2014
12057	0570324	2	6	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
12057	0570373	12	1	RICE 2014
12057	0570373	17	2	RICE 2014
12057	0570373	18	1	RICE 2014
12057	0570442	3	3	RICE 2014
12057	0570854	5	2	RICE 2014
12057	0571290	8	1	RICE 2014
12057	0571290	9	1	RICE 2014
12057	0571312	1	2	RICE 2014
12057	0571328	4	1	RICE 2014
12069	0694822	2	1	RICE 2014
12081	0810030	6	3	RICE 2014
12081	0810031	3	2	RICE 2014
12083	0830070	1	2	RICE 2014
12083	0830070	2	2	RICE 2014
12083	0830070	3	2	RICE 2014
12083	0830070	4	3	RICE 2014
12083	0830070	5	2	RICE 2014
12085	0850108	1	1	RICE 2014
12086	0250157	5	1	RICE 2014
12086	0250157	6	1	RICE 2014
12086	0250232	11	1	RICE 2014
12086	0250232	12	1	RICE 2014
12086	0250314	18	1	RICE 2014
12086	0250314	19	1	RICE 2014
12086	0250314	21	2	RICE 2014
12086	0250393	7	1	RICE 2014
12086	0250476	19	1	RICE 2014
12086	0250476	20	1	RICE 2014
12086	0250520	1	4	RICE 2014
12086	0250520	2	3	RICE 2014
12086	0250520	3	5	RICE 2014
12086	0250593	7	1	RICE 2014
12086	0250593	8	1	RICE 2014
12089	0890003	15	2	ICI PM Controls
12091	0910031	36	1	RICE 2014
12091	0910031	36	2	RICE 2014
12095	0950031	3	2	RICE 2014
12095	0950063	8	2	RICE 2014
12095	0950067	9	1	RICE 2014
12095	0950095	11	1	RICE 2014
12095	0950095	11	2	RICE 2014
12095	0950111	101	3	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
12095	0950184	4	3	RICE 2014
12095	0950190	1	3	RICE 2014
12095	0950190	2	3	RICE 2014
12095	0950190	3	3	RICE 2014
12095	0950190	4	3	RICE 2014
12095	0951219	2	1	RICE 2014
12095	0951315	2	1	RICE 2014
12097	0970068	1	3	RICE 2014
12097	0970077	1	1	RICE 2014
12099	0990015	6	1	RICE 2014
12099	0990015	6	2	RICE 2014
12099	0990021	65	2	RICE 2014
12099	0990021	68	1	RICE 2014
12099	0990042	6	1	RICE 2014
12099	0990234	17	1	RICE 2014
12099	0990354	2	1	RICE 2014
12101	1010378	3	1	RICE 2014
12101	1010378	5	1	RICE 2014
12103	1030004	5	2	RICE 2014
12103	1030091	7	1	RICE 2014
12103	1030234	7	1	RICE 2014
12105	1050004	12	1	RICE 2014
12105	1050023	15	1	RICE 2014
12105	1050151	4	2	RICE 2014
12105	1050215	1	2	RICE 2014
12105	1050298	4	1	RICE 2014
12105	1050341	5	1	RICE 2014
12105	1050387	2	4	RICE 2014
12105	1050397	1	1	RICE 2014
12105	1050400	1	2	RICE 2014
12105	7775202	3	2	RICE 2014
12105	7775280	3	4	RICE 2014
12107	1070039	24	2	RICE 2014
12109	7775056	2	3	RICE 2014
12111	1110060	1	2	RICE 2014
12111	1110060	2	2	RICE 2014
12111	1110060	3	2	RICE 2014
12111	1110060	4	2	RICE 2014
12111	1110071	2	2	RICE 2014
12111	1110071	3	2	RICE 2014
12113	1130005	38	1	RICE 2014
12113	1130005	44	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
12113	1130005	45	1	RICE 2014
12113	1130005	46	1	RICE 2014
12113	1130014	13	1	RICE 2014
12113	1130037	1	2	RICE 2014
12113	1130037	2	2	RICE 2014
12113	1130037	3	2	RICE 2014
12113	1130037	4	2	RICE 2014
12113	1130037	5	2	RICE 2014
12117	1170019	3	2	RICE 2014
12117	1170030	2	2	RICE 2014
12117	1170362	3	1	RICE 2014
12119	7775176	1	6	RICE 2014
12123	1230034	1	2	RICE 2014
12127	1270189	1	2	RICE 2014
12131	7775118	1	6	RICE 2014
12133	1330005	1	2	RICE 2014
12133	1330005	2	2	RICE 2014
12133	1330005	3	2	RICE 2014
12133	1330005	4	2	RICE 2014
12133	1330005	5	2	RICE 2014
13021	02100001	B001	3	ICI PM Controls
13021	02100001	B002	3	ICI PM Controls
13021	02100001	B003	2	ICI PM Controls
13021	02100055	BO3	1	ICI PM Controls
13021	02100055	BO4	1	ICI PM Controls
13021	02100055	BO5	1	ICI PM Controls
13045	04500051	P800	P800	RICE 2014
13045	04500051	P801	P801	RICE 2014
13045	04500051	P802	P802	RICE 2014
13051	05100007	PB13	PB13	ICI PM Controls
13051	05100007	PB13	PB13	State Supplied Control
13051	05100077	SA02	1	State Supplied Control
13055	05500001	EU01	1	ICI PM Controls
13055	05500001	EU02	1	ICI PM Controls
13055	05500001	EU03	1	ICI PM Controls
13055	05500001	EU04	1	ICI PM Controls
13057	05700036	EG1	EG1P	RICE 2014
13057	05700036	FP1	FP1P	RICE 2014
13059	05900059	B005	3	ICI PM Controls
13063	06300059	GG13	1	RICE 2014
13063	06300059	GG14	1	RICE 2014
13063	06300105	GG13	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
13063	06300105	GG14	1	RICE 2014
13063	06300105	GG15	1	RICE 2014
13063	06300105	GG16	2	RICE 2014
13067	06700022	CB01	CB01C	ICI PM Controls
13067	06700027	F100	F100	RICE 2014
13067	06700027	F101	F101	RICE 2014
13067	06700027	F102	F102	RICE 2014
13067	06700027	F103	F103	RICE 2014
13067	06700027	F23	F23	RICE 2014
13067	06700027	F24	F24	RICE 2014
13067	06700027	F25	F25	RICE 2014
13067	06700027	F26	F26	RICE 2014
13067	06700027	F27	F27	RICE 2014
13067	06700027	F28	F28	RICE 2014
13067	06700027	F61	F61	RICE 2014
13067	06700027	F62	F62	RICE 2014
13067	06700027	F63	F63	RICE 2014
13067	06700027	F99	F99	RICE 2014
13089	08900299	E1	EP4	RICE 2014
13089	08900299	E2	EP5	RICE 2014
13095	09500010	B001	1	ICI PM Controls
13095	09500010	B002	1	ICI PM Controls
13099	09900001	U500	1	State Supplied Control
13099	09900001	U500	2	State Supplied Control
13099	09900001	U500	3	State Supplied Control
13099	09900001	U500	4	State Supplied Control
13099	09900001	U500	6	ICI PM Controls
13099	09900001	U501	1	State Supplied Control
13099	09900001	U501	2	State Supplied Control
13099	09900001	U501	3	State Supplied Control
13099	09900001	U501	4	State Supplied Control
13099	09900001	U501	6	ICI PM Controls
13103	10300007	BO01	1	ICI PM Controls
13103	10300007	BO01	2	ICI PM Controls
13103	10300007	BO02	1	ICI PM Controls
13103	10300007	BO03	1	ICI PM Controls
13103	10300007	BO03	2	ICI PM Controls
13103	10300012	DWP1	DWP1	RICE 2014
13115	11500021	F4	2	ICI PM Controls
13121	12100268	G1	1	RICE 2014
13121	12100268	G2	1	RICE 2014
13121	12100268	G3	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
13121	12100807	GG13	1	RICE 2014
13121	12100807	GG14	1	RICE 2014
13127	12700003	F1	3	State Supplied Control
13127	12700003	F1	4	State Supplied Control
13139	13900002	B001	1	ICI PM Controls
13139	13900002	B001	1	OECA Settlement
13139	13900002	B002	1	OECA Settlement
13139	13900002	HPB1	1	OECA Settlement
13139	13900002	HPB2	1	OECA Settlement
13139	13900002	HR01	1	OECA Settlement
13139	13900002	INSG2	1	ICI PM Controls
13139	13900002	SB1	1	OECA Settlement
13151	15100025	AC01	1	RICE 2014
13151	15100025	AC02	1	RICE 2014
13151	15100025	AUX1	1	RICE 2014
13151	15100025	AUX2	1	RICE 2014
13151	15100025	AUX3	1	RICE 2014
13153	15300033	G001	G001	RICE 2014
13153	15300033	G002	G002	RICE 2014
13153	15300033	G003	G003	RICE 2014
13153	15300033	G004	G004	RICE 2014
13153	15300033	G005	G005	RICE 2014
13153	15300033	G006	G006	RICE 2014
13153	15300033	G007	G007	RICE 2014
13153	15300033	G008	G008	RICE 2014
13153	15300033	G009	G009	RICE 2014
13153	15300033	G011	G011	RICE 2014
13153	15300033	G012	G012	RICE 2014
13153	15300033	G013	G013	RICE 2014
13153	15300033	G014	G014	RICE 2014
13153	15300033	G015	G015	RICE 2014
13153	15300033	G016	G016	RICE 2014
13153	15300033	G017	G017	RICE 2014
13153	15300033	G018	G018	RICE 2014
13153	15300033	G019	G019	RICE 2014
13153	15300033	G022	G022	RICE 2014
13153	15300033	G023	G023	RICE 2014
13153	15300033	G024	G024	RICE 2014
13153	15300033	G026	G026	RICE 2014
13153	15300033	G027	G027	RICE 2014
13153	15300033	G028	G028	RICE 2014
13153	15300033	G029	G029	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
13153	15300033	G030	G030	RICE 2014
13153	15300033	G031	G031	RICE 2014
13153	15300033	G033	G033	RICE 2014
13153	15300033	G034	G034	RICE 2014
13153	15300033	G035	G035	RICE 2014
13153	15300033	G036	G036	RICE 2014
13153	15300033	G037	G037	RICE 2014
13153	15300033	G038	G038	RICE 2014
13153	15300033	G039	G039	RICE 2014
13153	15300033	G040	G040	RICE 2014
13153	15300033	G041	G041	RICE 2014
13153	15300033	G042	G042	RICE 2014
13153	15300033	G043	G043	RICE 2014
13153	15300033	G044	G044	RICE 2014
13175	17500004	PB1	1	ICI PM Controls
13175	17500004	PB2	1	ICI PM Controls
13179	17900001	F1	1	State Supplied Control
13179	17900001	F1	2	State Supplied Control
13179	17900001	F1	3	State Supplied Control
13179	17900001	F3	1	State Supplied Control
13185	18500001	1017	2	State Supplied Control
13185	18500001	1017	3	State Supplied Control
13195	19500015	AC01	1	RICE 2014
13195	19500015	AC02	1	RICE 2014
13195	19500015	AUX1	1	RICE 2014
13195	19500015	AUX2	1	RICE 2014
13195	19500015	AUX3	1	RICE 2014
13217	21700024	RCU2	2	RICE 2014
13245	24500006	PB1A	2	ICI PM Controls
13245	24500006	PB2A	5	ICI PM Controls
13293	29300025	C003	P001	RICE 2014
13293	29300025	C004	P001	RICE 2014
13295	29500031	BR11	STEAM1	ICI PM Controls
13303	30300006	GEN1	1	RICE 2014
13303	30300006	GEN2	1	RICE 2014
13305	30500001	PB02	1	State Supplied Control
13305	30500001	PB02	2	State Supplied Control
13305	30500001	RF01	1	State Supplied Control
13305	30500001	RF04	1	State Supplied Control
13313	31300096	BL06	BL06	ICI PM Controls
13313	31300096	BL07	BL07	ICI PM Controls
13319	31900027	GEN1	GEN1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
13319	31900027	GEN2	GEN2	RICE 2014
13319	31900029	EDG1	EDG1	RICE 2014
13319	31900029	EDG2	EDG2	RICE 2014
21005	00003	006	1	ICI PM Controls
21009	00065	017	1	RICE 2014
21013	00001	001	1	ICI PM Controls
21013	00082	08-01	1	RICE 2014
21013	00091	001	1	ICI PM Controls
21013	00091	002	2	ICI PM Controls
21013	00093	001	1	RICE 2014
21013	00093	02	1	RICE 2014
21013	00094	EP-01	1	RICE 2014
21013	00094	EP-02	1	RICE 2014
21015	00062	007	1	RICE 2014
21015	00133	001	1	RICE 2014
21015	00133	002	1	RICE 2014
21015	00148	008	1	RICE 2014
21015	00148	009	1	RICE 2014
21015	00148	009	2	RICE 2014
21015	00148	009	3	RICE 2014
21015	00148	010	1	RICE 2014
21015	00148	011	1	RICE 2014
21015	00148	012	1	RICE 2014
21015	00148	013	1	RICE 2014
21015	00155	05	5	RICE 2014
21015	00155	06	6	RICE 2014
21015	00155	07	6	RICE 2014
21017	00025	IA12	1	RICE 2014
21017	00025	IA13	1	RICE 2014
21019	00106	EP001	1	RICE 2014
21019	00106	EP001	2	RICE 2014
21019	00106	EP001	3	RICE 2014
21019	00106	EP001	4	RICE 2014
21019	00106	EP001	5	RICE 2014
21019	00106	EP001	6	RICE 2014
21019	00106	EP001	7	RICE 2014
21027	00022	001	1	RICE 2014
21027	00022	001	2	RICE 2014
21027	00022	001	3	RICE 2014
21027	00022	001	4	RICE 2014
21027	00022	001	5	RICE 2014
21027	00022	001	6	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
21027	00022	001	7	RICE 2014
21027	00028	EP-01	1	RICE 2014
21029	00005	008	1	ICI PM Controls
21029	00044	EU-01	1	RICE 2014
21029	00044	EU-02	1	RICE 2014
21029	00044	EU-03	1	RICE 2014
21029	00044	EU-04	1	RICE 2014
21029	00045	EU02	1	RICE 2014
21031	09182	03-01	1	RICE 2014
21031	09182	03-01	2	RICE 2014
21037	00090	GP2	4	RICE 2014
21037	00095	18	1	RICE 2014
21037	00095	19-21	1	RICE 2014
21041	00004	089	1	RICE 2014
21047	00030	I134	1	RICE 2014
21047	00117	C-1	1	RICE 2014
21047	00117	C-2	1	RICE 2014
21049	00060	001	1	ICI PM Controls
21049	00062	EP11	1	RICE 2014
21051	00052	001	1	RICE 2014
21051	00052	002	1	RICE 2014
21051	09173	03-01	1	RICE 2014
21059	00010	001	1	ICI PM Controls
21059	00039	032	1	ICI PM Controls
21059	00071	016	1	RICE 2014
21059	09189	03-01	1	RICE 2014
21067	00003	007	1	ICI PM Controls
21067	00003	008	1	ICI PM Controls
21067	00003	013	1	ICI PM Controls
21067	00003	013	2	ICI PM Controls
21067	00003	053	1	RICE 2014
21067	00003	054	1	RICE 2014
21067	00003	054	2	RICE 2014
21067	00003	055	1	RICE 2014
21067	00003	055	2	RICE 2014
21067	00003	056	1	RICE 2014
21067	00003	059	1	RICE 2014
21067	00003	063	1	RICE 2014
21067	00003	60	1	RICE 2014
21067	00012	800810	1	RICE 2014
21067	00012	801802	1	RICE 2014
21067	00032	013	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
21067	00032	014	1	RICE 2014
21067	00032	015	1	RICE 2014
21067	00032	016	1	RICE 2014
21067	00032	018	1	RICE 2014
21067	00032	019	1	RICE 2014
21067	00061	001	1	ICI PM Controls
21067	00061	005	2	ICI PM Controls
21067	00171	001	1	RICE 2014
21067	00171	002	1	RICE 2014
21067	00171	003	1	RICE 2014
21067	00171	004	1	RICE 2014
21067	00171	005	1	RICE 2014
21067	00182	002	1	RICE 2014
21067	09187	02-01	1	RICE 2014
21071	00138	EP0102	1	RICE 2014
21071	00138	EP0102	2	RICE 2014
21071	00140	001	1	RICE 2014
21071	00154	E01	1	RICE 2014
21071	00154	E02	1	RICE 2014
21071	00155	001	1	RICE 2014
21071	00156	001	1	RICE 2014
21071	00161	001	1	RICE 2014
21071	00162	EP-01	1	RICE 2014
21071	00163	EP-01	1	RICE 2014
21073	00001	004	1	ICI PM Controls
21073	00001	005	1	ICI PM Controls
21073	00009	009	1	ICI PM Controls
21073	00054	EG	1	RICE 2014
21073	00054	EG	2	RICE 2014
21073	00054	EG	3	RICE 2014
21073	00054	EG	4	RICE 2014
21073	00082	006	1	RICE 2014
21077	00020	049	1	RICE 2014
21077	00020	050	1	RICE 2014
21077	00031	17--01	1	RICE 2014
21083	00052	D1	1	RICE 2014
21089	00001	001	1	OECA Settlement
21089	00001	001	2	OECA Settlement
21089	00001	001	3	OECA Settlement
21089	00001	003	2	OECA Settlement
21089	00001	INS-2	1	OECA Settlement
21089	00001	INS-2	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
21089	00001	INS-2	2	OECA Settlement
21089	00001	INS-2	2	RICE 2014
21089	00005	insig1	1	RICE 2014
21089	00033	EP001	1	RICE 2014
21089	00033	EP001	10	RICE 2014
21089	00033	EP001	11	RICE 2014
21089	00033	EP001	12	RICE 2014
21089	00033	EP001	13	RICE 2014
21089	00033	EP001	14	RICE 2014
21089	00033	EP001	15	RICE 2014
21089	00033	EP001	16	RICE 2014
21089	00033	EP001	2	RICE 2014
21089	00033	EP001	3	RICE 2014
21089	00033	EP001	4	RICE 2014
21089	00033	EP001	5	RICE 2014
21089	00033	EP001	6	RICE 2014
21089	00033	EP001	7	RICE 2014
21089	00033	EP001	8	RICE 2014
21089	00033	EP001	9	RICE 2014
21091	00005	008	3	ICI PM Controls
21095	00063	001	1	ICI PM Controls
21095	00103	005	1	ICI PM Controls
21095	00119	001	1	RICE 2014
21095	00119	002	1	RICE 2014
21095	00123	EP-01	1	RICE 2014
21095	00123	EP-02	1	RICE 2014
21095	00123	EP-03	1	RICE 2014
21095	09162	EU-01	1	RICE 2014
21101	00012	EU01U5	1	ICI PM Controls
21101	00016	022	1	RICE 2014
21101	00021	07-01	1	RICE 2014
21101	00124	001	1	RICE 2014
21101	00124	001	2	RICE 2014
21101	00124	001	3	RICE 2014
21107	00003	002	1	ICI PM Controls
21107	00134	001	1	RICE 2014
21107	00134	001	2	RICE 2014
21107	00134	001	3	RICE 2014
21107	00134	001	4	RICE 2014
21107	00134	001	5	RICE 2014
21107	00134	001	6	RICE 2014
21107	00134	002	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
21107	00134	002	2	RICE 2014
21107	00134	002	3	RICE 2014
21107	00134	002	4	RICE 2014
21107	00134	003	1	RICE 2014
21107	00134	003	2	RICE 2014
21107	00134	004	1	RICE 2014
21107	00148	001	1	RICE 2014
21107	00148	001	2	RICE 2014
21107	00148	001	3	RICE 2014
21107	00148	001	4	RICE 2014
21107	00154	RC0304	1	RICE 2014
21107	00154	RC0304	2	RICE 2014
21111	0011	09	01	ICI PM Controls
21111	0060	01	01	TR NODA Cement
21111	0072	01	01	ICI PM Controls
21111	0148	01	01	ICI PM Controls
21111	0223	01	02	RICE 2014
21111	0223	01	03	RICE 2014
21111	0223	03	02	RICE 2014
21111	0244	01	01	ICI PM Controls
21111	0532	03	02	RICE 2014
21111	0852	01	01	ICI PM Controls
21111	0870	01	01	ICI PM Controls
21111	1333	01	01	ICI PM Controls
21111	1333	01	02	ICI PM Controls
21111	1333	01	03	ICI PM Controls
21111	1333	04	01	ICI PM Controls
21117	00171	0201	1	RICE 2014
21117	00171	0201	2	RICE 2014
21117	00171	0801	1	RICE 2014
21119	00030	EP-003	1	RICE 2014
21119	00030	EP0102	2	RICE 2014
21119	00037	001	1	ICI PM Controls
21119	00037	002	1	ICI PM Controls
21119	00038	001	1	RICE 2014
21119	00040	001	1	RICE 2014
21119	00042	001	1	RICE 2014
21119	00042	002	1	RICE 2014
21119	00042	004	1	RICE 2014
21119	00043	04C	5	RICE 2014
21119	00045	EP-01	1	RICE 2014
21119	00045	EP-02	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
21119	00045	EP-03	2	RICE 2014
21121	00058	001	1	RICE 2014
21121	00058	002	1	RICE 2014
21121	00059	ENG1	1	RICE 2014
21121	00059	ENG2	1	RICE 2014
21123	00012	003	1	RICE 2014
21123	00012	003	2	RICE 2014
21123	00012	003	3	RICE 2014
21123	00012	004	1	RICE 2014
21123	00012	004	2	RICE 2014
21123	00012	004	3	RICE 2014
21127	00040	IA1	1	RICE 2014
21127	00040	IA1	2	RICE 2014
21127	00040	IA1	3	RICE 2014
21131	00025	001	1	RICE 2014
21131	00025	002	1	RICE 2014
21133	00098	EP-001	1	RICE 2014
21133	00098	EP-002	1	RICE 2014
21133	00106	03-01	1	RICE 2014
21133	09163	EU-01	1	RICE 2014
21133	09164	EU-01	1	RICE 2014
21145	00074	001	1	ICI PM Controls
21145	00074	002	1	ICI PM Controls
21145	00094	002	1	RICE 2014
21145	00094	003	1	RICE 2014
21151	00007	EG-01	1	RICE 2014
21151	00007	EG-02	1	RICE 2014
21151	00007	EU-01	1	ICI PM Controls
21151	00007	EU-02	1	ICI PM Controls
21151	00007	EU-04	1	ICI PM Controls
21151	00013	23	1	RICE 2014
21151	00013	EU02	1	RICE 2014
21151	00013	EU03	1	RICE 2014
21151	00013	EU04	1	RICE 2014
21151	00013	EU05	1	RICE 2014
21151	00013	EU06	1	RICE 2014
21151	00013	EU07	1	RICE 2014
21151	00013	EU08	1	RICE 2014
21151	00013	I1	1	RICE 2014
21151	00038	008	1	ICI PM Controls
21151	00048	07	1	RICE 2014
21151	00048	07	2	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
21151	00064	006	1	RICE 2014
21151	09194	03-01	1	RICE 2014
21151	09194	03-02	1	RICE 2014
21155	00021	EP7	1	RICE 2014
21157	00003	0AA	1	ICI PM Controls
21157	00003	0AA	2	ICI PM Controls
21157	00037	002	1	RICE 2014
21157	00037	002	2	RICE 2014
21157	00037	002	3	RICE 2014
21157	00037	002	4	RICE 2014
21157	00037	002	5	RICE 2014
21157	00039	026	1	ICI PM Controls
21157	00042	002	2	RICE 2014
21157	00048	05	1	RICE 2014
21157	00048	05	2	RICE 2014
21157	00048	05	3	RICE 2014
21157	00048	05	4	RICE 2014
21157	00051	003	1	RICE 2014
21157	09161	EP02	1	RICE 2014
21159	00002	002	2	ICI PM Controls
21159	00022	AC1	1	RICE 2014
21159	00025	08-10	1	RICE 2014
21159	00025	08-10	2	RICE 2014
21159	00025	08-10	3	RICE 2014
21159	00025	12	1	RICE 2014
21159	00030	EP01	1	RICE 2014
21163	00017	01	1	RICE 2014
21163	00017	02	1	RICE 2014
21163	00017	02	2	RICE 2014
21163	00017	02	3	RICE 2014
21163	00017	02	4	RICE 2014
21163	00017	02	5	RICE 2014
21163	00017	02	6	RICE 2014
21163	00021	001	1	RICE 2014
21163	00022	001	1	RICE 2014
21163	00022	001	2	RICE 2014
21163	00024	001	1	RICE 2014
21163	00024	005	1	RICE 2014
21163	09160	30--01	1	RICE 2014
21163	09160	30--02	1	RICE 2014
21167	00004	EU-15	1	RICE 2014
21167	00004	EU-15	2	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
21167	00004	EU-15	3	RICE 2014
21167	00004	EU-15	4	RICE 2014
21167	00004	EU-16	1	RICE 2014
21167	00004	EU-16	2	RICE 2014
21167	00004	EU-16	3	RICE 2014
21167	00004	EU-16	4	RICE 2014
21167	00004	EU-16	5	RICE 2014
21167	00004	EU-16	6	RICE 2014
21167	00024	002	1	RICE 2014
21173	09129	08	1	RICE 2014
21173	09129	09	1	RICE 2014
21173	09157	03-01	1	RICE 2014
21175	00019	001	1	ICI PM Controls
21175	00019	002	1	ICI PM Controls
21175	00019	003	1	ICI PM Controls
21175	00019	004	1	ICI PM Controls
21177	00047	001	1	ICI PM Controls
21177	00066	001	1	RICE 2014
21177	00066	002	1	RICE 2014
21177	00073	001	1	RICE 2014
21177	00073	001	2	RICE 2014
21177	00074	001	1	RICE 2014
21177	00074	001	2	RICE 2014
21177	00075	001	1	RICE 2014
21177	00075	001	2	RICE 2014
21177	00075	001	3	RICE 2014
21177	00083	03-01	1	RICE 2014
21177	00083	03-02	1	RICE 2014
21177	00089	001	1	ICI PM Controls
21177	00089	002	1	ICI PM Controls
21179	00014	09	1	ICI PM Controls
21179	00020	EU-09	1	ICI PM Controls
21179	00020	EU-09	2	ICI PM Controls
21179	00044	011	1	RICE 2014
21191	00007	004	1	ICI PM Controls
21191	09079	030a	1	RICE 2014
21191	09079	030b	1	RICE 2014
21191	09130	EU-009	1	RICE 2014
21191	09130	EU-010	1	RICE 2014
21191	09146	03--01	1	RICE 2014
21193	00105	EP-001	1	RICE 2014
21193	00105	EP-002	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
21195	00135	001	1	RICE 2014
21195	00247	EP0102	1	RICE 2014
21195	00247	EP0102	2	RICE 2014
21195	00252	001	1	RICE 2014
21195	00252	003	1	RICE 2014
21195	00253	001	1	RICE 2014
21195	00253	002	1	RICE 2014
21195	00258	01	1	RICE 2014
21195	00258	02	1	RICE 2014
21195	00264	001	1	RICE 2014
21195	00268	02	2	RICE 2014
21195	00271	EU-01	1	RICE 2014
21195	00274	EP-01	2	RICE 2014
21195	00276	01	1	RICE 2014
21197	00006	EP0104	1	RICE 2014
21197	00006	EP0104	2	RICE 2014
21197	00006	EP0104	3	RICE 2014
21197	00006	EP0104	4	RICE 2014
21197	00013	EP001	1	RICE 2014
21197	00013	EP001	10	RICE 2014
21197	00013	EP001	11	RICE 2014
21197	00013	EP001	12	RICE 2014
21197	00013	EP001	13	RICE 2014
21197	00013	EP001	14	RICE 2014
21197	00013	EP001	15	RICE 2014
21197	00013	EP001	16	RICE 2014
21197	00013	EP001	17	RICE 2014
21197	00013	EP001	18	RICE 2014
21197	00013	EP001	19	RICE 2014
21197	00013	EP001	2	RICE 2014
21197	00013	EP001	20	RICE 2014
21197	00013	EP001	21	RICE 2014
21197	00013	EP001	22	RICE 2014
21197	00013	EP001	23	RICE 2014
21197	00013	EP001	24	RICE 2014
21197	00013	EP001	25	RICE 2014
21197	00013	EP001	26	RICE 2014
21197	00013	EP001	27	RICE 2014
21197	00013	EP001	28	RICE 2014
21197	00013	EP001	29	RICE 2014
21197	00013	EP001	3	RICE 2014
21197	00013	EP001	30	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
21197	00013	EP001	31	RICE 2014
21197	00013	EP001	32	RICE 2014
21197	00013	EP001	33	RICE 2014
21197	00013	EP001	34	RICE 2014
21197	00013	EP001	35	RICE 2014
21197	00013	EP001	36	RICE 2014
21197	00013	EP001	4	RICE 2014
21197	00013	EP001	5	RICE 2014
21197	00013	EP001	6	RICE 2014
21197	00013	EP001	7	RICE 2014
21197	00013	EP001	8	RICE 2014
21197	00013	EP001	9	RICE 2014
21199	00073	023	2	RICE 2014
21199	00073	024	1	RICE 2014
21199	00073	025	1	RICE 2014
21199	09138	03-01	1	RICE 2014
21199	09193	0301	1	RICE 2014
21199	09193	0302	1	RICE 2014
21199	09193	0303	1	RICE 2014
21199	09193	0304	1	RICE 2014
21205	00005	EU-02	1	ICI PM Controls
21205	00005	EU-03	1	ICI PM Controls
21205	00005	IA8	1	RICE 2014
21205	00005	IA9-10	1	RICE 2014
21205	00005	IA9-10	2	RICE 2014
21207	00017	EU02	1	ICI PM Controls
21211	00050	1	1	RICE 2014
21211	00050	2	2	RICE 2014
21213	00047	41	1	RICE 2014
21217	00033	001	14	RICE 2014
21217	00033	001	15	RICE 2014
21217	00033	001	16	RICE 2014
21217	00033	001	17	RICE 2014
21217	00033	001	18	RICE 2014
21217	00033	001	19	RICE 2014
21217	00033	001	20	RICE 2014
21217	00033	001	21	RICE 2014
21217	00033	001	22	RICE 2014
21217	00033	001	23	RICE 2014
21217	00033	001	24	RICE 2014
21217	00033	001	25	RICE 2014
21217	00033	001	26	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
21217	00033	001	27	RICE 2014
21217	00033	001	28	RICE 2014
21217	00033	001	29	RICE 2014
21217	00033	001	30	RICE 2014
21217	00033	001	31	RICE 2014
21217	00033	001	32	RICE 2014
21217	00034	EP001	1	RICE 2014
21217	00034	EP001	2	RICE 2014
21217	00034	EP001	3	RICE 2014
21223	00002	033	1	RICE 2014
21227	00012	001	1	ICI PM Controls
21227	00012	002	1	ICI PM Controls
21227	00130	01	1	RICE 2014
21227	00142	04	1	RICE 2014
21227	00149	01	1	RICE 2014
21227	00150	012	1	RICE 2014
21227	09151	0301	1	RICE 2014
21233	00074	002	10	RICE 2014
21233	00074	002	11	RICE 2014
21233	00074	002	12	RICE 2014
21233	00074	002	17	RICE 2014
21233	00074	002	18	RICE 2014
21233	00074	002	5	RICE 2014
21233	00074	002	6	RICE 2014
21233	00074	002	7	RICE 2014
21233	00074	002	9	RICE 2014
21233	00075	EP-001	1	RICE 2014
21235	00050	001	1	RICE 2014
21235	00051	001	1	RICE 2014
21239	00008	001	2	RICE 2014
21239	00008	002	2	RICE 2014
28003	2800300003	001	1	RICE 2014
28003	2800300003	002	1	RICE 2014
28003	2800300003	049	1	RICE 2014
28003	2800300003	050	1	RICE 2014
28003	2800300003	051	1	RICE 2014
28003	2800300003	052	1	RICE 2014
28003	2800300028	001	1	RICE 2014
28003	2800300028	002	1	RICE 2014
28003	2800300028	003	1	RICE 2014
28003	2800300028	004	1	RICE 2014
28003	2800300028	007	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
28003	2800300028	008	1	RICE 2014
28003	2800300028	010	1	RICE 2014
28003	2800300030	034	1	RICE 2014
28003	2800300030	035	1	RICE 2014
28003	2800300030	036	1	RICE 2014
28007	2800700029	002	1	RICE 2014
28007	2800700029	003	1	RICE 2014
28007	2800700029	004	1	RICE 2014
28007	2800700029	005	1	RICE 2014
28007	2800700029	006	1	RICE 2014
28007	2800700029	007	1	RICE 2014
28007	2800700029	008	1	RICE 2014
28007	2800700029	009	1	RICE 2014
28007	2800700029	010	1	RICE 2014
28007	2800700029	011	1	RICE 2014
28007	2800700029	012	1	RICE 2014
28007	2800700029	013	1	RICE 2014
28007	2800700029	014	1	RICE 2014
28007	2800700029	015	1	RICE 2014
28007	2800700029	016	1	RICE 2014
28007	2800700029	017	1	RICE 2014
28007	2800700032	004	1	RICE 2014
28007	2800700032	008	1	RICE 2014
28009	2800900019	009	1	RICE 2014
28011	2801100081	001	1	RICE 2014
28011	2801100081	002	1	RICE 2014
28011	2801100081	003	1	RICE 2014
28011	2801100081	015	1	RICE 2014
28013	2801300005	001	1	RICE 2014
28013	2801300005	002	1	RICE 2014
28013	2801300005	003	1	RICE 2014
28013	2801300005	004	1	RICE 2014
28013	2801300005	005	1	RICE 2014
28013	2801300005	006	1	RICE 2014
28013	2801300005	007	1	RICE 2014
28013	2801300005	012	1	RICE 2014
28013	2801300005	015	1	RICE 2014
28013	2801300005	016	1	RICE 2014
28017	2801700039	003	1	RICE 2014
28017	2801700039	004	1	RICE 2014
28017	2801700039	005	1	RICE 2014
28017	2801700039	006	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
28017	2801700039	007	1	RICE 2014
28017	2801700039	008	1	RICE 2014
28017	2801700039	009	1	RICE 2014
28017	2801700039	010	1	RICE 2014
28017	2801700039	011	1	RICE 2014
28017	2801700039	012	1	RICE 2014
28023	2802300048	001	1	RICE 2014
28023	2802300048	002	1	RICE 2014
28023	2802300048	003	1	RICE 2014
28023	2802300048	004	1	RICE 2014
28023	2802300048	005	1	RICE 2014
28023	2802300048	006	1	RICE 2014
28023	2802300048	007	1	RICE 2014
28023	2802300048	015	1	RICE 2014
28023	2802300048	019	1	RICE 2014
28023	2802300048	020	1	RICE 2014
28027	2802700008	001	1	RICE 2014
28027	2802700008	002	1	RICE 2014
28027	2802700008	003	1	RICE 2014
28027	2802700008	004	1	RICE 2014
28027	2802700008	005	1	RICE 2014
28027	2802700008	006	1	RICE 2014
28027	2802700008	007	1	RICE 2014
28027	2802700008	012	1	RICE 2014
28027	2802700008	023	1	RICE 2014
28031	2803100005	001	1	RICE 2014
28031	2803100005	002	1	RICE 2014
28031	2803100005	003	1	RICE 2014
28031	2803100005	004	1	RICE 2014
28033	2803300009	010	1	RICE 2014
28033	2803300009	011	1	RICE 2014
28033	2803300009	012	1	RICE 2014
28033	2803300009	024	1	RICE 2014
28035	2803500023	001	1	RICE 2014
28035	2803500023	002	1	RICE 2014
28035	2803500023	003	1	RICE 2014
28035	2803500023	004	1	RICE 2014
28035	2803500023	005	1	RICE 2014
28035	2803500023	006	1	RICE 2014
28035	2803500023	007	1	RICE 2014
28035	2803500023	008	1	RICE 2014
28035	2803500050	001	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
28035	2803500050	002	1	RICE 2014
28035	2803500050	003	1	RICE 2014
28035	2803500050	008	1	RICE 2014
28035	2803500092	001	1	RICE 2014
28035	2803500092	004	1	RICE 2014
28043	2804300013	015	1	RICE 2014
28043	2804300013	016	1	RICE 2014
28045	2804500005	001	1	RICE 2014
28045	2804500005	002	1	RICE 2014
28045	2804500005	007	1	RICE 2014
28045	2804500005	008	1	RICE 2014
28045	2804500005	013	1	RICE 2014
28045	2804500005	014	1	RICE 2014
28045	2804500005	015	1	RICE 2014
28045	2804500005	017	1	RICE 2014
28045	2804500005	019	1	RICE 2014
28045	2804500005	022	1	RICE 2014
28045	2804500005	024	1	RICE 2014
28045	2804500005	027	1	RICE 2014
28045	2804500005	029	1	RICE 2014
28045	2804500005	030	1	RICE 2014
28045	2804500005	031	1	RICE 2014
28045	2804500005	032	1	RICE 2014
28045	2804500005	033	1	RICE 2014
28045	2804500005	034	1	RICE 2014
28045	2804500005	036	1	RICE 2014
28045	2804500005	037	1	RICE 2014
28045	2804500005	038	1	RICE 2014
28045	2804500005	039	1	RICE 2014
28045	2804500005	040	1	RICE 2014
28045	2804500005	041	1	RICE 2014
28045	2804500005	042	1	RICE 2014
28045	2804500005	043	1	RICE 2014
28045	2804500005	044	1	RICE 2014
28045	2804500005	045	1	RICE 2014
28045	2804500005	046	1	RICE 2014
28045	2804500005	047	1	RICE 2014
28045	2804500005	048	1	RICE 2014
28045	2804500005	049	1	RICE 2014
28045	2804500005	093	1	RICE 2014
28045	2804500005	094	1	RICE 2014
28045	2804500005	095	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
28045	2804500005	096	1	RICE 2014
28045	2804500005	097	1	RICE 2014
28045	2804500005	098	1	RICE 2014
28045	2804500005	099	1	RICE 2014
28045	2804500017	001	1	RICE 2014
28045	2804500017	002	1	RICE 2014
28045	2804500017	003	1	RICE 2014
28045	2804500017	004	1	RICE 2014
28045	2804500017	005	1	RICE 2014
28045	2804500017	006	1	RICE 2014
28045	2804500017	007	1	RICE 2014
28045	2804500017	008	1	RICE 2014
28045	2804500017	009	1	RICE 2014
28045	2804500017	010	1	RICE 2014
28045	2804500028	007	1	RICE 2014
28047	2804700006	005	1	RICE 2014
28047	2804700006	012	1	RICE 2014
28047	2804700006	013	1	RICE 2014
28047	2804700006	027	1	RICE 2014
28047	2804700006	032	1	RICE 2014
28047	2804700107	011	1	RICE 2014
28047	2804700115	024	1	ICI PM Controls
28047	2804700115	025	1	ICI PM Controls
28047	2804700115	074	1	RICE 2014
28047	2804700115	077	1	RICE 2014
28047	2804700115	083	1	RICE 2014
28047	2804700115	092	1	RICE 2014
28047	2804700115	093	1	RICE 2014
28047	2804700115	094	1	RICE 2014
28047	2804700115	095	1	RICE 2014
28047	2804700115	096	1	RICE 2014
28047	2804700115	097	1	RICE 2014
28047	2804700115	098	1	RICE 2014
28047	2804700115	099	1	RICE 2014
28047	2804700115	100	1	RICE 2014
28047	2804700115	101	1	RICE 2014
28047	2804700115	102	1	RICE 2014
28047	2804700115	103	1	RICE 2014
28047	2804700115	104	1	RICE 2014
28049	2804900069	002	1	RICE 2014
28049	2804900112	006	1	RICE 2014
28049	2804900112	007	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
28049	2804900209	005	1	RICE 2014
28053	2805300003	001	1	RICE 2014
28053	2805300003	002	1	RICE 2014
28053	2805300003	003	1	RICE 2014
28053	2805300003	004	1	RICE 2014
28053	2805300003	005	1	RICE 2014
28053	2805300003	006	1	RICE 2014
28053	2805300003	007	1	RICE 2014
28053	2805300003	008	1	RICE 2014
28053	2805300003	009	1	RICE 2014
28053	2805300003	010	1	RICE 2014
28053	2805300003	011	1	RICE 2014
28053	2805300020	001	1	RICE 2014
28053	2805300020	002	1	RICE 2014
28053	2805300020	003	1	RICE 2014
28053	2805300020	004	1	RICE 2014
28053	2805300020	006	1	RICE 2014
28053	2805300020	007	1	RICE 2014
28053	2805300020	008	1	RICE 2014
28057	2805700028	017	1	RICE 2014
28059	2805900041	031	1	RICE 2014
28059	2805900041	036	1	RICE 2014
28059	2805900041	039	1	RICE 2014
28059	2805900058	469	1	RICE 2014
28059	2805900058	491	1	RICE 2014
28059	2805900058	496	1	RICE 2014
28059	2805900058	520	1	RICE 2014
28059	2805900058	533	1	RICE 2014
28059	2805900058	565	1	RICE 2014
28059	2805900058	568	1	RICE 2014
28059	2805900090	022	1	ICI PM Controls
28059	2805900090	023	1	ICI PM Controls
28059	2805900090	024	1	ICI PM Controls
28059	2805900090	025	1	ICI PM Controls
28059	2805900090	026	1	ICI PM Controls
28059	2805900119	004	1	RICE 2014
28061	2806100023	001	1	RICE 2014
28061	2806100023	002	1	RICE 2014
28061	2806100023	003	1	RICE 2014
28061	2806100023	004	1	RICE 2014
28061	2806100023	005	1	RICE 2014
28061	2806100023	006	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
28061	2806100023	007	1	RICE 2014
28061	2806100023	008	1	RICE 2014
28061	2806100023	009	1	RICE 2014
28061	2806100023	010	1	RICE 2014
28061	2806100023	011	1	RICE 2014
28061	2806100031	004	1	RICE 2014
28063	2806300014	001	1	RICE 2014
28063	2806300014	002	1	RICE 2014
28063	2806300014	003	1	RICE 2014
28063	2806300014	004	1	RICE 2014
28063	2806300014	005	1	RICE 2014
28063	2806300014	006	1	RICE 2014
28063	2806300014	007	1	RICE 2014
28063	2806300014	008	1	RICE 2014
28063	2806300014	009	1	RICE 2014
28063	2806300014	010	1	RICE 2014
28063	2806300014	011	1	RICE 2014
28063	2806300014	012	1	RICE 2014
28063	2806300014	013	1	RICE 2014
28063	2806300014	014	1	RICE 2014
28063	2806300014	015	1	RICE 2014
28065	2806500006	001	1	RICE 2014
28065	2806500006	002	1	RICE 2014
28065	2806500006	003	1	RICE 2014
28065	2806500006	004	1	RICE 2014
28065	2806500006	005	1	RICE 2014
28065	2806500006	006	1	RICE 2014
28065	2806500006	007	1	RICE 2014
28065	2806500006	008	1	RICE 2014
28065	2806500006	009	1	RICE 2014
28065	2806500006	011	1	RICE 2014
28067	2806700010	001	1	RICE 2014
28067	2806700010	002	1	RICE 2014
28067	2806700010	003	1	RICE 2014
28067	2806700010	004	1	RICE 2014
28067	2806700010	005	1	RICE 2014
28067	2806700010	006	1	RICE 2014
28067	2806700010	007	1	RICE 2014
28067	2806700010	008	1	RICE 2014
28067	2806700010	009	1	RICE 2014
28067	2806700010	010	1	RICE 2014
28067	2806700010	011	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
28067	2806700010	012	1	RICE 2014
28067	2806700010	013	1	RICE 2014
28067	2806700010	014	1	RICE 2014
28067	2806700010	015	1	RICE 2014
28067	2806700010	016	1	RICE 2014
28067	2806700010	018	1	RICE 2014
28067	2806700010	019	1	RICE 2014
28067	2806700010	020	1	RICE 2014
28067	2806700010	021	1	RICE 2014
28067	2806700010	022	1	RICE 2014
28067	2806700064	003	1	OECA Settlement
28067	2806700064	004	1	OECA Settlement
28067	2806700064	005	1	OECA Settlement
28067	2806700064	006	1	OECA Settlement
28067	2806700064	007	1	OECA Settlement
28067	2806700064	038	1	OECA Settlement
28067	2806700064	041	1	OECA Settlement
28067	2806700064	042	1	OECA Settlement
28067	2806700064	043	1	OECA Settlement
28069	2806900005	001	1	RICE 2014
28069	2806900005	002	1	RICE 2014
28069	2806900005	003	1	RICE 2014
28069	2806900005	005	1	RICE 2014
28071	2807100021	006	1	RICE 2014
28071	2807100021	007	1	RICE 2014
28071	2807100021	008	1	RICE 2014
28071	2807100021	009	1	RICE 2014
28071	2807100021	010	1	RICE 2014
28071	2807100021	011	1	RICE 2014
28071	2807100021	012	1	RICE 2014
28071	2807100021	013	1	RICE 2014
28071	2807100021	014	1	RICE 2014
28071	2807100021	015	1	RICE 2014
28073	2807300011	001	1	OECA Settlement
28073	2807300011	002	1	OECA Settlement
28073	2807300011	007	1	OECA Settlement
28073	2807300011	010	1	OECA Settlement
28073	2807300011	011	1	OECA Settlement
28073	2807300011	012	1	OECA Settlement
28073	2807300011	013	1	OECA Settlement
28073	2807300011	014	1	OECA Settlement
28073	2807300011	015	1	OECA Settlement

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
28073	2807300011	016	1	OECA Settlement
28073	2807300011	038	1	OECA Settlement
28077	2807700007	077	1	ICI PM Controls
28077	2807700020	006	1	RICE 2014
28081	2808100026	013	1	RICE 2014
28087	2808700005	006	1	RICE 2014
28087	2808700005	017	1	RICE 2014
28087	2808700005	018	1	RICE 2014
28087	2808700023	001	1	RICE 2014
28087	2808700023	002	1	RICE 2014
28087	2808700023	003	1	RICE 2014
28087	2808700023	004	1	RICE 2014
28087	2808700023	005	1	RICE 2014
28087	2808700023	007	1	RICE 2014
28087	2808700023	008	1	RICE 2014
28087	2808700025	027	1	RICE 2014
28087	2808700025	028	1	RICE 2014
28087	2808700025	029	1	RICE 2014
28089	2808900073	073	1	RICE 2014
28089	2808900073	092	1	RICE 2014
28095	2809500014	019	1	RICE 2014
28095	2809500035	001	1	RICE 2014
28095	2809500035	005	1	RICE 2014
28095	2809500035	006	1	RICE 2014
28095	2809500035	007	1	RICE 2014
28095	2809500035	008	1	RICE 2014
28095	2809500035	009	1	RICE 2014
28095	2809500035	010	1	RICE 2014
28095	2809500035	011	1	RICE 2014
28095	2809500035	012	1	RICE 2014
28095	2809500035	049	1	RICE 2014
28095	2809500035	084	1	RICE 2014
28095	2809500035	085	1	RICE 2014
28095	2809500039	001	1	RICE 2014
28095	2809500039	002	1	RICE 2014
28095	2809500039	003	1	RICE 2014
28095	2809500039	004	1	RICE 2014
28095	2809500039	005	1	RICE 2014
28105	2810500038	008	1	RICE 2014
28107	2810700021	026	1	RICE 2014
28107	2810700023	001	1	RICE 2014
28107	2810700023	002	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
28107	2810700023	003	1	RICE 2014
28107	2810700023	004	1	RICE 2014
28107	2810700023	005	1	RICE 2014
28107	2810700023	006	1	RICE 2014
28107	2810700023	007	1	RICE 2014
28107	2810700023	008	1	RICE 2014
28107	2810700023	009	1	RICE 2014
28107	2810700023	010	1	RICE 2014
28107	2810700023	011	1	RICE 2014
28107	2810700023	012	1	RICE 2014
28107	2810700023	013	1	RICE 2014
28107	2810700023	014	1	RICE 2014
28107	2810700023	015	1	RICE 2014
28107	2810700023	016	1	RICE 2014
28107	2810700023	017	1	RICE 2014
28107	2810700023	018	1	RICE 2014
28107	2810700023	019	1	RICE 2014
28107	2810700023	020	1	RICE 2014
28107	2810700023	021	1	RICE 2014
28107	2810700023	023	1	RICE 2014
28107	2810700023	024	1	RICE 2014
28107	2810700028	001	1	RICE 2014
28107	2810700028	002	1	RICE 2014
28107	2810700028	003	1	RICE 2014
28107	2810700028	004	1	RICE 2014
28107	2810700028	005	1	RICE 2014
28107	2810700028	008	1	RICE 2014
28107	2810700054	012	1	RICE 2014
28107	2810700054	013	1	RICE 2014
28121	2812100036	006	1	RICE 2014
28121	2812100036	007	1	RICE 2014
28121	2812100036	008	1	RICE 2014
28121	2812100036	009	1	RICE 2014
28121	2812100036	010	1	RICE 2014
28121	2812100083	001	1	RICE 2014
28121	2812100083	002	1	RICE 2014
28121	2812100083	003	1	RICE 2014
28121	2812100083	006	1	RICE 2014
28121	2812100096	001	1	RICE 2014
28121	2812100096	002	1	RICE 2014
28121	2812100096	003	1	RICE 2014
28121	2812100096	004	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
28121	2812100096	005	1	RICE 2014
28125	2812500022	001	1	RICE 2014
28125	2812500022	002	1	RICE 2014
28125	2812500022	003	1	RICE 2014
28125	2812500022	004	1	RICE 2014
28125	2812500022	005	1	RICE 2014
28125	2812500022	006	1	RICE 2014
28125	2812500022	007	1	RICE 2014
28125	2812500022	008	1	RICE 2014
28125	2812500022	009	1	RICE 2014
28129	2812900002	053	1	RICE 2014
28129	2812900007	013	1	RICE 2014
28131	2813100004	001	1	RICE 2014
28131	2813100004	002	1	RICE 2014
28145	2814500019	001	1	RICE 2014
28145	2814500019	002	1	RICE 2014
28145	2814500019	003	1	RICE 2014
28145	2814500019	004	1	RICE 2014
28145	2814500019	005	1	RICE 2014
28145	2814500019	006	1	RICE 2014
28145	2814500019	007	1	RICE 2014
28145	2814500019	008	1	RICE 2014
28145	2814500019	009	1	RICE 2014
28147	2814700008	003	1	RICE 2014
28147	2814700008	004	1	RICE 2014
28147	2814700010	001	1	RICE 2014
28147	2814700031	001	1	RICE 2014
28147	2814700031	002	1	RICE 2014
28147	2814700031	003	1	RICE 2014
28147	2814700031	004	1	RICE 2014
28147	2814700031	005	1	RICE 2014
28147	2814700031	006	1	RICE 2014
28147	2814700031	007	1	RICE 2014
28147	2814700031	008	1	RICE 2014
28149	2814900027	008	1	RICE 2014
28149	2814900027	009	1	RICE 2014
28149	2814900027	010	1	RICE 2014
28149	2814900087	012	1	RICE 2014
28151	2815100015	013	1	RICE 2014
28151	2815100015	014	1	RICE 2014
28151	2815100015	015	1	RICE 2014
28151	2815100015	018	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
28151	2815100037	019	1	RICE 2014
28151	2815100037	020	1	RICE 2014
28151	2815100037	021	1	RICE 2014
28151	2815100037	022	1	RICE 2014
28151	2815100037	023	1	RICE 2014
28151	2815100037	024	1	RICE 2014
28151	2815100037	025	1	RICE 2014
28151	2815100037	026	1	RICE 2014
28151	2815100037	027	1	RICE 2014
28151	2815100037	029	1	RICE 2014
28151	2815100037	031	1	RICE 2014
28151	2815100037	032	1	RICE 2014
28151	2815100037	033	1	RICE 2014
28151	2815100037	034	1	RICE 2014
28151	2815100037	035	1	RICE 2014
28151	2815100037	036	1	RICE 2014
28151	2815100044	001	1	RICE 2014
28151	2815100044	002	1	RICE 2014
28151	2815100044	003	1	RICE 2014
28151	2815100044	004	1	RICE 2014
28151	2815100044	005	1	RICE 2014
28151	2815100044	006	1	RICE 2014
28151	2815100044	007	1	RICE 2014
28151	2815100044	008	1	RICE 2014
28151	2815100044	009	1	RICE 2014
28151	2815100048	004	1	RICE 2014
28151	2815100048	005	1	RICE 2014
28151	2815100048	006	1	RICE 2014
28151	2815100120	007	1	RICE 2014
28153	2815300034	001	1	RICE 2014
28153	2815300034	004	1	RICE 2014
28153	2815300034	008	1	RICE 2014
28153	2815300034	010	1	RICE 2014
28153	2815300034	012	1	RICE 2014
28153	2815300034	030	1	RICE 2014
28153	2815300034	031	1	RICE 2014
28153	2815300034	032	1	RICE 2014
28159	2815900008	001	1	RICE 2014
28159	2815900008	002	1	RICE 2014
28159	2815900008	003	1	RICE 2014
28159	2815900008	004	1	RICE 2014
28159	2815900008	005	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
28159	2815900008	006	1	RICE 2014
28159	2815900008	007	1	RICE 2014
28159	2815900008	008	1	RICE 2014
28159	2815900008	009	1	RICE 2014
28159	2815900008	010	1	RICE 2014
28159	2815900008	011	1	RICE 2014
28159	2815900008	012	1	RICE 2014
28159	2815900008	013	1	RICE 2014
28159	2815900008	014	1	RICE 2014
28159	2815900008	015	1	RICE 2014
28159	2815900008	016	1	RICE 2014
28159	2815900008	017	1	RICE 2014
28159	2815900008	018	1	RICE 2014
28159	2815900008	020	1	RICE 2014
28159	2815900020	008	1	RICE 2014
28163	2816300010	004	1	RICE 2014
28163	2816300010	018	1	RICE 2014
28163	2816300010	019	1	RICE 2014
28163	2816300010	020	1	RICE 2014
28163	2816300010	021	1	RICE 2014
28163	2816300010	022	1	RICE 2014
28163	2816300010	023	1	RICE 2014
28163	2816300010	024	1	RICE 2014
28163	2816300046	001	1	RICE 2014
28163	2816300046	002	1	RICE 2014
28163	2816300046	003	1	RICE 2014
28163	2816300047	002	1	RICE 2014
37001	3700100010	1	S-1	RICE 2014
37001	3700100220	28	S-39	RICE 2014
37001	3700100220	28	S-41	RICE 2014
37001	3700100234	4	S-5	RICE 2014
37001	3700100234	6	S-8	RICE 2014
37001	3700100238	2	S-2	RICE 2014
37001	3700100238	3	S-3	RICE 2014
37001	3700100255	1	S-1	RICE 2014
37001	3700100272	2	S-2	RICE 2014
37001	3700100272	2	S-3	RICE 2014
37001	3700100276	18	S-21	RICE 2014
37003	3700300005	6	S-18	RICE 2014
37005	3700500074	12	S-11	RICE 2014
37005	3700500074	12	S-5	RICE 2014
37005	3700500074	12	S-9	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37005	3700500074	21	S-5	RICE 2014
37013	3701300139	1	S-1	RICE 2014
37015	3701500044	2	S-4	RICE 2014
37015	3701500044	2	S-5	RICE 2014
37015	3701500044	2	S-6	RICE 2014
37017	3701700055	13	S-10	RICE 2014
37017	3701700055	13	S-11	RICE 2014
37017	3701700055	13	S-12	RICE 2014
37017	3701700055	13	S-13	RICE 2014
37017	3701700055	13	S-14	RICE 2014
37017	3701700055	13	S-15	RICE 2014
37017	3701700055	13	S-16	RICE 2014
37017	3701700055	13	S-17	RICE 2014
37017	3701700055	13	S-18	RICE 2014
37017	3701700055	13	S-19	RICE 2014
37017	3701700055	13	S-20	RICE 2014
37017	3701700055	13	S-21	RICE 2014
37017	3701700055	13	S-22	RICE 2014
37017	3701700055	13	S-23	RICE 2014
37017	3701700055	13	S-24	RICE 2014
37017	3701700055	13	S-25	RICE 2014
37017	3701700055	13	S-26	RICE 2014
37017	3701700055	13	S-27	RICE 2014
37017	3701700055	13	S-9	RICE 2014
37019	3701900013	108	S-31	ICI PM Controls
37019	3701900013	108	S-5	ICI PM Controls
37019	3701900054	27	S-6	RICE 2014
37021	0435	ES1-3	HMA	RICE 2014
37021	0476	ES-12	EMGEN	RICE 2014
37021	0476	ES-13	EMGEN	RICE 2014
37021	0476	ES-14	EMGEN	RICE 2014
37021	0476	ES-5	EMGEN	RICE 2014
37021	0476	ES-6	EMGEN	RICE 2014
37021	0476	ES-7	EMGEN	RICE 2014
37021	0476	ES-8	EMGEN	RICE 2014
37021	0536	ES-1	ES-1	RICE 2014
37021	0587	G-1	EMGEN	RICE 2014
37021	0588	ES-4	EMGEN	RICE 2014
37021	0588	ES-5	EMGEN	RICE 2014
37021	0588	ES-6	EMGEN	RICE 2014
37021	0724	B9	P1	ICI PM Controls
37021	0725	ES3-5	HMA	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37021	0772	EG-1	EG-1	RICE 2014
37021	0773	AEC1	P2	RICE 2014
37021	0773	AEC2	P2	RICE 2014
37021	0773	AEC3	P2	RICE 2014
37021	0773	AEC4	P2	RICE 2014
37021	0796	ES1-3	HMA	RICE 2014
37021	0846	ES-1	ES-1	RICE 2014
37023	3702300008	3	S-3	RICE 2014
37023	3702300008	4	S-3	RICE 2014
37023	3702300049	2	S-5	RICE 2014
37025	3702500005	10	S-5	RICE 2014
37025	3702500005	11	S-2	RICE 2014
37025	3702500005	12	S-6	RICE 2014
37025	3702500005	13	S-7	RICE 2014
37025	3702500005	15	S-8	RICE 2014
37025	3702500005	4	S-10	RICE 2014
37025	3702500005	4	S-9	RICE 2014
37025	3702500005	7	S-3	RICE 2014
37025	3702500005	9	S-4	RICE 2014
37025	3702500103	1	S-2	RICE 2014
37025	3702500103	1	S-3	RICE 2014
37025	3702500103	1	S-4	RICE 2014
37025	3702500103	1	S-5	RICE 2014
37025	3702500103	1	S-6	RICE 2014
37025	3702500103	1	S-7	RICE 2014
37025	3702500103	1	S-8	RICE 2014
37025	3702500103	1	S-9	RICE 2014
37025	3702500104	1	S-2	RICE 2014
37025	3702500136	1	S-2	RICE 2014
37025	3702500136	1	S-3	RICE 2014
37025	3702500136	1	S-4	RICE 2014
37025	3702500136	1	S-5	RICE 2014
37025	3702500144	1	S-1	RICE 2014
37027	3702700007	10	S-1	ICI PM Controls
37027	3702700008	12	S-4	ICI PM Controls
37027	3702700027	14	S-5	ICI PM Controls
37027	3702700027	16	S-6	ICI PM Controls
37027	3702700174	5	S-11	RICE 2014
37027	3702700174	5	S-13	RICE 2014
37027	3702700174	5	S-15	RICE 2014
37027	3702700174	5	S-17	RICE 2014
37027	3702700174	5	S-7	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37027	3702700174	5	S-9	RICE 2014
37035	3703500011	1	S-1	ICI PM Controls
37035	3703500031	11	S-4	RICE 2014
37035	3703500031	15	S-12	RICE 2014
37035	3703500031	33	S-8	RICE 2014
37035	3703500073	58	S-14	RICE 2014
37035	3703500150	31	S-21	RICE 2014
37035	3703500194	7	S-2	RICE 2014
37035	3703500194	7	S-3	RICE 2014
37035	3703500206	55	S-17	RICE 2014
37035	3703500339	2	S-2	RICE 2014
37035	3703500339	3	S-3	RICE 2014
37035	3703500519	1	S-1	RICE 2014
37037	3703700002	1	S-12	RICE 2014
37037	3703700015	7	S-5	RICE 2014
37039	3703900121	11	S-2	RICE 2014
37039	3703900121	11	S-3	RICE 2014
37041	3704100073	2	S-12	RICE 2014
37041	3704100080	9	S-13	RICE 2014
37045	3704500051	3	S-5	RICE 2014
37045	3704500051	3	S-6	RICE 2014
37045	3704500051	3	S-7	RICE 2014
37045	3704500081	237	S-102	RICE 2014
37047	3704700036	40	S-11	ICI PM Controls
37047	3704700036	45	S-55	ICI PM Controls
37049	3704900019	32	S-47	RICE 2014
37049	3704900019	81	S-46	ICI PM Controls
37049	3704900019	81	S-999	ICI PM Controls
37049	3704900019	87	S-33	RICE 2014
37049	3704900019	87	S-38	RICE 2014
37049	3704900197	3	S-999	RICE 2014
37049	3704900197	8	S-999	RICE 2014
37051	3705100009	145	S-48	RICE 2014
37051	3705100014	11	S-1	RICE 2014
37051	3705100014	16	S-1	RICE 2014
37051	3705100014	6	S-1	RICE 2014
37051	3705100016	1	S-1	ICI PM Controls
37051	3705100016	1	S-1	OECA Settlement
37051	3705100016	47	S-3	OECA Settlement
37051	3705100016	58	S-31	OECA Settlement
37051	3705100016	59	S-31	OECA Settlement
37051	3705100016	61	S-32	OECA Settlement

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37051	3705100016	62	S-32	OECA Settlement
37051	3705100050	6	S-74	RICE 2014
37051	3705100050	6	S-75	RICE 2014
37051	3705100098	10	S-5	RICE 2014
37051	3705100099	3	S-6	RICE 2014
37051	3705100099	3	S-7	RICE 2014
37051	3705100099	3	S-8	RICE 2014
37051	3705100102	120	S-112	RICE 2014
37051	3705100102	127	S-36	RICE 2014
37051	3705100206	6	S-5	RICE 2014
37051	3705100206	6	S-6	RICE 2014
37051	3705100206	6	S-7	RICE 2014
37053	3705300034	1	S-1	RICE 2014
37057	3705700109	35	S-69	RICE 2014
37057	3705700109	36	S-71	RICE 2014
37057	3705700109	38	S-75	RICE 2014
37057	3705700109	69	S-111	RICE 2014
37057	3705700149	2	S-2	ICI PM Controls
37057	3705700278	6	S-8	RICE 2014
37057	3705700300	1	S-1	RICE 2014
37057	3705700300	2	S-2	RICE 2014
37057	3705700300	3	S-3	RICE 2014
37057	3705700300	4	S-4	RICE 2014
37057	3705700300	5	S-5	RICE 2014
37057	3705700300	6	S-6	RICE 2014
37057	3705700300	7	S-7	RICE 2014
37057	3705700300	8	S-8	RICE 2014
37057	3705700324	1	S-1	RICE 2014
37057	3705700324	2	S-2	RICE 2014
37057	3705700335	2	S-3	RICE 2014
37057	3705700345	1	S-1	RICE 2014
37061	3706100014	3	S-3	RICE 2014
37061	3706100116	6	S-7	RICE 2014
37063	3706300010	1	S-1	RICE 2014
37063	3706300010	1	S-2	RICE 2014
37063	3706300010	2	S-4	RICE 2014
37063	3706300010	2	S-6	RICE 2014
37063	3706300017	94	S-44	RICE 2014
37063	3706300041	1	S-8	RICE 2014
37063	3706300041	16	S-4	RICE 2014
37063	3706300041	16	S-6	RICE 2014
37063	3706300041	17	S-13	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37063	3706300041	17	S-15	RICE 2014
37063	3706300041	18	S-10	RICE 2014
37063	3706300041	18	S-11	RICE 2014
37063	3706300055	20	S-30	RICE 2014
37063	3706300055	20	S-31	RICE 2014
37063	3706300055	22	S-34	RICE 2014
37063	3706300055	22	S-35	RICE 2014
37063	3706300055	22	S-36	RICE 2014
37063	3706300055	31	S-46	RICE 2014
37063	3706300055	33	S-48	RICE 2014
37063	3706300055	5	S-6	RICE 2014
37063	3706300055	6	S-23	RICE 2014
37063	3706300055	6	S-25	RICE 2014
37063	3706300055	7	S-7	RICE 2014
37063	3706300055	8	S-27	RICE 2014
37063	3706300055	9	S-29	RICE 2014
37063	3706300143	2	S-21	RICE 2014
37063	3706300143	2	S-999	RICE 2014
37063	3706300143	5	S-22	RICE 2014
37063	3706300144	1	S-1	ICI PM Controls
37063	3706300144	3	S-2	ICI PM Controls
37063	3706300144	46	S-10	RICE 2014
37063	3706300144	5	S-2	ICI PM Controls
37063	3706300158	16	S-38	RICE 2014
37063	3706300158	8	S-10	RICE 2014
37063	3706300158	8	S-11	RICE 2014
37063	3706300158	8	S-13	RICE 2014
37063	3706300158	8	S-15	RICE 2014
37063	3706300158	8	S-17	RICE 2014
37063	3706300158	8	S-19	RICE 2014
37063	3706300158	8	S-28	RICE 2014
37063	3706300158	8	S-29	RICE 2014
37063	3706300158	8	S-7	RICE 2014
37063	3706300158	8	S-8	RICE 2014
37063	3706300166	1	S-1	RICE 2014
37063	3706300234	3	S-3	RICE 2014
37063	3706300234	4	S-4	RICE 2014
37063	3706300234	5	S-5	RICE 2014
37063	3706300234	6	S-9	RICE 2014
37063	3706300239	5	S-16	RICE 2014
37063	3706300251	10	S-12	RICE 2014
37063	3706300251	11	S-13	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37063	3706300251	14	S-16	RICE 2014
37063	3706300251	15	S-17	RICE 2014
37063	3706300251	4	S-6	RICE 2014
37063	3706300251	5	S-7	RICE 2014
37063	3706300251	6	S-8	RICE 2014
37063	3706300251	7	S-9	RICE 2014
37063	3706300251	8	S-10	RICE 2014
37063	3706300262	3	S-3	RICE 2014
37063	3706300262	4	S-4	RICE 2014
37063	3706300274	1	S-1	RICE 2014
37063	3706300274	2	S-2	RICE 2014
37063	3706300283	3	S-1	RICE 2014
37063	3706300289	2	S-2	RICE 2014
37063	3706300295	2	S-12	RICE 2014
37063	3706300295	2	S-13	RICE 2014
37063	3706300295	2	S-5	RICE 2014
37063	3706300295	2	S-6	RICE 2014
37063	3706300295	2	S-7	RICE 2014
37063	3706300295	2	S-8	RICE 2014
37063	3706300300	2	S-4	RICE 2014
37063	3706300354	1	S-1	RICE 2014
37065	3706500014	2	S-2	RICE 2014
37065	3706500033	3	S-12	RICE 2014
37065	3706500132	2	S-1	RICE 2014
37065	3706500132	2	S-2	RICE 2014
37065	3706500132	2	S-3	RICE 2014
37065	3706500146	1	S-1	ICI PM Controls
37065	3706500146	2	S-2	ICI PM Controls
37065	3706500150	14	S-25	RICE 2014
37065	3706500150	15	S-26	RICE 2014
37065	3706500150	17	S-28	RICE 2014
37065	3706500150	18	S-29	RICE 2014
37065	3706500164	1	S-1	RICE 2014
37065	3706500167	23	S-6	RICE 2014
37067	00003	ES-1	ES-1	ICI PM Controls
37067	00003	ES-2	ES-2	RICE 2014
37067	00003	ES-4	ES-4	RICE 2014
37067	00003	ES-5	ES-5	RICE 2014
37067	00003	ES-6	ES-6	RICE 2014
37067	00131	B-01	B01-CL	ICI PM Controls
37067	00131	B-02	B02-CL	ICI PM Controls
37067	00131	B-03	B03-CL	ICI PM Controls

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37067	00201	ES-3	02	RICE 2014
37067	00339	60211	60211	RICE 2014
37067	00339	6023	6023C	ICI PM Controls
37067	00339	6024	6024C	ICI PM Controls
37067	00405	ES-E1	ES-E1	RICE 2014
37067	00436	ES13	ES13	RICE 2014
37067	00436	ES2	ES2	RICE 2014
37067	00436	ES6	ES6	RICE 2014
37067	00436	ES7	ES7	RICE 2014
37067	00436	ES9	ES9	RICE 2014
37067	00449	ES2	ES2	RICE 2014
37067	00732	ES062C	62C-C	ICI PM Controls
37067	00745	85484	85484	RICE 2014
37067	00817	ES-01	ES01FO	RICE 2014
37067	00817	ES-02	ES02FO	RICE 2014
37067	00878	MC-1	MC-1FO	RICE 2014
37067	00878	MC-10	MC-10F	RICE 2014
37067	00878	MC-10	MC-10L	RICE 2014
37067	00878	MC-4	MC-4FO	RICE 2014
37067	00878	MC-4	MC-4LS	RICE 2014
37067	00878	MC-5	MC-5LS	RICE 2014
37067	00878	MC-6	MC-6LS	RICE 2014
37067	01045	EG1	EG1	RICE 2014
37067	01046	EG1	EG1	RICE 2014
37067	01046	EG2	EG2	RICE 2014
37069	3706900071	1	S-2	RICE 2014
37069	3706900071	5	S-2	RICE 2014
37069	3706900074	1	S-2	RICE 2014
37069	3706900074	1	S-3	RICE 2014
37071	3707100049	3	S-1	RICE 2014
37071	3707100128	11	S-9	RICE 2014
37071	3707100314	1	S-1	RICE 2014
37071	3707100314	1	S-2	RICE 2014
37071	3707100314	1	S-3	RICE 2014
37071	3707100315	1	S-1	RICE 2014
37071	3707100316	1	S-1	RICE 2014
37071	3707100316	1	S-3	RICE 2014
37071	3707100316	1	S-5	RICE 2014
37071	3707100327	1	S-1	RICE 2014
37077	3707700029	9	S-21	RICE 2014
37077	3707700097	2	S-1	RICE 2014
37077	3707700097	2	S-2	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37077	3707700097	2	S-3	RICE 2014
37077	3707700110	1	S-1	RICE 2014
37079	3707900010	7	S-2	RICE 2014
37079	3707900039	1	S-1	RICE 2014
37081	3708100019	9	S-11	RICE 2014
37081	3708100024	7	S-27	RICE 2014
37081	3708100132	1	S-4	RICE 2014
37081	3708100132	4	S-5	RICE 2014
37081	3708100132	6	S-9	RICE 2014
37081	3708100132	7	S-10	RICE 2014
37081	3708100132	8	S-12	RICE 2014
37081	3708100132	9	S-13	RICE 2014
37081	3708100198	23	S-57	RICE 2014
37081	3708100198	34	S-51	RICE 2014
37081	3708100424	9	S-9	RICE 2014
37081	3708100433	40	S-21	RICE 2014
37081	3708100433	40	S-22	RICE 2014
37081	3708100679	7	S-10	RICE 2014
37081	3708100679	7	S-7	RICE 2014
37081	3708100679	7	S-8	RICE 2014
37081	3708100863	46	S-88	RICE 2014
37081	3708100875	1	S-1	RICE 2014
37081	3708100875	2	S-2	RICE 2014
37081	3708100875	3	S-3	RICE 2014
37081	3708100875	4	S-4	RICE 2014
37081	3708100923	5	S-6	RICE 2014
37081	3708100923	6	S-7	RICE 2014
37081	3708101018	10	S-10	RICE 2014
37081	3708101018	6	S-6	RICE 2014
37081	3708101018	7	S-7	RICE 2014
37081	3708101018	8	S-8	RICE 2014
37081	3708101018	9	S-9	RICE 2014
37081	3708101022	10	S-23	RICE 2014
37081	3708101022	10	S-25	RICE 2014
37081	3708101022	10	S-26	RICE 2014
37081	3708101022	10	S-27	RICE 2014
37081	3708101022	10	S-29	RICE 2014
37081	3708101022	10	S-48	RICE 2014
37081	3708101022	12	S-45	RICE 2014
37081	3708101022	12	S-46	RICE 2014
37081	3708101022	12	S-47	RICE 2014
37081	3708101120	1	S-1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37081	3708101148	13	S-2	RICE 2014
37081	3708101148	14	S-2	RICE 2014
37081	3708101148	15	S-3	RICE 2014
37081	3708101169	2	S-1	RICE 2014
37081	3708101169	4	S-2	RICE 2014
37081	3708101169	5	S-3	RICE 2014
37081	3708101169	6	S-4	RICE 2014
37081	3708101170	1	S-1	RICE 2014
37081	3708101170	2	S-3	RICE 2014
37081	3708101170	3	S-2	RICE 2014
37081	3708101172	1	S-1	RICE 2014
37081	3708101172	1	S-2	RICE 2014
37083	3708300007	14	S-14	ICI PM Controls
37083	3708300073	13	S-7	RICE 2014
37083	3708300174	3	S-10	RICE 2014
37083	3708300174	3	S-8	RICE 2014
37085	3708500077	5	S-14	RICE 2014
37085	3708500077	6	S-16	RICE 2014
37085	3708500090	3	S-2	RICE 2014
37085	3708500091	3	S-4	RICE 2014
37087	3708700159	2	S-1	ICI PM Controls
37087	3708700159	4	S-2	ICI PM Controls
37087	3708700159	5	S-2	ICI PM Controls
37087	3708700159	6	S-3	ICI PM Controls
37087	3708700159	7	S-4	ICI PM Controls
37087	3708700159	88	S-55	RICE 2014
37089	3708900150	1	S-2	RICE 2014
37089	3708900259	24	S-30	RICE 2014
37093	3709300001	1	S-1	ICI PM Controls
37097	3709700076	12	S-12	RICE 2014
37097	3709700093	6	S-9	ICI PM Controls
37097	3709700225	1	S-1	RICE 2014
37097	3709700225	10	S-10	RICE 2014
37097	3709700225	12	S-12	RICE 2014
37097	3709700225	13	S-13	RICE 2014
37097	3709700225	14	S-14	RICE 2014
37097	3709700225	15	S-15	RICE 2014
37097	3709700225	16	S-16	RICE 2014
37097	3709700225	17	S-17	RICE 2014
37097	3709700225	18	S-18	RICE 2014
37097	3709700225	19	S-19	RICE 2014
37097	3709700225	2	S-2	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37097	3709700225	20	S-20	RICE 2014
37097	3709700225	21	S-21	RICE 2014
37097	3709700225	26	S-11	RICE 2014
37097	3709700225	3	S-3	RICE 2014
37097	3709700225	4	S-4	RICE 2014
37097	3709700225	5	S-5	RICE 2014
37097	3709700225	6	S-6	RICE 2014
37097	3709700225	60	S-9	RICE 2014
37097	3709700225	7	S-7	RICE 2014
37097	3709700225	8	S-8	RICE 2014
37097	3709700264	3	S-6	RICE 2014
37097	3709700270	1	S-1	RICE 2014
37101	3710100156	5	S-3	RICE 2014
37101	3710100160	3	S-5	RICE 2014
37101	3710100172	1	S-1	RICE 2014
37101	3710100172	9	S-1	RICE 2014
37101	3710100180	1	S-2	RICE 2014
37105	3710500109	14	S-15	RICE 2014
37105	3710500109	5	S-1	RICE 2014
37105	3710500109	5	S-2	RICE 2014
37105	3710500109	5	S-3	RICE 2014
37105	3710500109	5	S-4	RICE 2014
37105	3710500109	9	S-12	RICE 2014
37105	3710500123	14	S-19	RICE 2014
37105	3710500123	16	S-21	RICE 2014
37105	3710500123	17	S-23	RICE 2014
37105	3710500123	18	S-27	RICE 2014
37105	3710500123	18	S-999	RICE 2014
37107	3710700039	23	S-15	ICI PM Controls
37107	3710700039	24	S-15	ICI PM Controls
37107	3710700087	1	S-1	RICE 2014
37107	3710700170	32	S-44	RICE 2014
37107	3710700173	6	S-3	RICE 2014
37107	3710700189	15	S-2	ICI PM Controls
37107	3710700189	16	S-2	ICI PM Controls
37109	3710900110	2	S-1	RICE 2014
37111	3711100001	1	S-1	ICI PM Controls
37111	3711100116	2	S-10	RICE 2014
37111	3711100116	2	S-11	RICE 2014
37111	3711100116	2	S-12	RICE 2014
37111	3711100116	2	S-5	RICE 2014
37111	3711100116	2	S-6	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37111	3711100116	2	S-7	RICE 2014
37111	3711100116	2	S-8	RICE 2014
37111	3711100116	2	S-9	RICE 2014
37111	3711100179	2	S-3	RICE 2014
37119	1	29	01	RICE 2014
37119	1	30	01	RICE 2014
37119	132	10	01	RICE 2014
37119	132	11	01	RICE 2014
37119	132	16	01	RICE 2014
37119	132	20	01	RICE 2014
37119	132	21	01	RICE 2014
37119	132	24	01	RICE 2014
37119	132	9	01	RICE 2014
37119	15	28	Exempt	RICE 2014
37119	176	2	01	RICE 2014
37119	20	10	(ES-14	RICE 2014
37119	20	16	G2 Ins	RICE 2014
37119	20	7	(ES-7)	RICE 2014
37119	20	8	(ES-8)	RICE 2014
37119	20	9	(ES-12	RICE 2014
37119	201	10	ES-10	RICE 2014
37119	201	11	ES-11	RICE 2014
37119	201	12	ES-12	RICE 2014
37119	201	13	G2: ES	RICE 2014
37119	201	16	ES-16	RICE 2014
37119	201	18	ES-18	RICE 2014
37119	201	19	ES-19	RICE 2014
37119	201	32	ES-31	RICE 2014
37119	201	33	ES-32	RICE 2014
37119	201	34	G2: ES	RICE 2014
37119	201	35	G2: ES	RICE 2014
37119	201	8	ES-8	RICE 2014
37119	201	9	ES-9	RICE 2014
37119	215	151	Genera	RICE 2014
37119	215	152	Consol	RICE 2014
37119	215	153	Consol	RICE 2014
37119	215	154	Consol	RICE 2014
37119	22	1	ES-03	ICI PM Controls
37119	22	30	ES- 31	RICE 2014
37119	222	6	01	RICE 2014
37119	269	10	ES15,	RICE 2014
37119	269	12	ES-29	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37119	280	5	ES-2	RICE 2014
37119	284	27	Insig.	RICE 2014
37119	289	11	ES-15	RICE 2014
37119	289	12	ES-19	RICE 2014
37119	289	15	G2: ES	RICE 2014
37119	289	22	ES-12	RICE 2014
37119	289	23	ES-13	RICE 2014
37119	289	24	ES-14	RICE 2014
37119	289	25	ES-16	RICE 2014
37119	289	26	G2: ES	RICE 2014
37119	289	28	G2: ES	RICE 2014
37119	289	29	G2: MM	RICE 2014
37119	289	30	IST	RICE 2014
37119	289	31	ES-27&	RICE 2014
37119	289	32	ES-29	RICE 2014
37119	3	5	ES-Gen	RICE 2014
37119	34	6	ES-6	RICE 2014
37119	34	8	Exempt	RICE 2014
37119	3711900687	24	1	RICE 2014
37119	3711900687	26	1	RICE 2014
37119	38	8	ES-3	RICE 2014
37119	4	10	01	RICE 2014
37119	4	6	Exempt	RICE 2014
37119	4	7	G2: ES	RICE 2014
37119	504	3	01	RICE 2014
37119	506	6	G1	RICE 2014
37119	568	13	ES-1	RICE 2014
37119	568	15	01	RICE 2014
37119	568	25	ES-21	RICE 2014
37119	568	29	ES-27	RICE 2014
37119	590	17	ES-DIE	RICE 2014
37119	595	22	ES-16	RICE 2014
37119	668	4	G1, G3	RICE 2014
37119	678	11	G2: Fl	RICE 2014
37119	678	3	01	RICE 2014
37119	678	4	ESEG2	RICE 2014
37119	678	5	01	RICE 2014
37119	682	94	Genera	RICE 2014
37119	710	5	G-1	RICE 2014
37119	733	1	ES 1 -	RICE 2014
37119	733	6	EU 1-	RICE 2014
37119	740	1	ES-1 [	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37119	740	2	ES-2 [	RICE 2014
37119	741	8	01	RICE 2014
37119	764	17	G-12	RICE 2014
37119	764	18	G-13	RICE 2014
37119	764	19	G-14	RICE 2014
37119	764	20	G-15	RICE 2014
37119	764	21	G-16	RICE 2014
37119	764	22	G-17	RICE 2014
37119	764	39	2-02-0	RICE 2014
37119	764	41	2-02-0	RICE 2014
37119	785	3	ES-3	RICE 2014
37119	785	4	ES-4	RICE 2014
37119	785	5	ES-5	RICE 2014
37119	789	7	Insig	RICE 2014
37119	804	3	ES-3	RICE 2014
37119	832	4	Exempt	RICE 2014
37119	832	6	Chille	RICE 2014
37119	872	2	EG	RICE 2014
37119	915	2	EU-2	RICE 2014
37119	936	3	ES-3	RICE 2014
37119	936	4	ES-4	RICE 2014
37119	937	1	EG-601	RICE 2014
37119	939	16	01	RICE 2014
37119	955	5	G-1	RICE 2014
37119	955	6	G-2	RICE 2014
37119	E010	1	ES-1	RICE 2014
37119	R420	1	ES1	RICE 2014
37119	R421	1	ES1	RICE 2014
37119	R429	1	D20P1	RICE 2014
37119	R429	2	D125P1	RICE 2014
37119	R431	1	Emerge	RICE 2014
37119	R453	1	Genera	RICE 2014
37119	R472	1	IST-1	RICE 2014
37119	R472	2	IST-2	RICE 2014
37123	3712300036	2	S-3	RICE 2014
37123	3712300052	5	S-5	RICE 2014
37123	3712300061	29	S-23	RICE 2014
37125	3712500080	2	S-2	RICE 2014
37125	3712500089	5	S-3	RICE 2014
37127	3712700096	3	S-5	RICE 2014
37127	3712700096	3	S-6	RICE 2014
37127	3712700096	5	S-10	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37127	3712700096	5	S-11	RICE 2014
37127	3712700096	8	S-15	RICE 2014
37127	3712700232	6	S-6	RICE 2014
37127	3712700232	7	S-7	RICE 2014
37127	3712700266	1	S-1	RICE 2014
37127	3712700267	1	S-1	RICE 2014
37127	3712700288	1	S-1	RICE 2014
37127	3712700298	1	S-1	RICE 2014
37127	3712700299	1	S-1	RICE 2014
37129	3712900049	1	S-1	RICE 2014
37129	3712900070	5	S-11	RICE 2014
37129	3712900070	5	S-12	RICE 2014
37129	3712900070	5	S-9	RICE 2014
37129	3712900070	6	S-14	RICE 2014
37129	3712900274	12	S-15	RICE 2014
37129	3712900303	2	S-9	RICE 2014
37131	3713100006	59	S-68	RICE 2014
37131	3713100016	27	S-8	RICE 2014
37131	3713100074	6	S-4	RICE 2014
37131	3713100074	7	S-1	RICE 2014
37131	3713100074	8	S-2	RICE 2014
37131	3713100074	9	S-3	RICE 2014
37133	3713300011	308	S-7	ICI PM Controls
37133	3713300011	308	S-8	ICI PM Controls
37133	3713300011	310	S-164	RICE 2014
37133	3713300011	310	S-165	RICE 2014
37133	3713300011	310	S-166	RICE 2014
37133	3713300011	325	S-161	RICE 2014
37133	3713300011	394	S-96	RICE 2014
37133	3713300011	401	S-91	RICE 2014
37133	3713300011	402	S-97	RICE 2014
37135	3713500043	4	S-3	ICI PM Controls
37135	3713500043	41	S-65	RICE 2014
37135	3713500043	42	S-55	RICE 2014
37135	3713500043	43	S-45	RICE 2014
37135	3713500043	48	S-53	RICE 2014
37135	3713500043	55	S-40	RICE 2014
37135	3713500043	64	S-41	RICE 2014
37135	3713500043	65	S-42	RICE 2014
37135	3713500043	7	S-3	ICI PM Controls
37135	3713500043	71	S-44	RICE 2014
37135	3713500043	82	S-67	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37135	3713500043	84	S-57	RICE 2014
37135	3713500043	87	S-59	RICE 2014
37135	3713500043	88	S-60	RICE 2014
37135	3713500043	89	S-61	RICE 2014
37135	3713500043	90	S-47	RICE 2014
37135	3713500043	91	S-49	RICE 2014
37135	3713500043	92	S-62	RICE 2014
37135	3713500043	94	S-1	RICE 2014
37135	3713500043	95	S-2	RICE 2014
37135	3713500087	1	S-1	RICE 2014
37135	3713500088	1	S-1	RICE 2014
37139	3713900003	2	S-3	RICE 2014
37139	3713900076	1	S-1	RICE 2014
37139	3713900076	12	S-37	RICE 2014
37139	3713900076	13	S-38	RICE 2014
37139	3713900076	9	S-39	RICE 2014
37145	3714500045	8	S-5	RICE 2014
37145	3714500045	9	S-7	RICE 2014
37145	3714500061	20	S-7	RICE 2014
37147	3714700242	9	S-7	RICE 2014
37147	3714700281	5	S-10	RICE 2014
37147	3714700283	1	S-1	RICE 2014
37147	3714700288	10	S-13	RICE 2014
37151	3715100243	3	S-3	RICE 2014
37151	3715100262	1	S-1	RICE 2014
37151	3715100262	3	S-2	RICE 2014
37151	3715100295	3	S-1	RICE 2014
37153	3715300044	2	S-2	ICI PM Controls
37153	3715300051	6	S-12	RICE 2014
37153	3715300072	3	S-2	RICE 2014
37153	3715300077	1	S-1	RICE 2014
37155	3715500203	9	S-6	RICE 2014
37155	3715500212	5	S-3	RICE 2014
37157	3715700090	4	S-1	ICI PM Controls
37157	3715700090	6	S-2	ICI PM Controls
37157	3715700131	16	S-16	RICE 2014
37157	3715700131	17	S-17	RICE 2014
37157	3715700131	18	S-18	RICE 2014
37157	3715700131	19	S-19	RICE 2014
37157	3715700131	20	S-20	RICE 2014
37157	3715700131	24	S-24	RICE 2014
37157	3715700156	17	S-10	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37157	3715700156	17	S-7	RICE 2014
37157	3715700156	17	S-999	RICE 2014
37159	3715900004	32	S-11	RICE 2014
37159	3715900060	3	S-1	RICE 2014
37159	3715900060	4	S-2	RICE 2014
37159	3715900060	5	S-3	RICE 2014
37159	3715900060	6	S-4	RICE 2014
37159	3715900060	7	S-5	RICE 2014
37159	3715900171	3	S-2	RICE 2014
37161	3716100199	5	S-12	RICE 2014
37161	3716100208	2	S-2	RICE 2014
37165	3716500027	18	S-36	RICE 2014
37165	3716500027	21	S-35	RICE 2014
37165	3716500027	29	S-34	RICE 2014
37167	3716700016	3	S-3	ICI PM Controls
37167	3716700053	4	S-7	RICE 2014
37167	3716700095	2	S-4	RICE 2014
37167	3716700095	3	S-3	RICE 2014
37167	3716700095	4	S-5	RICE 2014
37169	3716900028	15	S-19	RICE 2014
37171	3717100006	20	S-1	ICI PM Controls
37171	3717100006	28	S-31	RICE 2014
37171	3717100006	29	S-32	RICE 2014
37171	3717100009	2	S-1	ICI PM Controls
37171	3717100009	4	S-2	ICI PM Controls
37171	3717100028	5	S-8	ICI PM Controls
37171	3717100108	10	S-16	RICE 2014
37171	3717100108	8	S-14	RICE 2014
37171	3717100157	1	S-1	RICE 2014
37179	3717900009	8	S-67	RICE 2014
37179	3717900009	9	S-67	RICE 2014
37179	3717900019	3	S-9	RICE 2014
37179	3717900023	14	S-14	RICE 2014
37179	3717900023	15	S-15	RICE 2014
37179	3717900023	17	S-17	RICE 2014
37179	3717900023	18	S-18	RICE 2014
37179	3717900023	5	S-4	RICE 2014
37179	3717900023	6	S-5	RICE 2014
37179	3717900165	4	S-7	RICE 2014
37181	3718100082	18	S-11	RICE 2014
37181	3718100082	18	S-12	RICE 2014
37181	3718100103	2	S-1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37181	3718100112	1	S-1	RICE 2014
37181	3718100112	1	S-2	RICE 2014
37181	3718100112	3	S-1	RICE 2014
37183	3718300208	22	S-5	OECA Settlement
37183	3718300208	6	S-6	OECA Settlement
37183	3718300208	7	S-7	OECA Settlement
37183	3718300208	8	S-7	OECA Settlement
37183	3718300290	4	S-3	RICE 2014
37183	3718300290	61	S-2	RICE 2014
37183	3718300290	62	S-4	RICE 2014
37183	3718300290	63	S-2	RICE 2014
37183	3718300290	64	S-4	RICE 2014
37183	3718300290	65	S-4	RICE 2014
37183	3718300333	1	S-1	RICE 2014
37183	3718300333	3	S-1	RICE 2014
37183	3718300343	3	S-2	RICE 2014
37183	3718300343	3	S-3	RICE 2014
37183	3718300443	11	S-20	RICE 2014
37183	3718300443	11	S-47	RICE 2014
37183	3718300443	11	S-999A	RICE 2014
37183	3718300443	11	S-999B	RICE 2014
37183	3718300443	11	S-999C	RICE 2014
37183	3718300443	11	S-999D	RICE 2014
37183	3718300443	11	S-999E	RICE 2014
37183	3718300443	11	S-999F	RICE 2014
37183	3718300443	22	S-53	RICE 2014
37183	3718300443	23	S-54	RICE 2014
37183	3718300443	7	S-40	RICE 2014
37183	3718300472	1	S-1	RICE 2014
37183	3718300500	8	S-8	RICE 2014
37183	3718300566	10	S-5	RICE 2014
37183	3718300566	11	S-6	RICE 2014
37183	3718300566	12	S-9	RICE 2014
37183	3718300566	13	S-7	RICE 2014
37183	3718300566	5	S-8	RICE 2014
37183	3718300593	2	S-2	RICE 2014
37183	3718300599	11	S-12	RICE 2014
37183	3718300599	6	S-13	RICE 2014
37183	3718300599	6	S-14	RICE 2014
37183	3718300599	7	S-15	RICE 2014
37183	3718300599	7	S-16	RICE 2014
37183	3718300617	4	S-4	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37183	3718300617	5	S-5	RICE 2014
37183	3718300620	1	S-1	RICE 2014
37183	3718300621	5	S-1	RICE 2014
37183	3718300621	7	S-1	RICE 2014
37183	3718300636	1	S-1	RICE 2014
37183	3718300639	1	S-1	RICE 2014
37183	3718300639	1	S-2	RICE 2014
37183	3718300639	2	S-3	RICE 2014
37189	3718900003	18	S-10	RICE 2014
37189	3718900003	5	S-4	RICE 2014
37189	3718900003	6	S-4	RICE 2014
37189	3718900003	7	S-4	RICE 2014
37189	3718900003	9	S-4	RICE 2014
37189	3718900077	1	S-4	RICE 2014
37189	3718900077	1	S-5	RICE 2014
37189	3718900077	1	S-6	RICE 2014
37189	3718900077	3	S-8	RICE 2014
37189	3718900077	5	S-7	RICE 2014
37189	3718900117	4	S-10	RICE 2014
37191	3719100023	6	S-8	RICE 2014
37191	3719100023	7	S-5	RICE 2014
37193	3719300001	19	S-177	RICE 2014
37193	3719300005	7	S-51	RICE 2014
37193	3719300154	8	S-12	RICE 2014
37195	3719500001	6	S-4	RICE 2014
37195	3719500001	7	S-5	RICE 2014
37195	3719500040	11	S-40	ICI PM Controls
37195	3719500040	13	S-41	ICI PM Controls
37195	3719500043	1	S-1	RICE 2014
37195	3719500043	1	S-2	RICE 2014
37195	3719500161	20	S-26	RICE 2014
37195	3719500161	21	S-25	RICE 2014
37195	3719500161	22	S-27	RICE 2014
37195	3719500161	23	S-32	RICE 2014
37195	3719500161	25	S-33	RICE 2014
37195	3719500161	44	S-36	RICE 2014
37195	3719500195	1	S-1	RICE 2014
37195	3719500195	2	S-2	RICE 2014
37195	3719500195	3	S-3	RICE 2014
37195	3719500195	4	S-4	RICE 2014
37195	3719500195	5	S-5	RICE 2014
37195	3719500197	2	S-2	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
37195	3719500198	1	S-1	RICE 2014
37195	3719500204	2	S-7	RICE 2014
37195	3719500206	2	S-4	RICE 2014
37195	3719500220	1	S-1	RICE 2014
37199	3719900067	4	S-7	RICE 2014
45001	0040-0005	001	1	ICI PM Controls
45003	0080-0009	IAG	1	RICE 2014
45003	0080-0009	IAI	1	RICE 2014
45003	0080-0009	IAJ	1	RICE 2014
45003	0080-0009	IAL	1	RICE 2014
45003	0080-0041	A06	1	ICI PM Controls
45003	0080-0041	A07	1	ICI PM Controls
45003	0080-0041	N20	2	RICE 2014
45003	0080-0041	N31	2	RICE 2014
45003	0080-0057	IA4	2	RICE 2014
45003	0080-0114	IA1	1	RICE 2014
45007	0200-0004	EB1	1	RICE 2014
45007	0200-0004	EB2	1	RICE 2014
45007	0200-0004	EFP	1	RICE 2014
45007	0200-0011	003	1	ICI PM Controls
45007	0200-0011	003	2	ICI PM Controls
45007	0200-0031	ICV	1	RICE 2014
45007	0200-0031	ICW	1	RICE 2014
45007	0200-0031	ICX	1	RICE 2014
45007	0200-0032	001	1	ICI PM Controls
45013	0360-0002	IAA	1	RICE 2014
45013	0360-0002	IAB	1	RICE 2014
45013	0360-0004	I26	1	RICE 2014
45013	0360-0004	I26	2	RICE 2014
45013	0360-0004	I26	3	RICE 2014
45015	0420-0013	001	1	RICE 2014
45015	0420-0015	I0R	1	RICE 2014
45015	0420-0029	003	28	RICE 2014
45015	0420-0029	009	1	RICE 2014
45015	0420-0029	010	1	RICE 2014
45015	0420-0029	011	1	RICE 2014
45015	0420-0029	011	2	RICE 2014
45015	0420-0029	011	3	RICE 2014
45015	0420-0029	011	4	RICE 2014
45015	0420-0029	011	5	RICE 2014
45015	0420-0033	IAB	2	RICE 2014
45015	0420-0048	IAA	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
45015	0420-0048	IAB	1	RICE 2014
45015	0420-0060	012	1	RICE 2014
45015	0420-0060	012	2	RICE 2014
45015	0420-0060	IAR	10	RICE 2014
45015	0420-0060	IAR	6	RICE 2014
45015	0420-0060	IAR	7	RICE 2014
45015	0420-0060	IAR	8	RICE 2014
45015	0420-0060	IAR	9	RICE 2014
45015	0420-0060	IAT	5	RICE 2014
45015	0420-0089	002	1	ICI PM Controls
45015	0420-0095	IA1	1	RICE 2014
45015	0420-0095	IA1	2	RICE 2014
45015	0420-0095	IA1	3	RICE 2014
45015	0420-0095	IA1	4	RICE 2014
45019	0560-0029	002	1	RICE 2014
45019	0560-0236	002	2	RICE 2014
45019	0560-0244	001	1	ICI PM Controls
45021	0600-0007	010	1	ICI PM Controls
45021	0600-0007	012	2	ICI PM Controls
45021	0600-0007	013	2	ICI PM Controls
45023	0640-0008	IA1	10	RICE 2014
45023	0640-0008	IA1	8	RICE 2014
45023	0640-0008	IA1	9	RICE 2014
45023	0640-0018	IAA	1	RICE 2014
45023	0640-0018	IAB	1	RICE 2014
45023	0640-0018	N01	1	RICE 2014
45023	0640-0035	IAB	1	RICE 2014
45023	0640-0035	IAC	1	RICE 2014
45023	0640-0035	IAG	1	RICE 2014
45031	0820-0001	008	1	RICE 2014
45031	0820-0001	I42	1	RICE 2014
45031	0820-0001	I43	1	RICE 2014
45031	0820-0001	I44	1	RICE 2014
45031	0820-0001	I45	1	RICE 2014
45031	0820-0001	I46	1	RICE 2014
45031	0820-0001	I47	1	RICE 2014
45031	0820-0001	I48	1	RICE 2014
45031	0820-0001	I49	1	RICE 2014
45031	0820-0001	N01	1	RICE 2014
45031	0820-0010	001	1	ICI PM Controls
45031	0820-0010	001	2	ICI PM Controls
45031	0820-0012	001	4	ICI PM Controls

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
45031	0820-0012	001	5	ICI PM Controls
45031	0820-0012	001	8	ICI PM Controls
45031	0820-0013	IA4	1	RICE 2014
45035	0900-0004	IAJ	1	RICE 2014
45035	0900-0004	IAS	1	RICE 2014
45035	0900-0020	I29	1	RICE 2014
45035	0900-0020	I30	1	RICE 2014
45035	0900-0020	I31	1	RICE 2014
45035	0900-0020	I32	1	RICE 2014
45035	0900-0020	I35	1	RICE 2014
45035	0900-0020	I35	2	RICE 2014
45035	0900-0025	IAL	1	RICE 2014
45035	0900-0025	IAM	1	RICE 2014
45035	0900-0025	IAN	1	RICE 2014
45041	1040-0003	016	2	ICI PM Controls
45041	1040-0015	008	3	RICE 2014
45043	1140-0002	001	2	ICI PM Controls
45043	1140-0002	001	9	ICI PM Controls
45043	1140-0002	IA1	3	RICE 2014
45043	1140-0002	IA1	4	RICE 2014
45043	1140-0031	IA1	1	RICE 2014
45043	1140-0031	IA1	2	RICE 2014
45043	1140-0031	IA1	3	RICE 2014
45045	1200-0029	003	1	ICI PM Controls
45045	1200-0060	006	1	RICE 2014
45045	1200-0094	N03	1	RICE 2014
45045	1200-0245	003	1	RICE 2014
45045	1200-0245	004	1	RICE 2014
45045	1200-0245	004	2	RICE 2014
45045	1200-0245	005	1	RICE 2014
45045	1200-0245	005	2	RICE 2014
45045	1200-0245	006	1	RICE 2014
45045	1200-0245	006	2	RICE 2014
45045	1200-0245	IAD	1	RICE 2014
45051	1340-0002	003	4	RICE 2014
45053	1360-0019	002	1	RICE 2014
45053	1360-0019	IA1	1	RICE 2014
45055	1380-0003	001	1	ICI PM Controls
45055	1380-0003	001	2	ICI PM Controls
45055	1380-0003	002	1	ICI PM Controls
45055	1380-0003	002	2	ICI PM Controls
45055	1380-0003	003	1	ICI PM Controls

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
45055	1380-0003	003	1	State Consent Decree
45055	1380-0003	003	2	ICI PM Controls
45055	1380-0003	003	2	State Consent Decree
45055	1380-0003	004	1	ICI PM Controls
45055	1380-0003	004	1	State Consent Decree
45055	1380-0003	004	2	ICI PM Controls
45055	1380-0003	004	2	State Consent Decree
45061	1540-0006	IAE	1	RICE 2014
45061	1540-0029	IA3	1	RICE 2014
45063	1560-0008	016	1	RICE 2014
45069	1680-0008	008	1	ICI PM Controls
45069	1680-0008	008	2	ICI PM Controls
45069	1680-0048	I41	12	RICE 2014
45075	1860-0085	002	1	RICE 2014
45075	1860-0085	002	2	RICE 2014
45077	1880-0007	IA1	7	RICE 2014
45077	1880-0010	004	1	ICI PM Controls
45077	1880-0062	001	2	RICE 2014
45079	1900-0046	007	1	ICI PM Controls
45079	1900-0052	IAM	1	RICE 2014
45079	1900-0093	IAU	1	RICE 2014
45079	1900-0132	003	1	RICE 2014
45083	2060-0081	IA1	1	RICE 2014
45083	2060-0179	003	1	RICE 2014
45083	2060-0179	003	2	RICE 2014
45083	2060-0179	003	3	RICE 2014
45083	2060-0361	IAA	1	RICE 2014
45083	2060-0361	IAB	1	RICE 2014
45083	2060-0430	IA1	1	RICE 2014
45083	2060-0430	IA1	2	RICE 2014
45083	2060-0430	IA1	4	RICE 2014
45083	2060-0430	IA1	5	RICE 2014
45085	2140-0004	IA5	2	RICE 2014
45085	2140-0004	IA5	3	RICE 2014
45087	2180-0003	001	1	ICI PM Controls
45087	2180-0003	001	2	ICI PM Controls
45087	2180-0003	001	3	ICI PM Controls
45087	2180-0003	IA1	3	RICE 2014
45087	2180-0003	IA1	5	RICE 2014
45087	2180-0008	IAA	1	RICE 2014
45087	2180-0012	I-H	1	RICE 2014
45087	2180-0012	I-I	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
45087	2180-0012	I-J	1	RICE 2014
45089	2320-0001	007	1	RICE 2014
45089	2320-0001	IA2	1	RICE 2014
45089	2320-0001	IA2	2	RICE 2014
45089	2320-0034	N01	1	RICE 2014
45089	2320-0034	N01	2	RICE 2014
45089	2320-0034	N01	3	RICE 2014
45091	2440-0027	NO1	1	RICE 2014
47037	4703700002	009	1	ICI PM Controls
47037	4703700002	010	1	ICI PM Controls
47037	4703700002	011	1	ICI PM Controls
47037	4703700018	012	1	RICE 2014
47037	4703700018	013	1	RICE 2014
47037	4703700025	001	1	RICE 2014
47037	4703700025	007	1	RICE 2014
47037	4703700038	002	1	ICI PM Controls
47037	4703700039	101	1	RICE 2014
47037	4703700039	205	3	ICI PM Controls
47037	4703700039	206	1	ICI PM Controls
47037	4703700039	207	3	ICI PM Controls
47037	4703700039	208	3	ICI PM Controls
47037	4703700039	209	1	ICI PM Controls
47037	4703700039	501	1	RICE 2014
47037	4703700042	061	1	RICE 2014
47037	4703700042	062	1	RICE 2014
47037	4703700042	063	1	RICE 2014
47037	4703700081	001	1	ICI PM Controls
47037	4703700081	011	1	RICE 2014
47037	4703700137	002	1	ICI PM Controls
47037	4703700141	016	1	RICE 2014
47037	4703700141	020	2	RICE 2014
47037	4703700208	004	5	RICE 2014
47037	4703700208	004	6	RICE 2014
47037	4703700208	007	1	RICE 2014
47037	4703700212	001	1	ICI PM Controls
47037	4703700255	003	1	RICE 2014
47037	4703700268	001	1	RICE 2014
47037	4703700272	002	1	RICE 2014
47037	4703700272	007	1	RICE 2014
47037	4703700295	002	1	RICE 2014
47037	4703700302	005	1	RICE 2014
47037	4703700302	007	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
47037	4703700302	010	1	RICE 2014
47037	4703700302	011	1	RICE 2014
47037	4703700302	013	1	RICE 2014
47045	0092	001	01	RICE 2014
47045	0092	002	01	RICE 2014
47045	0092	003	01	RICE 2014
47045	0092	004	01	RICE 2014
47045	0092	005	01	RICE 2014
47045	0092	006	01	RICE 2014
47045	0092	007	01	RICE 2014
47065	2730	0002	1	ICI PM Controls
47065	3070	0010	1	TR NODA Cement
47065	4150	0011	1	RICE 2014
47069	0006	71A01	01	RICE 2014
47069	0006	71A02	01	RICE 2014
47069	0006	71A03	01	RICE 2014
47069	0006	71A04	01	RICE 2014
47069	0006	71A05	01	RICE 2014
47069	0006	71A06	01	RICE 2014
47069	0006	71A07	01	RICE 2014
47069	0006	71A08	01	RICE 2014
47069	0006	71A09	01	RICE 2014
47069	0006	71AA01	01	RICE 2014
47069	0006	71AA02	01	RICE 2014
47069	0006	71AA03	01	RICE 2014
47069	0006	71AA04	01	RICE 2014
47069	0006	71B01	01	RICE 2014
47069	0006	71B02	01	RICE 2014
47069	0006	71B03	01	RICE 2014
47069	0006	71B04	01	RICE 2014
47069	0006	71B05	01	RICE 2014
47069	0006	71B06	01	RICE 2014
47069	0006	71B07	01	RICE 2014
47069	0006	71B08	01	RICE 2014
47069	0006	71BA02	01	RICE 2014
47069	0006	71BA03	01	RICE 2014
47069	0006	71C01	01	RICE 2014
47069	0006	71C02	01	RICE 2014
47069	0006	71C03	01	RICE 2014
47069	0006	71C04	01	RICE 2014
47069	0006	71C05	01	RICE 2014
47069	0006	71C06	01	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
47073	0028	005	01	ICI PM Controls
47073	0028	005	02	ICI PM Controls
47073	0028	005	03	ICI PM Controls
47075	0053	501	01	RICE 2014
47075	0053	502	01	RICE 2014
47075	0053	503	01	RICE 2014
47075	0053	504	01	RICE 2014
47075	0053	505	01	RICE 2014
47075	0053	506	01	RICE 2014
47077	0014	001	47	RICE 2014
47079	0024	601	01	RICE 2014
47079	0024	602	01	RICE 2014
47079	0024	603	01	RICE 2014
47079	0024	604	01	RICE 2014
47079	0024	605	01	RICE 2014
47079	0024	606	01	RICE 2014
47079	0024	607	01	RICE 2014
47079	0024	608	01	RICE 2014
47081	0002	860A01	01	RICE 2014
47081	0002	860A02	01	RICE 2014
47081	0002	860A03	01	RICE 2014
47081	0002	860A04	01	RICE 2014
47081	0002	860A05	01	RICE 2014
47081	0002	860A06	01	RICE 2014
47081	0002	860A07	01	RICE 2014
47081	0002	860A08	01	RICE 2014
47081	0002	860A09	01	RICE 2014
47081	0002	860A10	01	RICE 2014
47081	0002	860A11	01	RICE 2014
47081	0002	860A12	01	RICE 2014
47081	0002	860B01	01	RICE 2014
47093	0008	001	01	TR NODA Cement
47093	0018	001-01	01	ICI PM Controls
47093	0018	001-03	01	ICI PM Controls
47093	0018	002-01	01	ICI PM Controls
47093	0018	003-01	01	ICI PM Controls
47105	0003	002	01	ICI PM Controls
47105	0003	004	01	RICE 2014
47105	0081	005	01	ICI PM Controls
47105	0081	006	01	RICE 2014
47107	0012	015	01	ICI PM Controls
47107	0012	015	02	ICI PM Controls

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
47107	0167	007	01	ICI PM Controls
47111	0004	001	01	RICE 2014
47111	0004	002	01	RICE 2014
47111	0004	003	01	RICE 2014
47111	0004	004	01	RICE 2014
47113	0219	007	01	RICE 2014
47113	0219	008	01	RICE 2014
47113	0219	009	01	RICE 2014
47113	0219	010	01	RICE 2014
47115	0064	001	01	ICI PM Controls
47131	0101	001	01	RICE 2014
47131	0101	002	01	RICE 2014
47131	0101	003	01	RICE 2014
47131	0101	004	01	RICE 2014
47131	0101	005	01	RICE 2014
47131	0101	006	01	RICE 2014
47131	0101	007	01	RICE 2014
47131	0101	008	01	RICE 2014
47131	0101	009	01	RICE 2014
47131	0101	010	01	RICE 2014
47131	0101	013	01	RICE 2014
47131	0101	014	01	RICE 2014
47131	0101	015	01	RICE 2014
47141	0035	001	01	ICI PM Controls
47141	0035	004	01	ICI PM Controls
47141	0035	005	01	RICE 2014
47149	0155	087	01	RICE 2014
47157	00045	1015	1000	OECA Settlement
47157	00045	1019	1000	OECA Settlement
47157	00045	4003A	4000	OECA Settlement
47157	00045	4003B	4000	OECA Settlement
47157	00045	4004	4000	OECA Settlement
47157	00045	4005	4000	OECA Settlement
47157	00045	4008A	4000	OECA Settlement
47157	00045	4008B	4000	OECA Settlement
47157	00045	4009	4000	OECA Settlement
47157	00045	4011	4000	OECA Settlement
47157	00045	4020	4000	OECA Settlement
47157	00045	4021	4000	OECA Settlement
47157	00045	5002	5000	OECA Settlement
47157	00045	5003	5000	OECA Settlement
47157	00045	5040	5000	OECA Settlement

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
47157	00045	6008	6000	OECA Settlement
47157	00045	8001	8000	ICI PM Controls
47157	00045	8001	8000	OECA Settlement
47157	00045	8203	8000	ICI PM Controls
47157	00045	8301	8000	ICI PM Controls
47157	00045	8301	8000	OECA Settlement
47157	00045	8302	8000	ICI PM Controls
47157	00045	8500	8000	OECA Settlement
47157	00045	9002	9000	OECA Settlement
47157	00045	9008	9000	OECA Settlement
47157	00045	TEMP	8000	OECA Settlement
47157	00101	P1147	11	OECA Settlement
47157	00101	P1147	11	RICE 2014
47157	00101	P1313A	13	OECA Settlement
47157	00101	P1313B	13	OECA Settlement
47157	00101	P1843	18	OECA Settlement
47157	00101	P1844	18	OECA Settlement
47157	00101	P2018	20	OECA Settlement
47157	00101	P2019	20	OECA Settlement
47157	00101	P2020	20	OECA Settlement
47157	00101	P2128B	21	OECA Settlement
47157	00101	P2242	22	OECA Settlement
47157	00101	P2324A	23	OECA Settlement
47157	00101	P2605	26	OECA Settlement
47157	00101	P2615	26	OECA Settlement
47157	00101	P2709A	27	OECA Settlement
47157	00101	P2709B	27	OECA Settlement
47157	00101	P2712	27	OECA Settlement
47157	00101	P2806B	28	OECA Settlement
47157	00101	P4121A	41	OECA Settlement
47157	00101	P4121B	41	OECA Settlement
47157	00101	P4121C	41	OECA Settlement
47157	00101	P4129	41	OECA Settlement
47157	00101	P4130	41	OECA Settlement
47157	00101	P4153	24	OECA Settlement
47157	00101	P4153	24	RICE 2014
47157	00101	P4154	24	OECA Settlement
47157	00101	P4154	24	RICE 2014
47157	00465	EG-1	EP-EG1	RICE 2014
47157	00465	EG-11	EP-EG1	RICE 2014
47157	00465	EG-2	EP-EG2	RICE 2014
47157	00465	EG-3	EP-EG3	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
47157	00465	EG-4	EP-EG4	RICE 2014
47157	00465	EG-5	EP-EG5	RICE 2014
47157	00664	EU5	EU5	RICE 2014
47157	00664	EU7	EU7	RICE 2014
47157	00819	R01	R01	RICE 2014
47163	0003	020101	01	ICI PM Controls
47163	0003	020101	02	ICI PM Controls
47163	0003	020101	03	ICI PM Controls
47163	0003	020904	01	ICI PM Controls
47163	0003	021003	01	ICI PM Controls
47163	0003	021520	01	ICI PM Controls
47163	0003	021520	02	ICI PM Controls
47163	0003	021520	03	ICI PM Controls
47163	0003	021520	04	ICI PM Controls
47163	0003	021520	05	ICI PM Controls
47163	0003	027425	01	ICI PM Controls
47163	0003	261501	01	ICI PM Controls
47163	0003	261501	02	ICI PM Controls
47163	0110	001	01	RICE 2014
47163	0110	002	01	RICE 2014
47165	0008	87A01	01	RICE 2014
47165	0008	87A02	01	RICE 2014
47165	0008	87A03	01	RICE 2014
47165	0008	87A04	01	RICE 2014
47165	0008	87A05	01	RICE 2014
47165	0008	87A06	01	RICE 2014
47165	0008	87A07	01	RICE 2014
47165	0008	87A08	01	RICE 2014
47165	0008	87A09	01	RICE 2014
47165	0008	87C01	01	RICE 2014
47165	0008	87C02	01	RICE 2014
47165	0008	87C03	01	RICE 2014
47165	0008	87C04	01	RICE 2014
47165	0008	87C05	01	RICE 2014
47165	0008	87C06	01	RICE 2014
47165	0008	87C07	01	RICE 2014
47165	0008	87C08	01	RICE 2014
47165	0008	87D01	01	RICE 2014
47165	0008	87D02	01	RICE 2014
47165	0008	87D03	01	RICE 2014
47165	0008	87E01	01	RICE 2014
47165	0008	87E02	01	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
47165	0014	001	01	RICE 2014
47165	0014	001	02	RICE 2014
47165	0014	001	03	RICE 2014
47167	0067	001	01	RICE 2014
47167	0067	001	02	RICE 2014
47167	0067	001	03	RICE 2014
47167	0067	001	04	RICE 2014
47167	0067	001	05	RICE 2014
47167	0067	001	06	RICE 2014
47167	0067	001	07	RICE 2014
47167	0067	001	08	RICE 2014
47167	0067	001	09	RICE 2014
47167	0067	001	10	RICE 2014
47167	0067	003	01	RICE 2014
47179	0039	14	E04	RICE 2014
51001	00002	9	1	RICE 2014
51001	00005	5	2	RICE 2014
51005	00043	20	1	RICE 2014
51011	00011	12	1	RICE 2014
51011	00011	13	1	RICE 2014
51011	00011	14	1	RICE 2014
51013	00009	13	1	RICE 2014
51013	00010	20	01	RICE 2014
51013	00010	20	1	RICE 2014
51013	00010	21	1	RICE 2014
51013	00015	15	1	RICE 2014
51013	00163	2	1	RICE 2014
51015	00002	1	1	ICI PM Controls
51015	00002	2	1	ICI PM Controls
51015	00087	10	1	RICE 2014
51015	00110	1	1	ICI PM Controls
51015	00110	2	1	ICI PM Controls
51015	00110	3	1	ICI PM Controls
51017	00004	4	1	RICE 2014
51019	00003	1	1	ICI PM Controls
51019	00003	2	4	ICI PM Controls
51021	00005	1	1	ICI PM Controls
51021	00005	20	1	RICE 2014
51021	00005	21	1	RICE 2014
51023	00003	22	1	TR NODA Cement
51023	00003	22	2	ICI PM Controls
51023	00003	22	2	TR NODA Cement

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
51023	00003	22	3	ICI PM Controls
51023	00003	22	3	TR NODA Cement
51023	00003	22	4	TR NODA Cement
51027	00098	1	1	ICI PM Controls
51027	11159	21	1	RICE 2014
51031	00152	4	4	RICE 2014
51041	00015	129	1	RICE 2014
51041	00015	223	1	RICE 2014
51041	00015	268	1	RICE 2014
51041	00015	272	1	RICE 2014
51041	00015	273	1	RICE 2014
51041	00015	274	1	RICE 2014
51041	00015	277	1	RICE 2014
51041	00015	279	1	RICE 2014
51041	00015	280	1	RICE 2014
51041	00015	281	1	RICE 2014
51041	00015	95	1	RICE 2014
51041	00081	2	2	ICI PM Controls
51041	00081	3	2	ICI PM Controls
51041	00114	28	1	RICE 2014
51047	00004	1	2	ICI PM Controls
51047	00017	1	1	RICE 2014
51047	00017	1	2	RICE 2014
51047	00042	1	1	RICE 2014
51047	00044	1	1	RICE 2014
51047	00044	2	2	RICE 2014
51047	00055	1	1	RICE 2014
51047	00055	2	1	RICE 2014
51051	00034	22	1	RICE 2014
51051	00041	20	1	RICE 2014
51051	00044	20	1	RICE 2014
51051	00054	20	1	RICE 2014
51051	00057	20	1	RICE 2014
51051	00057	21	1	RICE 2014
51051	00057	22	1	RICE 2014
51051	00057	23	1	RICE 2014
51051	00061	21	1	RICE 2014
51051	00061	22	2	RICE 2014
51051	11229	20	1	RICE 2014
51051	11272	20	1	RICE 2014
51051	11351	20	1	RICE 2014
51051	11472	20	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
51051	11474	20	1	RICE 2014
51051	11478	20	1	RICE 2014
51051	11515	20	1	RICE 2014
51051	11516	20	1	RICE 2014
51053	00077	1	1	RICE 2014
51053	00077	1	2	RICE 2014
51053	00077	2	1	RICE 2014
51053	00077	2	2	RICE 2014
51053	00077	3	1	RICE 2014
51053	00077	3	2	RICE 2014
51053	00087	1	1	RICE 2014
51053	00087	10	1	RICE 2014
51053	00087	11	1	RICE 2014
51053	00087	13	1	RICE 2014
51053	00087	14	1	RICE 2014
51053	00087	16	1	RICE 2014
51053	00087	17	1	RICE 2014
51053	00087	19	1	RICE 2014
51053	00087	2	1	RICE 2014
51053	00087	20	1	RICE 2014
51053	00087	4	1	RICE 2014
51053	00087	5	1	RICE 2014
51053	00087	7	1	RICE 2014
51053	00087	8	1	RICE 2014
51059	00018	50	1	RICE 2014
51059	00022	20	1	RICE 2014
51059	00056	1	1	RICE 2014
51059	00056	12	1	RICE 2014
51059	00056	2	1	RICE 2014
51059	00056	4	1	RICE 2014
51059	00056	5	1	RICE 2014
51059	00056	7	1	RICE 2014
51059	00056	8	1	RICE 2014
51059	00277	10	1	RICE 2014
51059	00277	11	1	RICE 2014
51059	00281	7	1	RICE 2014
51059	00281	8	1	RICE 2014
51059	00281	9	1	RICE 2014
51059	00413	2	1	RICE 2014
51059	00413	3	1	RICE 2014
51059	00413	5	1	RICE 2014
51059	00421	8	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
51059	00439	31	1	RICE 2014
51059	00558	40	1	RICE 2014
51059	00575	1	1	RICE 2014
51059	00575	2	1	RICE 2014
51059	00729	1	1	RICE 2014
51059	00731	1	1	RICE 2014
51059	00732	1	1	RICE 2014
51059	00732	2	1	RICE 2014
51059	00732	3	1	RICE 2014
51059	00732	4	1	RICE 2014
51059	00732	5	1	RICE 2014
51059	00733	1	1	RICE 2014
51059	00745	2	1	RICE 2014
51059	00749	1	1	RICE 2014
51059	00749	2	1	RICE 2014
51059	00753	2	1	RICE 2014
51059	00753	4	1	RICE 2014
51059	00817	1	1	RICE 2014
51059	00840	1	1	RICE 2014
51059	00864	1	1	RICE 2014
51059	00864	2	1	RICE 2014
51059	00864	3	1	RICE 2014
51059	00864	4	1	RICE 2014
51059	00864	5	1	RICE 2014
51059	00865	1	1	RICE 2014
51059	00866	1	1	RICE 2014
51059	73515	1	1	RICE 2014
51059	73515	2	1	RICE 2014
51059	73515	3	1	RICE 2014
51059	73515	4	1	RICE 2014
51059	73515	5	1	RICE 2014
51059	73515	6	1	RICE 2014
51059	73515	7	1	RICE 2014
51059	73515	8	1	RICE 2014
51061	00022	2	2	RICE 2014
51061	00055	1	1	RICE 2014
51061	00056	1	1	RICE 2014
51061	00063	7	1	RICE 2014
51061	00067	1	1	RICE 2014
51061	00067	2	1	RICE 2014
51065	40789	1	1	RICE 2014
51065	40789	2	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
51065	40789	3	1	RICE 2014
51065	40789	4	1	RICE 2014
51065	40789	5	1	RICE 2014
51065	40789	6	1	RICE 2014
51067	00023	1	1	ICI PM Controls
51067	00045	21	1	RICE 2014
51069	00034	6	1	RICE 2014
51071	00004	1	1	RICE 2014
51071	00062	1	1	ICI PM Controls
51073	00032	40	1	RICE 2014
51075	00007	10	1	ICI PM Controls
51075	00007	11	1	ICI PM Controls
51075	00007	12	1	ICI PM Controls
51075	00007	20	1	RICE 2014
51075	00026	2	1	RICE 2014
51081	00002	6	1	ICI PM Controls
51081	00042	1	1	ICI PM Controls
51081	00042	2	1	ICI PM Controls
51085	00004	10	1	RICE 2014
51085	00004	7	1	RICE 2014
51085	00004	8	1	RICE 2014
51085	00004	9	1	RICE 2014
51085	00042	1	1	ICI PM Controls
51085	00042	1	4	ICI PM Controls
51085	00061	6	1	RICE 2014
51085	00061	7	1	RICE 2014
51087	00188	12	1	RICE 2014
51087	00188	9	1	RICE 2014
51087	00210	5	1	RICE 2014
51087	00217	3	3	RICE 2014
51089	00033	1	1	ICI PM Controls
51089	00037	2	2	ICI PM Controls
51093	00006	3	1	ICI PM Controls
51093	00006	4	1	ICI PM Controls
51093	00006	5	1	ICI PM Controls
51095	00008	26	1	RICE 2014
51099	00001	5	1	RICE 2014
51105	11401	1	1	RICE 2014
51107	00074	16	1	RICE 2014
51107	00075	1	1	RICE 2014
51107	00075	2	2	RICE 2014
51107	00075	3	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
51107	00124	2	1	RICE 2014
51107	00124	3	1	RICE 2014
51107	00128	1	1	RICE 2014
51107	00130	21	1	RICE 2014
51107	00133	1	1	RICE 2014
51107	00133	3	1	RICE 2014
51107	00134	1	1	RICE 2014
51107	00134	4	1	RICE 2014
51107	00134	5	1	RICE 2014
51107	00141	1	1	RICE 2014
51107	00141	4	1	RICE 2014
51107	00814	1	1	RICE 2014
51107	00814	2	1	RICE 2014
51107	00824	1	1	RICE 2014
51107	71978	3	1	RICE 2014
51109	00050	8	1	RICE 2014
51121	00002	1	1	ICI PM Controls
51121	00002	5	1	ICI PM Controls
51121	00002	8	1	RICE 2014
51121	00006	1	1	ICI PM Controls
51121	00006	2	1	ICI PM Controls
51121	00006	3	1	ICI PM Controls
51121	00006	4	1	ICI PM Controls
51121	00006	5	1	ICI PM Controls
51135	00029	1	1	ICI PM Controls
51137	00027	15	1	RICE 2014
51137	00027	16	1	RICE 2014
51137	00027	17	1	RICE 2014
51137	00027	18	1	RICE 2014
51137	00027	19	1	RICE 2014
51137	00031	1	1	RICE 2014
51139	00027	3	1	RICE 2014
51143	00003	1	1	ICI PM Controls
51143	00120	12	1	RICE 2014
51143	00120	13	1	RICE 2014
51143	00120	14	1	RICE 2014
51143	00123	4	1	RICE 2014
51147	00006	20	4	RICE 2014
51149	00007	10	1	RICE 2014
51149	00007	11	1	RICE 2014
51149	00007	14	1	RICE 2014
51149	00007	15	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
51149	00007	16	1	RICE 2014
51149	00007	17	1	RICE 2014
51149	00007	49	1	RICE 2014
51149	00007	6	1	RICE 2014
51149	00007	7	1	RICE 2014
51149	00007	8	1	RICE 2014
51149	00007	9	1	RICE 2014
51149	00062	10	1	RICE 2014
51149	00062	11	1	RICE 2014
51153	00011	5	1	RICE 2014
51153	00021	11	1	RICE 2014
51153	00021	12	1	RICE 2014
51153	00021	13	1	RICE 2014
51153	00021	15	1	RICE 2014
51153	00021	17	1	RICE 2014
51153	00047	3	1	RICE 2014
51153	00047	9	1	RICE 2014
51153	00139	2	1	RICE 2014
51153	00139	3	1	RICE 2014
51153	00143	1	1	RICE 2014
51153	00143	3	1	RICE 2014
51153	00143	3	2	RICE 2014
51153	00889	2	1	RICE 2014
51153	00889	3	1	RICE 2014
51153	00889	4	1	RICE 2014
51153	00889	5	1	RICE 2014
51159	00011	1	2	RICE 2014
51163	00001	7	1	ICI PM Controls
51165	00001	5	1	ICI PM Controls
51165	00001	6	1	ICI PM Controls
51165	00069	20	4	RICE 2014
51167	00006	20	2	ICI PM Controls
51167	00006	21	2	ICI PM Controls
51169	00060	24	1	RICE 2014
51171	00013	6	1	RICE 2014
51175	00019	7	1	RICE 2014
51175	00051	6	1	RICE 2014
51177	00043	6	1	RICE 2014
51177	00043	7	1	RICE 2014
51177	00079	2	1	RICE 2014
51177	00099	1	1	RICE 2014
51177	00105	3	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
51177	00106	1	1	RICE 2014
51179	00013	1	1	RICE 2014
51179	00020	10	1	RICE 2014
51179	00020	12	1	RICE 2014
51179	00045	4	1	RICE 2014
51179	00045	5	1	RICE 2014
51179	00045	6	1	RICE 2014
51179	00045	7	1	RICE 2014
51179	00045	8	1	RICE 2014
51179	41048	1	2	RICE 2014
51187	73459	2	1	RICE 2014
51191	00128	20	1	RICE 2014
51191	00128	21	1	RICE 2014
51195	00157	22	1	RICE 2014
51195	11226	20	1	RICE 2014
51195	11227	20	1	RICE 2014
51195	11471	20	1	RICE 2014
51197	00064	1	2	RICE 2014
51197	00074	20	1	RICE 2014
51199	00001	9	3	RICE 2014
51510	00035	4	1	RICE 2014
51510	00035	4	2	RICE 2014
51550	00016	29	1	RICE 2014
51550	00038	5	1	ICI PM Controls
51550	00190	2	1	RICE 2014
51550	00190	4	1	RICE 2014
51580	00003	PWR006	1	ICI PM Controls
51580	00003	PWR007	1	ICI PM Controls
51580	00003	PWR008	1	ICI PM Controls
51580	00003	PWR009	1	ICI PM Controls
51640	00003	1	1	ICI PM Controls
51640	00003	2	1	ICI PM Controls
51640	00003	3	1	ICI PM Controls
51640	00003	4	1	ICI PM Controls
51640	00018	2	1	ICI PM Controls
51640	00025	1	1	ICI PM Controls
51640	00025	2	1	ICI PM Controls
51650	00006	16	1	RICE 2014
51650	00007	34	1	RICE 2014
51650	00010	1	1	ICI PM Controls
51650	00010	2	1	ICI PM Controls
51650	00093	4	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
51660	00118	1	1	RICE 2014
51660	00146	3	1	RICE 2014
51670	00003	2	1	ICI PM Controls
51670	00026	19A	1	RICE 2014
51670	00063	7	1	RICE 2014
51670	00063	8	1	RICE 2014
51670	00063	9	1	RICE 2014
51680	00097	1	1	ICI PM Controls
51680	00097	2	1	ICI PM Controls
51683	00131	10	1	RICE 2014
51700	00002	1	1	RICE 2014
51700	00002	1	2	RICE 2014
51700	00002	4	1	RICE 2014
51700	00002	5	1	RICE 2014
51700	00013	54	1	RICE 2014
51700	00055	22	1	RICE 2014
51700	00055	22	2	RICE 2014
51700	00055	22	3	RICE 2014
51700	00055	22	4	RICE 2014
51700	00068	4	1	RICE 2014
51710	00006	12	1	RICE 2014
51710	00194	21	1	RICE 2014
51710	00194	25	1	RICE 2014
51710	00196	3	2	RICE 2014
51710	00197	41	1	RICE 2014
51710	00216	2	1	RICE 2014
51730	00084	100	1	RICE 2014
51730	00084	120	1	RICE 2014
51740	00006	27	1	RICE 2014
51740	00006	8	1	RICE 2014
51740	00007	11	2	RICE 2014
51740	00012	2	1	RICE 2014
51740	00078	44	1	ICI PM Controls
51740	00078	45	1	ICI PM Controls
51740	00078	46	1	ICI PM Controls
51740	00078	47	1	ICI PM Controls
51740	00078	56	01	RICE 2014
51740	00080	22	1	RICE 2014
51760	00087	1	1	ICI PM Controls
51760	00087	10	1	RICE 2014
51760	00087	2	1	ICI PM Controls
51760	00087	3	1	ICI PM Controls

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
51760	00087	4	1	ICI PM Controls
51760	00087	7	1	RICE 2014
51760	00087	8	1	RICE 2014
51760	00087	9	1	RICE 2014
51760	00308	1	1	ICI PM Controls
51760	00410	16	1	RICE 2014
51760	00410	17	1	RICE 2014
51760	00410	4	1	RICE 2014
51760	00410	5	1	RICE 2014
51770	00083	1	1	ICI PM Controls
51770	00083	2	1	ICI PM Controls
51770	00083	3	1	ICI PM Controls
51770	00088	2	1	ICI PM Controls
51800	00091	30	1	RICE 2014
51800	00109	1	1	RICE 2014
51810	00004	23	1	RICE 2014
51810	00006	10	1	RICE 2014
51810	00013	1	1	ICI PM Controls
51810	00013	2	1	ICI PM Controls
51810	00013	28	1	RICE 2014
51810	00013	3	1	ICI PM Controls
51810	00013	8	1	RICE 2014
51810	00013	9	1	RICE 2014
51810	00044	1	1	RICE 2014
51810	00105	3	1	RICE 2014
51820	00009	1	1	ICI PM Controls
51820	00009	2	1	ICI PM Controls
51820	00009	3	1	ICI PM Controls
54001	5400100100	001	1	RICE 2014
54001	5400100100	002	2	RICE 2014
54003	5400300012	009	15	RICE 2014
54007	5400700006	001	1	RICE 2014
54007	5400700006	002	3	RICE 2014
54007	5400700006	003	3	RICE 2014
54007	5400700006	004	4	RICE 2014
54007	5400700016	00Y	1	RICE 2014
54007	5400700100	011	1	RICE 2014
54011	5401100009	011	1	RICE 2014
54011	5401100009	011	2	RICE 2014
54013	5401300001	001	1	RICE 2014
54013	5401300001	002	2	RICE 2014
54013	5401300001	003	3	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
54013	5401300001	005	1	RICE 2014
54013	5401300002	001	1	RICE 2014
54013	5401300002	002	2	RICE 2014
54017	5401700001	001	1	RICE 2014
54017	5401700001	002	2	RICE 2014
54017	5401700001	003	3	RICE 2014
54017	5401700001	004	4	RICE 2014
54017	5401700001	005	5	RICE 2014
54017	5401700003	002	2	RICE 2014
54017	5401700011	001	1	RICE 2014
54017	5401700011	002	2	RICE 2014
54017	5401700100	001	1	RICE 2014
54017	5401700100	002	2	RICE 2014
54019	5401900001	006	1	ICI PM Controls
54019	5401900001	006	3	ICI PM Controls
54019	5401900001	045	1	ICI PM Controls
54021	5402100001	009	1	RICE 2014
54021	5402100001	016	1	RICE 2014
54021	5402100002	001	1	RICE 2014
54021	5402100002	002	2	RICE 2014
54021	5402100010	05	5	RICE 2014
54023	5402300003	015	1	RICE 2014
54023	5402300014	018	3	RICE 2014
54031	5403100002	012	1	RICE 2014
54031	5403100002	013	1	RICE 2014
54033	5403300011	001	1	RICE 2014
54033	5403300011	002	2	RICE 2014
54033	5403300011	003	3	RICE 2014
54033	5403300013	001	1	RICE 2014
54033	5403300013	002	2	RICE 2014
54033	5403300014	001	1	RICE 2014
54033	5403300014	002	2	RICE 2014
54033	5403300014	004	4	RICE 2014
54033	5403300015	008	1	RICE 2014
54033	5403300015	009	1	RICE 2014
54033	5403300015	010	1	RICE 2014
54033	5403300100	001	1	RICE 2014
54033	5403300100	002	2	RICE 2014
54035	5403500003	004	1	RICE 2014
54035	5403500003	005	1	RICE 2014
54035	5403500003	006	1	RICE 2014
54037	5403700007	001	1	ICI PM Controls

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
54037	5403700007	005	1	RICE 2014
54037	5403700007	008	1	ICI PM Controls
54039	5403900003	B6	1	ICI PM Controls
54039	5403900007	071	1	ICI PM Controls
54039	5403900007	081	1	ICI PM Controls
54039	5403900007	091	1	ICI PM Controls
54039	5403900011	022	4	RICE 2014
54039	5403900036	P05	7	RICE 2014
54039	5403900044	001	1	RICE 2014
54039	5403900044	001	2	RICE 2014
54039	5403900047	011	1	RICE 2014
54039	5403900047	012	1	RICE 2014
54039	5403900047	013	1	RICE 2014
54039	5403900048	003	1	RICE 2014
54039	5403900048	004	1	RICE 2014
54039	5403900048	005	1	RICE 2014
54039	5403900048	006	1	RICE 2014
54039	5403900048	007	1	RICE 2014
54039	5403900048	009	1	RICE 2014
54039	5403900048	016	1	RICE 2014
54039	5403900049	010	1	RICE 2014
54039	5403900049	011	1	RICE 2014
54039	5403900051	001	1	RICE 2014
54039	5403900051	002	2	RICE 2014
54039	5403900051	003	3	RICE 2014
54039	5403900051	004	4	RICE 2014
54039	5403900051	005	5	RICE 2014
54039	5403900051	006	6	RICE 2014
54039	5403900051	007	7	RICE 2014
54039	5403900051	008	8	RICE 2014
54039	5403900051	009	9	RICE 2014
54039	5403900051	010	10	RICE 2014
54039	5403900051	011	11	RICE 2014
54039	5403900051	012	12	RICE 2014
54039	5403900051	013	13	RICE 2014
54039	5403900051	015	15	RICE 2014
54039	5403900051	018	18	RICE 2014
54039	5403900074	002	1	RICE 2014
54039	5403900101	002	1	RICE 2014
54041	5404100010	001	1	RICE 2014
54041	5404100010	002	2	RICE 2014
54041	5404100010	003	3	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
54041	5404100010	004	4	RICE 2014
54041	5404100010	005	5	RICE 2014
54041	5404100010	007	7	RICE 2014
54041	5404100011	001	1	RICE 2014
54041	5404100011	002	2	RICE 2014
54041	5404100012	001	1	RICE 2014
54041	5404100012	002	2	RICE 2014
54041	5404100012	003	3	RICE 2014
54041	5404100012	004	4	RICE 2014
54041	5404100012	005	5	RICE 2014
54041	5404100012	006	6	RICE 2014
54041	5404100012	010	10	RICE 2014
54041	5404100013	001	1	RICE 2014
54041	5404100013	002	2	RICE 2014
54041	5404100013	003	3	RICE 2014
54041	5404100013	004	4	RICE 2014
54041	5404100013	005	5	RICE 2014
54041	5404100013	006	6	RICE 2014
54041	5404100013	007	7	RICE 2014
54041	5404100013	016	16	RICE 2014
54043	5404300002	003	1	RICE 2014
54043	5404300002	004	1	RICE 2014
54043	5404300002	014	1	RICE 2014
54049	5404900009	005	1	RICE 2014
54049	5404900052	001	1	RICE 2014
54049	5404900052	002	2	RICE 2014
54049	5404900052	005	5	RICE 2014
54051	5405100002	001	1	ICI PM Controls
54051	5405100002	002	1	ICI PM Controls
54051	5405100002	003	1	ICI PM Controls
54051	5405100005	006	1	RICE 2014
54051	5405100025	007	1	RICE 2014
54051	5405100025	008	1	RICE 2014
54051	5405100025	009	1	RICE 2014
54051	5405100025	010	1	RICE 2014
54051	5405100025	012	1	RICE 2014
54051	5405100025	013	1	RICE 2014
54051	5405100100	023	1	RICE 2014
54053	5405300009	005	1	RICE 2014
54057	5405700008	049	1	RICE 2014
54057	5405700011	034	1	ICI PM Controls
54061	5406100001	005	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
54061	5406100001	005	2	RICE 2014
54061	5406100027	043	1	ICI PM Controls
54061	5406100027	043	2	ICI PM Controls
54067	5406700025	500	1	RICE 2014
54071	5407100008	005	1	RICE 2014
54071	5407100008	006	1	RICE 2014
54073	5407300002	016	1	RICE 2014
54073	5407300002	016	2	RICE 2014
54073	5407300003	0W0	3	RICE 2014
54073	5407300004	002	4	ICI PM Controls
54073	5407300004	004	1	RICE 2014
54073	5407300005	008	1	RICE 2014
54073	5407300005	009	1	RICE 2014
54077	5407700001	005	1	RICE 2014
54077	5407700017	011	1	RICE 2014
54077	5407700017	012	1	RICE 2014
54077	5407700017	024	1	RICE 2014
54079	5407900072	FP0	1	RICE 2014
54079	5407900072	FP0	2	RICE 2014
54079	5407900072	QC1	1	RICE 2014
54083	5408300017	001	1	RICE 2014
54083	5408300017	002	1	RICE 2014
54083	5408300017	003	1	RICE 2014
54083	5408300017	004	1	RICE 2014
54083	5408300017	022	1	RICE 2014
54083	5408300018	002	1	RICE 2014
54083	5408300018	1	1	RICE 2014
54083	5408300018	3	1	RICE 2014
54083	5408300018	4	1	RICE 2014
54083	5408300019	001	1	RICE 2014
54083	5408300019	012	1	RICE 2014
54083	5408300101	1	1	RICE 2014
54083	5408300101	2	1	RICE 2014
54083	5408300101	3	1	RICE 2014
54085	5408500004	001	1	RICE 2014
54085	5408500004	002	2	RICE 2014
54085	5408500004	003	3	RICE 2014
54085	5408500004	007	1	RICE 2014
54085	5408500004	008	1	RICE 2014
54089	5408900004	007	1	RICE 2014
54091	5409100002	010	1	RICE 2014
54091	5409100002	B10	1	RICE 2014

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
54091	5409100013	01	1	RICE 2014
54091	5409100013	02	2	RICE 2014
54091	5409100013	03	3	RICE 2014
54091	5409100013	04	4	RICE 2014
54091	5409100013	05	5	RICE 2014
54091	5409100013	06	6	RICE 2014
54095	5409500001	0LN	2	RICE 2014
54095	5409500001	0RN	1	RICE 2014
54095	5409500007	001	1	RICE 2014
54095	5409500007	002	2	RICE 2014
54097	5409700001	048	1	RICE 2014
54097	5409700009	019	1	RICE 2014
54099	5409900010	1	1	ICI PM Controls
54099	5409900012	02	1	RICE 2014
54099	5409900013	012	1	RICE 2014
54099	5409900013	013	1	RICE 2014
54099	5409900013	014	1	RICE 2014
54099	5409900014	006	1	RICE 2014
54099	5409900014	007	1	RICE 2014
54099	5409900014	008	1	RICE 2014
54099	5409900014	009	1	RICE 2014
54099	5409900014	022	1	RICE 2014
54103	5410300006	001	1	RICE 2014
54103	5410300006	002	2	RICE 2014
54103	5410300006	008	8	RICE 2014
54103	5410300009	001	2	RICE 2014
54103	5410300009	002	4	RICE 2014
54103	5410300009	003	4	RICE 2014
54103	5410300009	004	4	RICE 2014
54103	5410300010	002	1	RICE 2014
54103	5410300010	003	1	RICE 2014
54103	5410300010	007	1	RICE 2014
54103	5410300033	001	1	RICE 2014
54103	5410300033	002	2	RICE 2014
54103	5410300033	003	3	RICE 2014
54103	5410300033	004	4	RICE 2014
54103	5410300033	005	5	RICE 2014
54103	5410300033	006	6	RICE 2014
54103	5410300033	007	7	RICE 2014
54107	5410700001	P01	1	ICI PM Controls
54107	5410700001	P02	1	ICI PM Controls
54107	5410700001	P03	1	ICI PM Controls

State and County FIPS	State Facility ID	Emission Unit ID	Process ID	Control Reference
54107	5410700001	P04	1	ICI PM Controls
54107	5410700001	P05	1	ICI PM Controls
54107	5410700001	P06	1	ICI PM Controls
54107	5410700100	003	1	RICE 2014
54107	5410700100	004	1	RICE 2014
54107	5410700100	005	1	RICE 2014
54107	5410700100	006	1	RICE 2014
54107	5410700100	007	1	RICE 2014
54109	5410900017	001	2	RICE 2014
54109	5410900017	001	3	RICE 2014
54109	5410900017	001	4	RICE 2014
54109	5410900017	001	5	RICE 2014
54109	5410900018	001	1	RICE 2014
54109	5410900018	002	2	RICE 2014
54109	5410900018	003	3	RICE 2014
54109	5410900018	004	4	RICE 2014
54109	5410900018	005	5	RICE 2014
54109	5410900018	006	6	RICE 2014
54109	5410900018	007	7	RICE 2014
54109	5410900019	001	1	RICE 2014
54109	5410900019	002	2	RICE 2014
54109	5410900019	003	3	RICE 2014
54109	5410900019	004	4	RICE 2014
54109	5410900019	006	6	RICE 2014
54109	5410900021	006	1	RICE 2014
54109	5410900021	008	1	RICE 2014
54109	5410900021	009	1	RICE 2014
54109	5410900021	010	1	RICE 2014
54109	5410900021	012	1	RICE 2014
54109	5410900021	020	1	RICE 2014
54109	5410900107	001	1	RICE 2014
54109	5410900107	001	2	RICE 2014
54109	5410900107	001	3	RICE 2014
54109	5410900107	001	4	RICE 2014

Appendix C: EGU Units Closures

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
01033	0010	010	01	47	1	State Closure
01033	0010	011	01	47	2	State Closure
01033	0010	012	01	47	3	State Closure
01033	0010	013	01	47	4	State Closure
01071	0008	002	01	50	1	State Closure
01071	0008	003	01	50	2	State Closure
01071	0008	004	01	50	3	State Closure
01071	0008	005	01	50	4	State Closure
01071	0008	006	01	50	5	State Closure
01071	0008	007	01	50	6	State Closure
12009	0090006	1	1	609	PCC1	State Closure
12009	0090006	1	2	609	PCC1	State Closure
12009	0090006	1	6	609	PCC1	State Closure
12009	0090006	2	1	609	PCC2	State Closure
12009	0090006	2	2	609	PCC2	State Closure
12009	0090006	2	6	609	PCC2	State Closure
12011	0110036	1	1	617	PPE1	State Closure
12011	0110036	1	2	617	PPE1	State Closure
12011	0110036	1	7	617	PPE1	State Closure
12011	0110036	2	1	617	PPE2	State Closure
12011	0110036	2	2	617	PPE2	State Closure
12011	0110036	2	6	617	PPE2	State Closure
12011	0110036	3	1	617	PPE3	State Closure
12011	0110036	3	2	617	PPE3	State Closure
12011	0110036	3	6	617	PPE3	State Closure
12011	0110036	4	1	617	PPE4	State Closure
12011	0110036	4	2	617	PPE4	State Closure
12011	0110036	4	6	617	PPE4	State Closure
12073	0730003	4	1	688	2	State Closure
12073	0730003	4	2	688	2	State Closure
12086	0250001	3	2	610	PCU5	Closure - FPL Supplied
12086	0250001	4	2	610	PCU6	Closure - FPL Supplied
12086	0250003	2	1	621	PTP2	Closure - FPL Supplied
12086	0250003	2	2	621	PTP2	Closure - FPL Supplied
12086	0250003	2	5	621	PTP2	Closure - FPL Supplied
12099	0990042	3	1	619	PRV3	State Closure
12099	0990042	3	3	619	PRV3	State Closure
12099	0990042	3	7	619	PRV3	State Closure
12099	0990042	4	1	619	PRV4	State Closure

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
12099	0990042	4	3	619	PRV4	State Closure
12099	0990042	4	7	619	PRV4	State Closure
12103	1030011	1	1	634	1	State Closure
12103	1030011	1	2	634	1	State Closure
12103	1030011	1	3	634	1	State Closure
12103	1030011	2	2	634	2	State Closure
12103	1030011	2	5	634	2	State Closure
12103	1030011	2	6	634	2	State Closure
12103	1030011	3	1	634	3	State Closure
12103	1030011	3	2	634	3	State Closure
12103	1030011	3	4	634	3	State Closure
12103	1030011	3	5	634	3	State Closure
12127	1270009	1	2	620	PSN3	Closure - FPL Supplied
12127	1270009	1	3	620	PSN3	Closure - FPL Supplied
12127	1270009	1	5	620	PSN3	Closure - FPL Supplied
13051	05100006	SG01	1	733	1	State Closure
13051	05100006	SG01	2	733	1	State Closure
13051	05100006	SG02	1	733	2	State Closure
13051	05100006	SG02	2	733	2	State Closure
13051	05100006	SG03	1	733	3	State Closure
13051	05100006	SG03	2	733	3	State Closure
13051	05100006	SG04	1	733	4	State Closure
13051	05100006	SG04	2	733	4	State Closure
13067	06700003	SGM1	1	710	MB1	State Closure
13067	06700003	SGM1	2	710	MB1	State Closure
13067	06700003	SGM1	3	710	MB1	State Closure
13067	06700003	SGM2	1	710	MB2	State Closure
13067	06700003	SGM2	2	710	MB2	State Closure
13067	06700003	SGM2	3	710	MB2	State Closure
13077	07700001	SG01	1	728	Y1BR	State Closure
13077	07700001	SG01	2	728	Y1BR	State Closure
13077	07700001	SG01	3	728	Y1BR	State Closure
13077	07700001	SG02	1	728	Y2BR	State Closure
13077	07700001	SG02	2	728	Y2BR	State Closure
13077	07700001	SG02	3	728	Y2BR	State Closure
13077	07700001	SG03	1	728	Y3BR	State Closure
13077	07700001	SG03	2	728	Y3BR	State Closure
13077	07700001	SG03	3	728	Y3BR	State Closure
13077	07700001	SG04	1	728	Y4BR	State Closure
13077	07700001	SG04	2	728	Y4BR	State Closure
13077	07700001	SG04	3	728	Y4BR	State Closure

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
13077	07700001	SG05	1	728	Y5BR	State Closure
13077	07700001	SG05	2	728	Y5BR	State Closure
13077	07700001	SG05	3	728	Y5BR	State Closure
13127	12700004	SG01	1	715	1	State Closure
13127	12700004	SG01	2	715	1	State Closure
13127	12700004	SG02	1	715	2	State Closure
13127	12700004	SG02	2	715	2	State Closure
13237	23700008	SG01	1	709	1	State Closure
13237	23700008	SG01	2	709	1	State Closure
13237	23700008	SG02	1	709	2	State Closure
13237	23700008	SG02	2	709	2	State Closure
13237	23700008	SG03	1	709	3	State Closure
13237	23700008	SG03	2	709	3	State Closure
13237	23700008	SG04	1	709	4	State Closure
13237	23700008	SG04	2	709	4	State Closure
21111	0126	04	01	1363	4	State Closure
21111	0126	05	01	1363	5	State Closure
21111	0126	06	01	1363	6	State Closure
21127	00003	01	1	1353	BSU1	State Closure
21127	00003	01	2	1353	BSU1	State Closure
21127	00003	02	1	1353	BSU2	State Closure
21127	00003	02	2	1353	BSU2	State Closure
21177	00001	003	1	1357	4	State Closure
21177	00001	004	1	1357	5	State Closure
21239	00001	EU05	1	1361	5	State Closure
37031	3703100116	1	S-1			State Closure
37037	3703700063	1	S-1	2708	5	State Closure
37037	3703700063	2	S-1	2708	5	State Closure
37037	3703700063	3	S-2	2708	6	State Closure
37037	3703700063	4	S-2	2708	6	State Closure
37037	3703700063	5	S-3	2708		State Closure
37037	3703700063	6	S-4	2708		State Closure
37037	3703700063	7	S-5	2708		State Closure
37037	3703700063	8	S-6	2708		State Closure
37071	3707100040	13	S-8	2732	10	State Closure
37071	3707100040	20	S-8	2732	10	State Closure
37071	3707100040	21	S-5	2732	7	State Closure
37071	3707100040	22	S-7	2732	9	State Closure
37071	3707100040	23	S-6	2732	8	State Closure
37071	3707100040	3	S-1	2732	8C	State Closure
37071	3707100040	32	S-2	2732	9C	State Closure

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
37071	3707100040	36	S-16	2732	8C	State Closure
37071	3707100040	37	S-16	2732	8C	State Closure
37071	3707100040	5	S-3	2732	10C	State Closure
37071	3707100040	7	S-4	2732	11C	State Closure
37129	3712900036	1	S-1	2713	2	State Closure
37129	3712900036	10	S-5	2713	2B	State Closure
37129	3712900036	13	S-6	2713	2	State Closure
37129	3712900036	16	S-9	2713	2	State Closure
37129	3712900036	17	S-8	2713	2	State Closure
37129	3712900036	2	S-1	2713	1	State Closure
37129	3712900036	3	S-1	2713	1	State Closure
37129	3712900036	4	S-1	2713	1	State Closure
37129	3712900036	5	S-2	2713	3	State Closure
37129	3712900036	6	S-2	2713	3	State Closure
37129	3712900036	9	S-4	2713	2A	State Closure
37145	3714500056	4	S-1	10379	BLR01A	State Closure
37155	3715500147	1	S-1	2716	1	State Closure
37155	3715500147	10	S-2	2716	1	State Closure
37155	3715500147	16	S-3	2716	1	State Closure
37155	3715500147	18	S-5	2716	1	State Closure
37155	3715500147	4	S-1	2716	2	State Closure
37155	3715500147	9	S-2	2716	3	State Closure
37155	3715500166	1	S-1	10382	UNIT1	State Closure
37157	3715700015	1	S-1	2723	1	State Closure
37157	3715700015	10	S-6	2723	1	State Closure
37157	3715700015	11	S-7	2723	1	State Closure
37157	3715700015	12	S-7	2723	1	State Closure
37157	3715700015	13	S-10	2723	1	State Closure
37157	3715700015	14	S-8	2723	1	State Closure
37157	3715700015	16	S-11	2723	1	State Closure
37157	3715700015	2	S-1	2723		State Closure
37157	3715700015	3	S-2	2723	2	State Closure
37157	3715700015	34	S-14	2723	2	State Closure
37157	3715700015	35	S-14	2723	2	State Closure
37157	3715700015	37	S-14	2723	2	State Closure
37157	3715700015	38	S-14	2723	2	State Closure
37157	3715700015	39	S-9	2723	2	State Closure
37157	3715700015	4	S-2	2723		State Closure
37157	3715700015	5	S-3	2723	3	State Closure
37157	3715700015	5	S-4	2723	3	State Closure
37157	3715700015	6	S-3	2723		State Closure

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
37157	3715700015	6	S-4	2723		State Closure
37157	3715700015	7	S-5	2723		State Closure
37157	3715700015	8	S-5	2723		State Closure
37157	3715700015	9	S-6	2723		State Closure
37159	3715900004	10	S-6	2720	8	State Closure
37159	3715900004	11	S-6	2720		State Closure
37159	3715900004	12	S-7	2720		State Closure
37159	3715900004	2	S-2	2720	5	State Closure
37159	3715900004	24	S-11	2720	5	State Closure
37159	3715900004	25	S-11	2720	5	State Closure
37159	3715900004	26	S-11	2720	5	State Closure
37159	3715900004	27	S-9	2720	5	State Closure
37159	3715900004	29	S-11	2720	5	State Closure
37159	3715900004	3	S-2	2720		State Closure
37159	3715900004	4	S-3	2720	6	State Closure
37159	3715900004	5	S-3	2720		State Closure
37159	3715900004	6	S-6	2720	7	State Closure
37159	3715900004	7	S-6	2720		State Closure
37159	3715900004	8	S-6	2720	9	State Closure
37159	3715900004	9	S-6	2720		State Closure
37161	3716100028	1	S-1	2721	1	State Closure
37161	3716100028	10	S-5	2721	1	State Closure
37161	3716100028	13	S-10	2721	1	State Closure
37161	3716100028	16	S-10	2721	1	State Closure
37161	3716100028	19	S-10	2721	1	State Closure
37161	3716100028	3	S-2	2721	2	State Closure
37161	3716100028	31	S-10	2721	2	State Closure
37161	3716100028	32	S-10	2721	2	State Closure
37161	3716100028	35	S-10	2721	2	State Closure
37161	3716100028	36	S-10	2721	2	State Closure
37161	3716100028	6	S-3	2721	3	State Closure
37161	3716100028	7	S-4	2721	4	State Closure
37191	3719100017	1	S-1	2709	1	State Closure
37191	3719100017	10	S-5	2709	1	State Closure
37191	3719100017	11	S-6	2709	1	State Closure
37191	3719100017	12	S-6	2709	1	State Closure
37191	3719100017	13	S-9	2709	1	State Closure
37191	3719100017	14	S-7	2709	1	State Closure
37191	3719100017	3	S-1	2709	2	State Closure
37191	3719100017	5	S-2	2709	3	State Closure
45003	0080-0011	003	1	3295	URQ3	State Closure

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
45003	0080-0011	003	2	3295	URQ3	State Closure
45003	0080-0011	003	3	3295	URQ3	State Closure
45003	0080-0011	003	4	3295	URQ3	State Closure
45003	0080-0011	003	5	3295	URQ3	State Closure
45003	0080-0011	003	6	3295	URQ3	State Closure
45003	0080-0011	003	7	3295	URQ3	State Closure
45003	0080-0011	003	8	3295	URQ3	State Closure
45003	0080-0011	003	9	3295	URQ3	State Closure
45007	0200-0004	001	1	3264	1	State Closure
45007	0200-0004	001	2	3264	1	State Closure
45007	0200-0004	001	3	3264	1	State Closure
45007	0200-0004	001	4	3264	1	State Closure
45007	0200-0004	001	6	3264	1	State Closure
45007	0200-0004	002	1	3264	2	State Closure
45007	0200-0004	002	2	3264	2	State Closure
45007	0200-0004	002	3	3264	2	State Closure
45007	0200-0004	002	4	3264	2	State Closure
45007	0200-0004	003	1	3264	3	State Closure
45007	0200-0004	003	2	3264	3	State Closure
45007	0200-0004	003	3	3264	3	State Closure
45007	0200-0004	003	4	3264	3	State Closure
45007	0200-0004	003	5	3264	3	State Closure
45007	0200-0004	003	6	3264	3	State Closure
45007	0200-0004	003	7	3264	3	State Closure
45007	0200-0004	003	8	3264	3	State Closure
45007	0200-0004	003	9	3264	3	State Closure
45013	0360-0048	001	2			State Closure
45013	0360-0048	002	1			State Closure
45013	0360-0048	002	2			State Closure
45013	0360-0048	003	1			State Closure
45013	0360-0048	003	2			State Closure
45015	0420-0003	003	1	3319	3	State Closure
45015	0420-0003	003	2	3319	3	State Closure
45015	0420-0003	004	1	3319	4	State Closure
45015	0420-0003	004	2	3319	4	State Closure
45019	0560-0305	001	1			State Closure
45029	0740-0002	001	1	3280	CAN1	State Closure
45029	0740-0002	001	2	3280	CAN1	State Closure
45029	0740-0002	001	3	3280	CAN1	State Closure
45029	0740-0002	001	4	3280	CAN1	State Closure
45029	0740-0002	001	5	3280	CAN1	State Closure

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
45029	0740-0002	001	6	3280	CAN1	State Closure
45029	0740-0002	002	1	3280	CAN2	State Closure
45029	0740-0002	002	2	3280	CAN2	State Closure
45029	0740-0002	002	3	3280	CAN2	State Closure
45029	0740-0002	002	4	3280	CAN2	State Closure
45029	0740-0002	002	5	3280	CAN2	State Closure
45029	0740-0002	002	6	3280	CAN2	State Closure
45029	0740-0002	003	1	3280	CAN3	State Closure
45029	0740-0002	003	2	3280	CAN3	State Closure
45029	0740-0002	003	3	3280	CAN3	State Closure
45029	0740-0002	003	4	3280	CAN3	State Closure
45029	0740-0002	003	5	3280	CAN3	State Closure
45029	0740-0002	003	6	3280	CAN3	State Closure
45031	0820-0002	001	1	3251	1	State Closure
45031	0820-0002	001	2	3251	1	State Closure
45031	0820-0002	001	4	3251	1	State Closure
45051	1340-0003	001	1	3317	1	State Closure
45051	1340-0003	001	2	3317	1	State Closure
45051	1340-0003	002	1	3317	2	State Closure
45051	1340-0003	002	2	3317	2	State Closure
45063	1560-0003	001	1	3287	MCM1	State Closure
45063	1560-0003	001	3	3287	MCM1	State Closure
45063	1560-0003	001	6	3287	MCM1	State Closure
45063	1560-0003	001	7	3287	MCM1	State Closure
45063	1560-0003	002	1	3287	MCM2	State Closure
45063	1560-0003	002	3	3287	MCM2	State Closure
45063	1560-0003	002	4	3287	MCM2	State Closure
45063	1560-0003	002	5	3287	MCM2	State Closure
54023	5402300014	001	1	7537	1A	State Closure
54023	5402300014	001	2	7537	1A	State Closure
54023	5402300014	002	1	7537	1B	State Closure
54023	5402300014	002	2	7537	1B	State Closure
54039	5403900006	001	1	3936	1	State Closure
54039	5403900006	001	2	3936	1	State Closure
54039	5403900006	002	1	3936	2	State Closure
54039	5403900006	002	2	3936	2	State Closure
54049	5404900009	001	1	3945	7	State Closure
54049	5404900009	001	2	3945	7	State Closure
54049	5404900009	002	1	3945	8	State Closure
54049	5404900009	002	2	3945	8	State Closure
54051	5405100006	001	1	3947	1	State Closure

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
54051	5405100006	001	2	3947	1	State Closure
54051	5405100006	002	1	3947	2	State Closure
54051	5405100006	002	2	3947	2	State Closure
54051	5405100006	003	1	3947	3	State Closure
54051	5405100006	003	2	3947	3	State Closure
54053	5405300001	001	1	3938	11	State Closure
54053	5405300001	001	2	3938	11	State Closure
54053	5405300001	002	1	3938	21	State Closure
54053	5405300001	002	2	3938	21	State Closure
54053	5405300001	003	1	3938	31	State Closure
54053	5405300001	003	2	3938	31	State Closure
54053	5405300001	004	1	3938	41	State Closure
54053	5405300001	004	2	3938	41	State Closure
54053	5405300001	005	1	3938	51	State Closure
54053	5405300001	005	2	3938	51	State Closure
54073	5407300004	001	1	3946	1	State Closure
54073	5407300004	001	2	3946	1	State Closure
54073	5407300004	001	3	3946	1	State Closure
54073	5407300004	002	1	3946	2	State Closure
54073	5407300004	002	2	3946	2	State Closure
54073	5407300004	002	3	3946	2	State Closure
54077	5407700001	001	1	3942	1	State Closure
54077	5407700001	001	2	3942	1	State Closure
54077	5407700001	002	1	3942	2	State Closure
54077	5407700001	002	2	3942	2	State Closure
54077	5407700001	003	1	3942	3	State Closure
54077	5407700001	003	2	3942	3	State Closure
54077	5407700001	003	3	3942	3	State Closure

Appendix D: EGU Units That Had Controls Applied in 2018

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
01033	0010	014	01	47	5	State Supplied Control
01055	0002	002	01	7	1	State ERTAC Spreadsheet - Fuel Switch
01055	0002	003	01	7	2	State ERTAC Spreadsheet - Fuel Switch
01071	0008	008	01	50	7	State Supplied Control
01071	0008	009	01	50	8	State Supplied Control
01073	0107300011	101	1	6002	1	State ERTAC Spreadsheet
01073	0107300011	101	1	6002	1	State Supplied Control
01073	0107300011	102	1	6002	2	State ERTAC Spreadsheet
01073	0107300011	102	1	6002	2	State ERTAC Spreadsheet - PM Default
01073	0107300011	102	1	6002	2	State Supplied Control
01073	0107300011	103	1	6002	3	State ERTAC Spreadsheet
01073	0107300011	103	1	6002	3	State ERTAC Spreadsheet - PM Default
01073	0107300011	103	1	6002	3	State Supplied Control
01073	0107300011	104	1	6002	4	State ERTAC Spreadsheet
01073	0107300011	104	1	6002	4	State ERTAC Spreadsheet - PM Default
01073	0107300011	104	1	6002	4	State Supplied Control
01097	1001	002	01	3	1	State ERTAC Spreadsheet - Fuel Switch
01097	1001	003	01	3	2	State ERTAC Spreadsheet - Fuel Switch
01097	1001	004	01	3	3	State ERTAC Spreadsheet - Fuel Switch
01097	1001	006	01	3	5	State ERTAC Spreadsheet
01097	1001	006	01	3	5	State Supplied Value
01117	0005	002	01	26	1	State ERTAC Spreadsheet - Fuel Switch
01117	0005	003	01	26	2	State ERTAC Spreadsheet - Fuel Switch
01117	0005	004	01	26	3	State ERTAC Spreadsheet - Fuel Switch
01117	0005	005	01	26	4	State ERTAC Spreadsheet - Fuel Switch
01117	0005	006	01	26	5	State Supplied Control
01117	0005	006	01	26	5	State Supplied Value
01127	0001	006	01	8	8	State Supplied Value
01127	0001	007	01	8	9	State ERTAC Spreadsheet
01127	0001	008	01	8	10	State ERTAC Spreadsheet

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
01129	0001	002	01	56	1	State ERTAC Spreadsheet
01129	0001	002	02	56	1	State ERTAC Spreadsheet
01129	0001	003	01	56	2	State ERTAC Spreadsheet
01129	0001	004	01	56	3	State ERTAC Spreadsheet
01129	0012	003	01	7063	**2	RICE 2014
01129	0012	004	01	7063	**3	RICE 2014
12005	0050014	1	1	643	1	State Supplied Control
12005	0050014	1	2	643	1	State Supplied Control
12005	0050014	1	3	643	1	State Supplied Control
12005	0050014	2	1	643	2	State Supplied Control
12005	0050014	2	2	643	2	State Supplied Control
12005	0050014	2	3	643	2	State Supplied Control
12005	0050014	9	1	643		RICE 2014
12009	0090006	4	1	609		RICE 2014
12009	0090006	5	1	609		RICE 2014
12011	0110036	18	1	617		RICE 2014
12011	0110037	40	18	613		RICE 2014
12017	0170004	3	2	628	5	State Supplied Control
12017	0170004	4	2	628	4	State Supplied Control
12031	0310045	16	1	207	1	State Supplied Control
12031	0310045	16	2	207	1	State Supplied Control
12031	0310045	16	3	207	1	State Supplied Control
12031	0310045	17	1	207	2	State Supplied Control
12031	0310045	17	2	207	2	State Supplied Control
12031	0310045	17	3	207	2	State Supplied Control
12031	0310166	15	1			RICE 2014
12033	0330045	11	1	641		RICE 2014
12033	0330045	4	2	641	4	State Supplied Control
12033	0330045	4	3	641	4	State Supplied Control
12033	0330045	4	4	641	4	State Supplied Control
12033	0330045	4	5	641	4	State Supplied Control
12033	0330045	5	2	641	5	State Supplied Control
12033	0330045	5	3	641	5	State Supplied Control
12033	0330045	5	4	641	5	State Supplied Control
12033	0330045	5	5	641	5	State Supplied Control
12033	0330045	6	1	641	6	State Supplied Control
12033	0330045	6	2	641	6	State Supplied Control
12033	0330045	6	3	641	6	State Supplied Control
12033	0330045	6	3	641	6	State Supplied Value
12033	0330045	7	1	641	7	State Supplied Control
12033	0330045	7	2	641	7	State Supplied Control

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
12033	0330045	7	3	641	7	State Supplied Control
12055	0550018	1	2			RICE 2014
12055	0550018	2	2			RICE 2014
12057	0570039	1	1	645	BB01	State Supplied Control
12057	0570039	1	2	645	BB01	State Supplied Control
12057	0570039	2	1	645	BB02	State Supplied Control
12057	0570039	2	2	645	BB02	State Supplied Control
12057	0570039	3	1	645	BB03	State Supplied Control
12057	0570039	3	2	645	BB03	State Supplied Control
12057	0570039	4	1	645	BB04	State Supplied Control
12057	0570039	4	2	645	BB04	State Supplied Control
12063	0630014	5	1	642		RICE 2014
12073	0730003	6	1	688		RICE 2014
12073	0730003	7	1	688		RICE 2014
12081	0810010	3	2	6042		RICE 2014
12085	0850001	15	1	6043		RICE 2014
12085	0850001	9	2	6043		RICE 2014
12086	0250003	5	1	621		RICE 2014
12086	0250003	6	1	621		RICE 2014
12086	0250003	7	1	621		RICE 2014
12086	0250013	19	2			RICE 2014
12086	0250013	20	2			RICE 2014
12086	0250013	21	2			RICE 2014
12086	0250013	8	2			RICE 2014
12086	0250013	9	2			RICE 2014
12087	0870003	10	1	6584		RICE 2014
12087	0870004	1	1			RICE 2014
12087	0870004	2	1			RICE 2014
12087	0870004	3	1			RICE 2014
12087	0870004	4	1			RICE 2014
12087	0870004	6	1			RICE 2014
12087	0870004	7	1			RICE 2014
12087	0870004	8	2			RICE 2014
12087	0870004	9	1			RICE 2014
12095	0950111	101	1			RICE 2014
12095	0950111	101	2			RICE 2014
12095	0950111	79	1			RICE 2014
12095	0950111	80	1			RICE 2014
12095	0950137	24	1	564		RICE 2014
12095	0951273	2	1			RICE 2014
12097	0970002	1	1			RICE 2014

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
12097	0970002	1	2			RICE 2014
12097	0970002	2	1			RICE 2014
12097	0970002	2	2			RICE 2014
12097	0970002	3	1			RICE 2014
12097	0970002	3	2			RICE 2014
12097	0970002	4	1			RICE 2014
12097	0970002	4	2			RICE 2014
12097	0970002	6	1			RICE 2014
12097	0970002	6	2			RICE 2014
12097	0970002	7	1			RICE 2014
12097	0970002	7	2			RICE 2014
12099	0990045	1	1	673		RICE 2014
12099	0990045	2	1	673		RICE 2014
12099	0990045	3	1	673		RICE 2014
12099	0990045	4	1	673		RICE 2014
12099	0990045	5	1	673		RICE 2014
12101	1010017	1	3	8048	1	State Supplied Value
12101	1010017	2	2	8048	2	State Supplied Value
12101	1010071	4	1			RICE 2014
12105	1050004	13	1	676		RICE 2014
12105	1050004	2	2	676		RICE 2014
12105	1050004	3	2	676		RICE 2014
12105	1050004	6	3	676	3	State Supplied Value
12105	1050233	7	1	7242		RICE 2014
12105	1050352	1	1			RICE 2014
12105	1050352	10	1			RICE 2014
12105	1050352	11	1			RICE 2014
12105	1050352	12	1			RICE 2014
12105	1050352	13	1			RICE 2014
12105	1050352	14	1			RICE 2014
12105	1050352	15	1			RICE 2014
12105	1050352	16	1			RICE 2014
12105	1050352	17	1			RICE 2014
12105	1050352	18	1			RICE 2014
12105	1050352	19	1			RICE 2014
12105	1050352	2	1			RICE 2014
12105	1050352	20	1			RICE 2014
12105	1050352	3	1			RICE 2014
12105	1050352	4	1			RICE 2014
12105	1050352	5	1			RICE 2014
12105	1050352	6	1			RICE 2014

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
12105	1050352	7	1			RICE 2014
12105	1050352	8	1			RICE 2014
12105	1050352	9	1			RICE 2014
12107	1070014	12	2	6246		RICE 2014
12107	1070025	1	2	136	1	State Supplied Value
12107	1070025	1	3	136	1	State Supplied Value
12107	1070025	2	2	136	2	State Supplied Value
12107	1070025	2	3	136	2	State Supplied Value
12111	1110003	1	2	658		RICE 2014
12111	1110003	2	2	658		RICE 2014
12127	1270003	3	2			RICE 2014
12127	1270009	4	2	620		RICE 2014
12129	1290001	12	1	689		RICE 2014
12129	1290001	13	1	689		RICE 2014
13015	01500011	SG01	1	703	1BLR	State ERTAC Spreadsheet
13015	01500011	SG01	1	703	1BLR	State ERTAC Spreadsheet - PM Default
13015	01500011	SG01	1	703	1BLR	State Supplied Value
13015	01500011	SG01	2	703	1BLR	State ERTAC Spreadsheet - PM Default
13015	01500011	SG02	1	703	2BLR	State ERTAC Spreadsheet
13015	01500011	SG02	1	703	2BLR	State ERTAC Spreadsheet - PM Default
13015	01500011	SG02	1	703	2BLR	State Supplied Value
13015	01500011	SG02	2	703	2BLR	State ERTAC Spreadsheet - PM Default
13015	01500011	SG03	1	703	3BLR	State ERTAC Spreadsheet
13015	01500011	SG03	1	703	3BLR	State ERTAC Spreadsheet - PM Default
13015	01500011	SG03	1	703	3BLR	State Supplied Value
13015	01500011	SG03	2	703	3BLR	State ERTAC Spreadsheet - PM Default
13015	01500011	SG04	1	703	4BLR	State ERTAC Spreadsheet
13015	01500011	SG04	1	703	4BLR	State ERTAC Spreadsheet - PM Default
13015	01500011	SG04	1	703	4BLR	State Supplied Value
13015	01500011	SG04	2	703	4BLR	State ERTAC Spreadsheet - PM Default
13077	07700001	SG06	2	728	Y6BR	State ERTAC Spreadsheet - PM Default
13077	07700001	SG06	3	728	Y6BR	State ERTAC Spreadsheet - PM Default
13077	07700001	SG07	2	728	Y7BR	State ERTAC Spreadsheet - PM

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
						Default
13077	07700001	SG07	3	728	Y7BR	State ERTAC Spreadsheet - PM Default
13115	11500003	SG01	1	708	1	State ERTAC Spreadsheet
13115	11500003	SG01	1	708	1	State ERTAC Spreadsheet - PM Default
13115	11500003	SG01	2	708	1	State ERTAC Spreadsheet - PM Default
13115	11500003	SG02	1	708	2	State ERTAC Spreadsheet
13115	11500003	SG02	1	708	2	State ERTAC Spreadsheet - PM Default
13115	11500003	SG02	2	708	2	State ERTAC Spreadsheet - PM Default
13115	11500003	SG03	1	708	3	State ERTAC Spreadsheet
13115	11500003	SG03	1	708	3	State ERTAC Spreadsheet - PM Default
13115	11500003	SG03	2	708	3	State ERTAC Spreadsheet - PM Default
13115	11500003	SG04	1	708	4	State ERTAC Spreadsheet
13115	11500003	SG04	1	708	4	State ERTAC Spreadsheet - PM Default
13115	11500003	SG04	1	708	4	State Supplied Value
13115	11500003	SG04	2	708	4	State ERTAC Spreadsheet - PM Default
13149	14900001	SG01	1	6052	1	State ERTAC Spreadsheet
13149	14900001	SG01	1	6052	1	State ERTAC Spreadsheet - PM Default
13149	14900001	SG01	1	6052	1	State Supplied Value
13149	14900001	SG01	2	6052	1	State ERTAC Spreadsheet - PM Default
13149	14900001	SG02	1	6052	2	State ERTAC Spreadsheet
13149	14900001	SG02	1	6052	2	State ERTAC Spreadsheet - PM Default
13149	14900001	SG02	1	6052	2	State Supplied Value
13149	14900001	SG02	2	6052	2	State ERTAC Spreadsheet - PM Default
13163	16300016	GG1	2			RICE 2014
13179	17900018	ICOM	1			RICE 2014
13207	20700008	SG01	1	6257	1	State ERTAC Spreadsheet
13207	20700008	SG01	1	6257	1	State ERTAC Spreadsheet - PM Default
13207	20700008	SG01	1	6257	1	State Supplied Value
13207	20700008	SG01	2	6257	1	State ERTAC Spreadsheet - PM Default

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
13207	20700008	SG02	1	6257	2	State ERTAC Spreadsheet
13207	20700008	SG02	1	6257	2	State ERTAC Spreadsheet - PM Default
13207	20700008	SG02	1	6257	2	State Supplied Value
13207	20700008	SG02	2	6257	2	State ERTAC Spreadsheet - PM Default
13207	20700008	SG03	1	6257	3	State ERTAC Spreadsheet
13207	20700008	SG03	1	6257	3	State ERTAC Spreadsheet - PM Default
13207	20700008	SG03	1	6257	3	State Supplied Value
13207	20700008	SG03	2	6257	3	State ERTAC Spreadsheet - PM Default
13207	20700008	SG04	1	6257	4	State ERTAC Spreadsheet
13207	20700008	SG04	1	6257	4	State ERTAC Spreadsheet - PM Default
13207	20700008	SG04	1	6257	4	State Supplied Value
13207	20700008	SG04	2	6257	4	State ERTAC Spreadsheet - PM Default
21015	00029	002	1	6018	2	State Supplied Value
21041	00010	001	1	1356	1	State Supplied Value
21041	00010	002	1	1356	2	State ERTAC Spreadsheet - PM Default
21041	00010	002	1	1356	2	State Supplied Value
21041	00010	003	1	1356	3	State ERTAC Spreadsheet - PM Default
21041	00010	003	1	1356	3	State Supplied Value
21041	00010	004	1	1356	4	State ERTAC Spreadsheet - PM Default
21041	00010	004	1	1356	4	State Supplied Value
21059	00027	EU001	1	1374	1	State Supplied Value
21059	00027	EU002	1	1374	2	State Supplied Value
21111	0125	02	01	1366	13	RICE 2014
21111	0127	03	01	1364	3	State Supplied Value
21111	0127	04	01	1364	4	State Supplied Value
21161	00009	EU01	1	6041	1	State ERTAC Spreadsheet - PM Default
21161	00009	EU01	1	6041	1	State Supplied Value
21161	00009	EU02	1	6041	2	State ERTAC Spreadsheet - PM Default
21161	00009	EU02	1	6041	2	State Supplied Value
21167	00001	001	1	1355	1	State ERTAC Spreadsheet - PM Default
21167	00001	001	1	1355	1	State Supplied Value
21167	00001	002	1	1355	2	State ERTAC Spreadsheet - PM

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
						Default
21167	00001	002	1	1355	2	State Supplied Value
21167	00001	003	1	1355	3	State ERTAC Spreadsheet
21167	00001	003	1	1355	3	State ERTAC Spreadsheet - PM Default
21167	00001	003	1	1355	3	State Supplied Value
21177	00006	EU01	1	1378	1	State Supplied Value
21177	00006	EU01	2	1378	1	State Supplied Value
21177	00006	EU01	3	1378	1	State Supplied Value
21177	00006	EU01	4	1378	1	State Supplied Value
21177	00006	EU01	5	1378	1	State Supplied Value
21177	00006	EU02	1	1378	2	State Supplied Value
21177	00006	EU02	2	1378	2	State Supplied Value
21177	00006	EU02	3	1378	2	State Supplied Value
21177	00006	EU02	4	1378	2	State Supplied Value
21177	00006	EU03	1	1378	3	State Supplied Value
21177	00006	EU03	2	1378	3	State Supplied Value
21177	00006	EU03	3	1378	3	State Supplied Value
21177	00006	EU03	4	1378	3	State Supplied Value
21177	00006	EU03	5	1378	3	State Supplied Value
21183	00069	EU-01	1	6823	W1	State Supplied Value
21199	00005	001	1	1384	1	State ERTAC Spreadsheet - PM Default
21199	00005	001	1	1384	1	State Supplied Value
21199	00005	001	2	1384	1	State ERTAC Spreadsheet - PM Default
21199	00005	001	2	1384	1	State Supplied Value
21199	00005	002	1	1384	2	State ERTAC Spreadsheet
21199	00005	002	1	1384	2	State ERTAC Spreadsheet - PM Default
21199	00005	002	1	1384	2	State Supplied Value
21199	00005	002	2	1384	2	State ERTAC Spreadsheet
21199	00005	002	2	1384	2	State ERTAC Spreadsheet - PM Default
21199	00005	002	2	1384	2	State Supplied Value
21223	00002	001	1	6071	1	State Supplied Value
21233	00001	EU02	1	1382	H1	State Supplied Value
21233	00001	EU03	1	1382	H2	State Supplied Value
28019	2801900011	003	1	55694		RICE 2014
28019	2801900011	004	1	55694		RICE 2014
28019	2801900018	001	01	55706	CTG1	RICE 2014
28019	2801900018	002	01	55706	CTG2	RICE 2014

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
28019	2801900018	003	01	55706	CTG3	RICE 2014
28033	2803300095	005	1	55269		RICE 2014
28033	2803300095	006	1	55269		RICE 2014
28033	2803300095	010	1	55269		RICE 2014
28033	2803300095	011	1	55269		RICE 2014
28033	2803300095	012	1	55269		RICE 2014
28039	2803900014	002	1			RICE 2014
28067	2806700035	004	1	2070	**4	RICE 2014
28073	2807300021	004	1	6061		RICE 2014
28073	2807300021	005	1	6061		RICE 2014
28083	2808300048	005	1			RICE 2014
28083	2808300048	006	1			RICE 2014
28083	2808300048	007	1			RICE 2014
28083	2808300048	008	1			RICE 2014
28083	2808300048	009	1			RICE 2014
28083	2808300048	010	1			RICE 2014
28083	2808300048	011	1			RICE 2014
28083	2808300048	012	1			RICE 2014
28087	2808700053	005	1			RICE 2014
28087	2808700053	006	1			RICE 2014
28089	2808900070	001	1			RICE 2014
28089	2808900070	002	1			RICE 2014
28089	2808900070	003	1			RICE 2014
28089	2808900070	004	1			RICE 2014
28089	2808900070	005	1			RICE 2014
28089	2808900070	014	1			RICE 2014
37007	3700700032	1	S-1			State Supplied Value
37007	3700700032	2	S-2			State Supplied Value
37007	3700700032	3	S-3			State Supplied Value
37007	3700700032	4	S-4			State Supplied Value
37019	3701900051	7	S-10			State Supplied Value
37019	3701900051	7	S-4			State Supplied Value
37019	3701900051	7	S-6			State Supplied Value
37019	3701900051	7	S-7			State Supplied Value
37019	3701900051	8	S-11			State Supplied Value
37019	3701900051	8	S-12			State Supplied Value
37019	3701900067	8	S-8	10378		RICE 2014
37021	0628	1	22	2706	1	State Supplied Value
37021	0628	2	22	2706	2	State Supplied Value
37021	0628	3	P1	2706	3	State Supplied Value
37021	0628	4	P1	2706	4	State Supplied Value

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
37023	3702300178	1	S-1			RICE 2014
37035	3703500073	13	S-4	2727	4	State Supplied Value
37035	3703500073	5	S-3	2727	3	State Supplied Value
37035	3703500073	53	S-1	2727	1	State Supplied Value
37035	3703500073	55	S-2	2727	2	State Supplied Value
37051	3705100094	13	S-18	1016		RICE 2014
37051	3705100094	13	S-19	1016		RICE 2014
37055	3705500021	1	S-3			RICE 2014
37055	3705500021	2	S-1			RICE 2014
37057	3705700339	1	S-1			RICE 2014
37057	3705700340	1	S-1			RICE 2014
37071	3707100039	1	S-1	2718	1	State Supplied Value
37071	3707100039	12	S-7	2718	1	State Supplied Value
37071	3707100039	3	S-2	2718	2	State Supplied Value
37071	3707100039	5	S-3	2718	3	State Supplied Value
37071	3707100039	7	S-4	2718	4	State Supplied Value
37071	3707100039	9	S-5	2718	5	State Supplied Value
37071	3707100325	1	S-1			RICE 2014
37071	3707100325	2	S-2			RICE 2014
37081	3708101143	1	S-1			RICE 2014
37095	3709500028	1	S-1			RICE 2014
37095	3709500028	2	S-2			RICE 2014
37109	3710900082	37	S-1	7277		State Supplied Value
37109	3710900082	53	S-23	7277		State Supplied Value
37119	269	9	ES-5 ,			State Supplied Value
37129	3712900036	8	S-3	2713		State Supplied Value
37145	3714500029	1	S-1	2712	1	State Supplied Value
37145	3714500029	14	S-10	2712	1	RICE 2014
37145	3714500029	14	S-10	2712	1	State Supplied Value
37145	3714500029	16	S-12	2712	2	State Supplied Value
37145	3714500029	17	S-12	2712	2	State Supplied Value
37145	3714500029	18	S-14	2712	4A	State Supplied Value
37145	3714500029	19	S-14	2712	4A	State Supplied Value
37145	3714500029	2	S-1	2712	1	State ERTAC Spreadsheet
37145	3714500029	26	S-15	2712	1	State ERTAC Spreadsheet
37145	3714500029	5	S-3	2712	3A	State Supplied Value
37145	3714500029	6	S-3	2712	3B	State Supplied Value
37145	3714500029	7	S-999	2712	4B	State Supplied Value
37145	3714500029	8	S-4	2712	4B	State Supplied Value
37145	3714500045	1	S-1	6250	1A	State Supplied Value
37145	3714500045	2	S-1	6250	1B	State Supplied Value

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
37153	3715300070	10	S-6	7805		State Supplied Value
37153	3715300070	11	S-8	7805		State Supplied Value
37153	3715300070	12	S-8	7805		State Supplied Value
37153	3715300070	14	S-10	7805		State Supplied Value
37153	3715300070	16	S-12	7805		State Supplied Value
37153	3715300070	17	S-14	7805		State Supplied Value
37153	3715300070	3	S-3	7805		State Supplied Value
37153	3715300070	4	S-3	7805		State Supplied Value
37153	3715300070	5	S-4	7805		State Supplied Value
37153	3715300070	6	S-4	7805		State Supplied Value
37153	3715300070	7	S-5	7805		State Supplied Value
37153	3715300070	8	S-5	7805		State Supplied Value
37153	3715300070	9	S-6	7805		State Supplied Value
37155	3715500147	2	S-1	2716		State Supplied Value
37155	3715500147	20	S-4	2716		State Supplied Value
37155	3715500147	22	S-6	2716		State Supplied Value
37155	3715500147	6	S-1	2716		State Supplied Value
37157	3715700156	15	2	55116	CT1	State Supplied Value
37157	3715700156	15	2	55116	CT2	State Supplied Value
37157	3715700156	15	2	55116	CT3	State Supplied Value
37157	3715700156	15	2	55116	CT4	State Supplied Value
37157	3715700156	15	S-11	55116	CT5	State Supplied Value
37157	3715700156	15	S-12	55116	CT5	State Supplied Value
37157	3715700156	15	S-13	55116	CT5	State Supplied Value
37157	3715700156	15	S-14	55116	CT5	State Supplied Value
37157	3715700156	15	S-15	55116	CT5	State Supplied Value
37157	3715700156	15	S-999	55116	CT5	State Supplied Value
37157	3715700156	15	S-999a	55116	CT5	State Supplied Value
37157	3715700156	15	S-999b	55116	CT5	State Supplied Value
37157	3715700156	15	S-999c	55116	CT5	State Supplied Value
37157	3715700156	15	S-999d	55116	CT5	State Supplied Value
37157	3715700156	16	S-11	55116	CT5	State Supplied Value
37157	3715700156	16	S-12	55116	CT5	State Supplied Value
37157	3715700156	16	S-13	55116	CT5	State Supplied Value
37157	3715700156	16	S-14	55116	CT5	State Supplied Value
37157	3715700156	16	S-15	55116	CT5	State Supplied Value
37157	3715700156	16	S-999	55116	CT5	State Supplied Value
37157	3715700156	16	S-999a	55116	CT5	State Supplied Value
37157	3715700156	16	S-999b	55116	CT5	State Supplied Value
37157	3715700156	16	S-999c	55116	CT5	State Supplied Value
37157	3715700156	16	S-999d	55116	CT5	State Supplied Value

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
37161	3716100028	2	S-1	2721		State Supplied Value
37161	3716100028	4	S-2	2721		State Supplied Value
37161	3716100028	5	S-3	2721		State Supplied Value
37161	3716100028	8	S-4	2721		State Supplied Value
37161	3716100028	9	S-5	2721	5	State Supplied Value
37169	3716900004	1	S-1	8042	1	State Supplied Value
37169	3716900004	2	S-2	8042	2	State Supplied Value
37169	3716900004	25	S-12	8042	2	State Supplied Value
37169	3716900004	5	S-6	8042		State Supplied Value
37169	3716900004	6	S-7	8042		State Supplied Value
37183	3718300595	1	S-1			RICE 2014
37183	3718300599	13	S-10			State Supplied Value
37183	3718300599	14	S-11			State Supplied Value
37191	3719100017	2	S-1	2709		State Supplied Value
37191	3719100017	4	S-1	2709		State Supplied Value
37191	3719100017	6	S-2	2709		State Supplied Value
37191	3719100017	7	S-3	2709		State Supplied Value
37191	3719100017	8	S-4	2709		State Supplied Value
37191	3719100017	9	S-5	2709		State Supplied Value
45021	0600-0081	FP1	1	7981		RICE 2014
47001	0009	001	01	3396	1	State ERTAC Spreadsheet
47001	0009	001	01	3396	1	State ERTAC Spreadsheet - PM Default
47001	0009	001	02	3396	1	State ERTAC Spreadsheet
47001	0009	001	02	3396	1	State ERTAC Spreadsheet - PM Default
47085	0011	004	01	3406	4	State ERTAC Spreadsheet - Rate Change
47085	0011	004	02	3406	4	State ERTAC Spreadsheet - Rate Change
47085	0011	004	03	3406	4	State ERTAC Spreadsheet - Rate Change
47145	0013	001	01	3407	1	State ERTAC Spreadsheet
47145	0013	001	01	3407	1	State ERTAC Spreadsheet - PM default
47145	0013	001	02	3407	1	State ERTAC Spreadsheet
47145	0013	001	02	3407	1	State ERTAC Spreadsheet - PM default
47145	0013	001	03	3407	1	State ERTAC Spreadsheet
47145	0013	001	03	3407	1	State ERTAC Spreadsheet - PM default
47145	0013	002	01	3407	2	State ERTAC Spreadsheet
47145	0013	002	01	3407	2	State ERTAC Spreadsheet - PM

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
						default
47145	0013	002	02	3407	2	State ERTAC Spreadsheet
47145	0013	002	02	3407	2	State ERTAC Spreadsheet - PM default
47145	0013	003	01	3407	3	State ERTAC Spreadsheet
47145	0013	003	01	3407	3	State ERTAC Spreadsheet - PM default
47145	0013	003	02	3407	3	State ERTAC Spreadsheet
47145	0013	003	02	3407	3	State ERTAC Spreadsheet - PM default
47145	0013	004	01	3407	4	State ERTAC Spreadsheet
47145	0013	004	01	3407	4	State ERTAC Spreadsheet - PM default
47145	0013	004	02	3407	4	State ERTAC Spreadsheet
47145	0013	004	02	3407	4	State ERTAC Spreadsheet - PM default
47145	0013	005	01	3407	5	State ERTAC Spreadsheet
47145	0013	005	01	3407	5	State ERTAC Spreadsheet - PM default
47145	0013	005	02	3407	5	State ERTAC Spreadsheet
47145	0013	005	02	3407	5	State ERTAC Spreadsheet - PM default
47145	0013	006	01	3407	6	State ERTAC Spreadsheet
47145	0013	006	01	3407	6	State ERTAC Spreadsheet - PM default
47145	0013	006	02	3407	6	State ERTAC Spreadsheet
47145	0013	006	02	3407	6	State ERTAC Spreadsheet - PM default
47145	0013	007	01	3407	7	State ERTAC Spreadsheet
47145	0013	007	01	3407	7	State ERTAC Spreadsheet - PM default
47145	0013	007	02	3407	7	State ERTAC Spreadsheet
47145	0013	007	02	3407	7	State ERTAC Spreadsheet - PM default
47145	0013	008	01	3407	8	State ERTAC Spreadsheet
47145	0013	008	01	3407	8	State ERTAC Spreadsheet - PM default
47145	0013	008	02	3407	8	State ERTAC Spreadsheet
47145	0013	008	02	3407	8	State ERTAC Spreadsheet - PM default
47145	0013	008	04	3407	8	State ERTAC Spreadsheet
47145	0013	008	04	3407	8	State ERTAC Spreadsheet - PM default
47145	0013	009	01	3407	9	State ERTAC Spreadsheet

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
47145	0013	009	01	3407	9	State ERTAC Spreadsheet - PM default
47145	0013	009	02	3407	9	State ERTAC Spreadsheet
47145	0013	009	02	3407	9	State ERTAC Spreadsheet - PM default
47145	0013	009	04	3407	9	State ERTAC Spreadsheet
47145	0013	009	04	3407	9	State ERTAC Spreadsheet - PM default
47157	00528	CT1	DOIL1	3393		RICE 2014
47157	00528	CT10	DOIL10	3393		RICE 2014
47157	00528	CT11	DOIL11	3393		RICE 2014
47157	00528	CT12	DOIL12	3393		RICE 2014
47157	00528	CT13	DOIL13	3393		RICE 2014
47157	00528	CT14	DOIL14	3393		RICE 2014
47157	00528	CT15	DOIL15	3393		RICE 2014
47157	00528	CT16	DOIL16	3393		RICE 2014
47157	00528	CT17	DOIL17	3393	ACT17	RICE 2014
47157	00528	CT18	DOIL18	3393	ACT18	RICE 2014
47157	00528	CT19	DOIL19	3393	ACT19	RICE 2014
47157	00528	CT2	DOIL2	3393		RICE 2014
47157	00528	CT20	DOIL20	3393	ACT20	RICE 2014
47157	00528	CT3	DOIL3	3393		RICE 2014
47157	00528	CT4	DOIL4	3393		RICE 2014
47157	00528	CT5	DOIL5	3393		RICE 2014
47157	00528	CT6	DOIL6	3393		RICE 2014
47157	00528	CT7	DOIL7	3393		RICE 2014
47157	00528	CT8	DOIL8	3393		RICE 2014
47157	00528	CT9	DOIL9	3393		RICE 2014
51001	00012	1	1			RICE 2014
51017	00003	1	1			RICE 2014
51017	00003	2	1			RICE 2014
51017	00003	3	1			RICE 2014
51041	00002	13	1	3797		RICE 2014
51041	00002	3	1	3797	3	State ERTAC Spreadsheet
51041	00002	3	1	3797	3	State ERTAC Spreadsheet - PM Default
51041	00002	3	2	3797	3	State ERTAC Spreadsheet
51041	00002	3	2	3797	3	State ERTAC Spreadsheet - PM Default
51041	00002	4	1	3797	4	State ERTAC Spreadsheet
51041	00002	4	1	3797	4	State ERTAC Spreadsheet - PM Default

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
51041	00002	4	1	3797	4	State ERTAC Spreadsheet - Rate Change
51041	00002	4	2	3797	4	State ERTAC Spreadsheet
51041	00002	4	2	3797	4	State ERTAC Spreadsheet - PM Default
51041	00002	4	2	3797	4	State ERTAC Spreadsheet - Rate Change
51041	00002	6	1	3797	5	State ERTAC Spreadsheet
51041	00002	6	1	3797	5	State ERTAC Spreadsheet - PM Default
51041	00002	6	1	3797	5	State ERTAC Spreadsheet - Rate Change
51041	00002	6	2	3797	5	State ERTAC Spreadsheet
51041	00002	6	2	3797	5	State ERTAC Spreadsheet - PM Default
51041	00002	6	2	3797	5	State ERTAC Spreadsheet - Rate Change
51041	00002	6	3	3797	5	State ERTAC Spreadsheet
51041	00002	6	3	3797	5	State ERTAC Spreadsheet - PM Default
51041	00002	6	3	3797	5	State ERTAC Spreadsheet - Rate Change
51041	00002	8	1	3797	6	State ERTAC Spreadsheet
51041	00002	8	1	3797	6	State ERTAC Spreadsheet - PM Default
51041	00002	8	1	3797	6	State ERTAC Spreadsheet - Rate Change
51041	00002	8	2	3797	6	State ERTAC Spreadsheet
51041	00002	8	2	3797	6	State ERTAC Spreadsheet - PM Default
51041	00002	8	2	3797	6	State ERTAC Spreadsheet - Rate Change
51047	00047	4	1			RICE 2014
51065	00001	1	1	3796	3	State ERTAC Spreadsheet - Fuel Switch
51065	00001	1	2	3796	3	State ERTAC Spreadsheet - Rate Change
51065	00001	1	3	3796	3	State ERTAC Spreadsheet - Rate Change
51065	00001	2	1	3796	4	State ERTAC Spreadsheet - Fuel Switch
51065	00001	2	2	3796	4	State ERTAC Spreadsheet - Rate Change
51065	00001	2	3	3796	4	State ERTAC Spreadsheet - Rate Change

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
51065	00021	8	8	55439		RICE 2014
51083	00046	4	1	7213		RICE 2014
51131	00008	1	1			RICE 2014
51131	00008	2	1			RICE 2014
51131	00008	3	1			RICE 2014
51131	00008	4	1			RICE 2014
51131	00008	5	1			RICE 2014
51131	00008	6	1			RICE 2014
51167	00003	1	1	3775	1	State ERTAC Spreadsheet - Fuel Switch
51167	00003	1	2	3775	1	State ERTAC Spreadsheet - Rate Change
51167	00003	2	1	3775	2	State ERTAC Spreadsheet - Fuel Switch
51167	00003	2	2	3775	2	State ERTAC Spreadsheet - Rate Change
51167	00003	3	1	3775	3	State ERTAC Spreadsheet - Rate Change
51167	00003	3	2	3775	3	State ERTAC Spreadsheet - Rate Change
51181	00002	6	1	7032		RICE 2014
51199	00001	5	1	3809	2	State ERTAC Spreadsheet
51199	00001	5	1	3809	2	State ERTAC Spreadsheet - PM Default
51199	00001	5	2	3809	2	State ERTAC Spreadsheet
51199	00001	5	2	3809	2	State ERTAC Spreadsheet - PM Default
51199	00001	5	3	3809	2	State ERTAC Spreadsheet
51199	00001	5	3	3809	2	State ERTAC Spreadsheet - PM Default
51199	00001	5	4	3809	2	State ERTAC Spreadsheet
51199	00001	5	4	3809	2	State ERTAC Spreadsheet - PM Default
51199	00001	5	5	3809	2	State ERTAC Spreadsheet - PM Default
51199	00001	6	1	3809	1	State ERTAC Spreadsheet
51199	00001	6	1	3809	1	State ERTAC Spreadsheet - PM Default
51199	00001	6	2	3809	1	State ERTAC Spreadsheet
51199	00001	6	2	3809	1	State ERTAC Spreadsheet - PM Default
51199	00001	6	3	3809	1	State ERTAC Spreadsheet
51199	00001	6	3	3809	1	State ERTAC Spreadsheet - PM Default

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
51199	00001	6	4	3809	1	State ERTAC Spreadsheet
51199	00001	6	4	3809	1	State ERTAC Spreadsheet - PM Default
51199	00001	6	5	3809	1	State ERTAC Spreadsheet
51199	00001	6	5	3809	1	State ERTAC Spreadsheet - PM Default
51510	00003	1	1	3788	1	State ERTAC Spreadsheet
51510	00003	1	1	3788	1	State ERTAC Spreadsheet - PM Default
51510	00003	1	1	3788	1	State ERTAC Spreadsheet - Rate Change
51510	00003	1	2	3788	1	State ERTAC Spreadsheet
51510	00003	1	2	3788	1	State ERTAC Spreadsheet - PM Default
51510	00003	1	2	3788	1	State ERTAC Spreadsheet - Rate Change
51510	00003	2	1	3788	2	State ERTAC Spreadsheet
51510	00003	2	1	3788	2	State ERTAC Spreadsheet - PM Default
51510	00003	2	1	3788	2	State ERTAC Spreadsheet - Rate Change
51510	00003	2	2	3788	2	State ERTAC Spreadsheet
51510	00003	2	2	3788	2	State ERTAC Spreadsheet - PM Default
51510	00003	2	2	3788	2	State ERTAC Spreadsheet - Rate Change
51510	00003	3	1	3788	3	State ERTAC Spreadsheet
51510	00003	3	1	3788	3	State ERTAC Spreadsheet - PM Default
51510	00003	3	1	3788	3	State ERTAC Spreadsheet - Rate Change
51510	00003	3	2	3788	3	State ERTAC Spreadsheet
51510	00003	3	2	3788	3	State ERTAC Spreadsheet - PM Default
51510	00003	3	2	3788	3	State ERTAC Spreadsheet - Rate Change
51510	00003	4	1	3788	4	State ERTAC Spreadsheet
51510	00003	4	1	3788	4	State ERTAC Spreadsheet - PM Default
51510	00003	4	1	3788	4	State ERTAC Spreadsheet - Rate Change
51510	00003	4	2	3788	4	State ERTAC Spreadsheet
51510	00003	4	2	3788	4	State ERTAC Spreadsheet - PM Default
51510	00003	4	2	3788	4	State ERTAC Spreadsheet -

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
						Rate Change
51510	00003	5	1	3788	5	State ERTAC Spreadsheet
51510	00003	5	1	3788	5	State ERTAC Spreadsheet - PM Default
51510	00003	5	1	3788	5	State ERTAC Spreadsheet - Rate Change
51510	00003	5	2	3788	5	State ERTAC Spreadsheet
51510	00003	5	2	3788	5	State ERTAC Spreadsheet - PM Default
51510	00003	5	2	3788	5	State ERTAC Spreadsheet - Rate Change
51550	00026	1	4	3803	1	State ERTAC Spreadsheet - Rate Change
51550	00026	2	4	3803	2	State ERTAC Spreadsheet - Rate Change
51550	00026	3	4	3803	3	State ERTAC Spreadsheet - Rate Change
51550	00026	4	4	3803	4	State ERTAC Spreadsheet - Rate Change
51620	00011	1	1			RICE 2014
51660	00146	2	1			RICE 2014
51660	00155	2	1			RICE 2014
51660	00155	3	1			RICE 2014
51660	00155	4	1			RICE 2014
51670	00055	1	1	10377	BLR01A	State ERTAC Spreadsheet
51670	00055	1	1	10377	BLR01A	State ERTAC Spreadsheet - PM Default
51670	00055	1	3	10377	BLR01A	State ERTAC Spreadsheet
51670	00055	2	1	10377	BLR02A	State ERTAC Spreadsheet
51670	00055	2	1	10377	BLR02A	State ERTAC Spreadsheet - PM Default
51670	00055	2	3	10377	BLR02A	State ERTAC Spreadsheet
51670	00058	7	1	10633		RICE 2014
51670	00058	7	2	10633		RICE 2014
51670	00063	6	1	10771		RICE 2014
51740	00081	1	1	10071	BLR01A	State ERTAC Spreadsheet
51740	00081	1	1	10071	BLR01A	State ERTAC Spreadsheet - PM Default
51740	00081	2	1	10071	BLR01B	State ERTAC Spreadsheet
51740	00081	2	1	10071	BLR01B	State ERTAC Spreadsheet - PM Default
51740	00081	3	1	10071	BLR01C	State ERTAC Spreadsheet
51740	00081	3	1	10071	BLR01C	State ERTAC Spreadsheet - PM Default

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
51740	00081	4	1	10071	BLR02A	State ERTAC Spreadsheet
51740	00081	4	1	10071	BLR02A	State ERTAC Spreadsheet - PM Default
51740	00081	5	1	10071	BLR02B	State ERTAC Spreadsheet
51740	00081	5	1	10071	BLR02B	State ERTAC Spreadsheet - PM Default
51740	00081	6	1	10071	BLR02C	State ERTAC Spreadsheet
51740	00081	6	1	10071	BLR02C	State ERTAC Spreadsheet - PM Default
54023	5402300003	001	1	3954	1	State Supplied Value
54023	5402300003	001	2	3954	1	State Supplied Control
54023	5402300003	002	1	3954	2	State Supplied Value
54023	5402300003	002	2	3954	2	State Supplied Control
54023	5402300003	003	1	3954	3	State Supplied Value
54023	5402300003	003	2	3954	3	State Supplied Control
54023	5402300003	003	3	3954	3	State Supplied Control
54033	5403300015	001	1	3944	1	State Supplied Value
54033	5403300015	001	2	3944	1	State Supplied Value - Rate Change
54033	5403300015	001	3	3944	1	State Supplied Value - Rate Change
54033	5403300015	002	1	3944	2	State Supplied Value
54033	5403300015	002	2	3944	2	State Supplied Value - Rate Change
54033	5403300015	002	3	3944	3	State Supplied Value - Rate Change
54033	5403300015	003	1	3944	3	State Supplied Value
54033	5403300015	003	2	3944	3	State Supplied Value - Rate Change
54049	5404900009	001	1	3945	7	State Supplied Value
54049	5404900009	002	1	3945	8	State Supplied Value
54051	5405100005	001	1	3948	1	State ERTAC Spreadsheet - PM Default
54051	5405100005	001	1	3948	1	State Supplied Value
54051	5405100005	001	2	3948	1	State ERTAC Spreadsheet
54051	5405100005	001	2	3948	1	State ERTAC Spreadsheet - PM Default
54051	5405100005	001	2	3948	1	State Supplied Control
54051	5405100005	002	1	3948	2	State Supplied Value
54051	5405100005	002	2	3948	2	State Supplied Control
54053	5405300009	001	1	6264	1	State ERTAC Spreadsheet - PM Default
54053	5405300009	001	1	6264	1	State Supplied Value

State County FIPS	State Facility ID	Emission Unit ID	Process ID	ORIS ID	ORIS Boiler ID	Control Reference
54053	5405300009	001	2	6264	1	State ERTAC Spreadsheet
54053	5405300009	001	2	6264	1	State ERTAC Spreadsheet - PM Default
54061	5406100001	001	1	3943	1	State ERTAC Spreadsheet - PM Default
54061	5406100001	001	1	3943	1	State Supplied Value
54061	5406100001	001	2	3943	1	State ERTAC Spreadsheet - PM Default
54061	5406100001	001	2	3943	1	State Supplied Control
54061	5406100001	002	1	3943	2	State ERTAC Spreadsheet - PM Default
54061	5406100001	002	1	3943	2	State Supplied Value
54061	5406100001	002	2	3943	2	State ERTAC Spreadsheet - PM Default
54061	5406100001	002	2	3943	2	State Supplied Control
54073	5407300005	001	1	6004	1	State Supplied Value
54073	5407300005	001	2	6004	1	State Supplied Control
54073	5407300005	001	3	6004	1	State Supplied Control
54073	5407300005	002	1	6004	2	State Supplied Value
54073	5407300005	002	2	6004	2	State Supplied Control
54073	5407300005	002	3	6004	2	State Supplied Control
54079	5407900006	001	1	3935	1	State ERTAC Spreadsheet - PM Default
54079	5407900006	001	1	3935	1	State Supplied Value
54079	5407900006	001	2	3935	1	State ERTAC Spreadsheet
54079	5407900006	001	2	3935	1	State ERTAC Spreadsheet - PM Default
54079	5407900006	001	2	3935	1	State Supplied Control
54079	5407900006	002	1	3935	2	State ERTAC Spreadsheet - PM Default
54079	5407900006	002	1	3935	2	State Supplied Value
54079	5407900006	002	2	3935	2	State ERTAC Spreadsheet
54079	5407900006	002	2	3935	2	State ERTAC Spreadsheet - PM Default
54079	5407900006	002	2	3935	2	State Supplied Control
54079	5407900006	003	1	3935	3	State ERTAC Spreadsheet - PM Default
54079	5407900006	003	1	3935	3	State Supplied Value
54079	5407900006	003	2	3935	3	State ERTAC Spreadsheet
54079	5407900006	003	2	3935	3	State ERTAC Spreadsheet - PM Default
54079	5407900006	003	2	3935	3	State Supplied Control

Appendix E: New EGU Units Added for 2018

State & County FIPS	State Facility Identifier	Emission Unit ID	ORIS ID	ORIS Boiler ID	Facility Name	Latitude	Longitude
12009	0090006	NEW1	609	NPCC1	FLORIDA POWER & LIGHT (PTF)	28.4694	-80.7642
12009	0090006	NEW2	609	NPCC2	FLORIDA POWER & LIGHT (PTF)	28.4694	-80.7642
12009	0090006	NEW3	609	NPCC3	FLORIDA POWER & LIGHT (PTF)	28.4694	-80.7642
12009	0090180	O-5	55286	O-5	Oleander Power Project	28.3655	-80.7955
12011	0110036	NEW1	617	NPPE1	FLORIDA POWER & LIGHT (PTF)	26.0856	-80.1253
12011	0110036	NEW2	617	NPPE2	FLORIDA POWER & LIGHT (PTF)	26.0856	-80.1253
12011	0110036	NEW3	617	NPPE3	FLORIDA POWER & LIGHT (PTF)	26.0856	-80.1253
12031	0310047	CT8	666	CT8	JEA	30.3649	-81.6156
12057	0570039	4A	645	CT4A	Tampa Electric	27.7939	-82.4158
12057	0570039	4B	645	CT4B	Tampa Electric	27.7939	-82.4158
12057	0570040	3A	7873	CT3A	Tampa Electric	27.9075	-82.4139
12057	0570040	3B	7873	CT3B	Tampa Electric	27.9075	-82.4139
12057	0570040	4A	7873	CT4A	Tampa Electric	27.9075	-82.4139
12057	0570040	4B	7873	CT4B	Tampa Electric	27.9075	-82.4139
12057	0570040	5A	7873	CT5A	Tampa Electric	27.9075	-82.4139
12057	0570040	5B	7873	CT5B	Tampa Electric	27.9075	-82.4139
12057	0570040	6A	7873	CT6A	Tampa Electric	27.9075	-82.4139
12057	0570040	6B	7873	CT6B	Tampa Electric	27.9075	-82.4139
12073	0730003	HP2A	688	HP2A	City of Tallahassee	30.452	-84.3994
12099	0990042	NEW1	619	NPPE1	FLORIDA POWER & LIGHT (PTF)	26.7653	-80.0528
12099	0990042	NEW2	619	NPPE2	FLORIDA POWER & LIGHT (PTF)	26.7653	-80.0528
12099	0990042	NEW3	619	NPPE3	FLORIDA POWER & LIGHT (PTF)	26.7653	-80.0528
12099	0990646	NEW1	56407	NPPE1	FLORIDA POWER & LIGHT (PTF)	26.6986	-80.3747
12099	0990646	NEW2	56407	NPPE2	FLORIDA POWER & LIGHT (PTF)	26.6986	-80.3747
12099	0990646	NEW3	56407	NPPE3	FLORIDA POWER & LIGHT (PTF)	26.6986	-80.3747
12103	1030011	4A	634	4A	Duke Energy	27.8603	-82.6117
12103	1030011	4B	634	4B	Duke Energy	27.8603	-82.6117
12103	1030011	4C	634	4C	Duke Energy	27.8603	-82.6117

State & County FIPS	State Facility Identifier	Emission Unit ID	ORIS ID	ORIS Boiler ID	Facility Name	Latitude	Longitude
12103	1030011	4D	634	4D	Duke Energy	27.8603	-82.6117
12105	1050234	4A	7302	4A	Duke Energy	27.7886	-81.8695
12105	1050234	4B	7302	4B	Duke Energy	27.7886	-81.8695
12111	1110121	1	56400	1	FMPA	27.3839	-80.3775
13067	06700003	CT4A	710	4A	Ga Power Company - Plant McDonough/Atkinson	33.8244	-84.475
13067	06700003	CT4B	710	4B	Ga Power Company - Plant McDonough/Atkinson	33.8244	-84.475
13067	06700003	CT5A	710	5A	Ga Power Company - Plant McDonough/Atkinson	33.8244	-84.475
13067	06700003	CT5B	710	5B	Ga Power Company - Plant McDonough/Atkinson	33.8244	-84.475
13067	06700003	CT6A	710	6A	Ga Power Company - Plant McDonough/Atkinson	33.8244	-84.475
13067	06700003	CT6B	710	6B	Ga Power Company - Plant McDonough/Atkinson	33.8244	-84.475
13303	NEWEGUWASH1	S1	991302	N13001	WASHINGTON	33.0647	-82.7451
13303	NEWEGUWASH1	S45	991302	N13001	WASHINGTON	33.0647	-82.7451
21111	0126	U15	1363	1	Cane Run	38.1819	-85.88895
37045	3716100028	6A	2721	6	Duke Energy Carolinas, LLC - Cliffside Steam Station	35.21815	-81.76197
37129	3712900036	01A	2713	01A	L V Sutton	34.2833	-77.9833
37129	3712900036	01B	2713	01B	L V Sutton	34.2833	-77.9833
37157	3715700015	11C	2723	11C	Duke Energy Carolinas, LLC - Dan River Steam Station	36.4862	-79.7208
37157	3715700015	12C	2723	12C	Duke Energy Carolinas, LLC - Dan River Steam Station	36.4862	-79.7208
37159	3715900004	11C	2720	11C	Duke Power Company, LLC - Buck Steam Station	35.7133	-80.3767
37159	3715900004	12C	2720	12C	Duke Power Company, LLC - Buck Steam Station	35.7133	-80.3767
37191	3719100017	15	2709	01A	Progress Energy - H.F. Lee Plant	35.37977	-78.088
37191	3719100017	16	2709	01B	Progress Energy - H.F.	35.37977	-78.088

State & County FIPS	State Facility Identifier	Emission Unit ID	ORIS ID	ORIS Boiler ID	Facility Name	Latitude	Longitude
					Lee Plant		
37191	3719100017	17	2709	01C	Progress Energy - H.F. Lee Plant	35.37977	-78.088
45003	0080-0011	003	3295	URQ3	SCE&G URQUHART	33.4342	-81.9114
45015	0420-0030	010	130	4	SANTEE COOPER CROSS	33.36831	-80.113722
47073	0007	008	3405	JSC1	John Sevier	36.373701	-82.96077
47073	0007	009	3405	JSC2	John Sevier	36.373701	-82.96077
47073	0007	010	3405	JSC3	John Sevier	36.373701	-82.96077
51029	NEWUN1	1	56807	1	Dominion-Bear Garden	37.696647	-78.287117
51029	NEWUN2	2	56807	2	Dominion-Bear Garden	37.696647	-78.287117
51033	00040	3	7838	3	Dominion - Ladysmith CT Station	38.070833	-77.513611
51033	00040	4	7838	4	Dominion - Ladysmith CT Station	38.070833	-77.513611
51033	00040	5	7838	5	Dominion - Ladysmith CT Station	38.070833	-77.513611
51187	NEWUN1	1	55939	1	Dominion-Warren County	38.917466	-78.189735
51187	NEWUN2	2	55939	2	Dominion-Warren County	38.917466	-78.189735
51187	NEWUN3	3	55939	3	Dominion-Warren County	38.917466	-78.189735
51195	NEWUN1	1	56808	1	Virginia City Hybrid Energy Center	36.9164	-82.3383
51195	NEWUN2	2	56808	2	Virginia City Hybrid Energy Center	36.9164	-82.3383
54061	NEWEGU1	1	56671	1	Longview Power Station	39.70788	-79.95889

Appendix B

Seasonal Adjustment Factors

Seasonal Adjustment Factors

Seasonal adjustment factors (SAF) were developed from EPA's 2017 emissions modeling platform. Specifically, the 2017gb emission case was the basis for the emissions. EPA's summary report broke the emissions down by sector, county, and month. The fraction of emissions in July for each sector was obtained by dividing the July total by the yearly total. The seasonal adjustment factor was obtained by dividing the July fraction by 0.08333 (which is 1 divided by 12). For the point sector, daily emissions were totaled for each of the three counties (Anderson, Blount, and Knox). Then, the SAF was multiplied by the county total. Since the only facility in Anderson County is TVA Bull Run, the point EGU (ptegu) SAF was used. For the point sector, the following NOx and VOC SAF were used:

County	NOx SAF	VOC SAF	Sector
Anderson	1.2679	1.1723	ptegu
Blount	0.9637	1.0130	ptnonipm
Knox	1.0172	1.0190	ptnonipm

For the marine, airport, and rail (MAR) sector, daily emissions were totaled for each of the three counties (Anderson, Blount, and Knox). Then, the SAF was multiplied by the county total. For the MAR sector, the following NOx and VOC SAF were used:

County	NOx SAF	VOC SAF	Sector
Anderson	1.0942	1.0942	Airport
Blount	1.0942	1.0942	Airport
Knox	1.0942	1.0942	Airport
Knox	1.0115	1.0115	Rail

Sector	poll	ann_value	county	jan_value	feb_value	mar_valu	apr_value	may_valu	jun_value	jul_value	aug_value	sep_value	oct_value	nov_value	dec_value	July fraction	1/12	SAF
airports	NOX	0.319	Anderson C	0.023	0.023	0.027	0.027	0.028	0.028	0.029	0.029	0.027	0.029	0.024	0.023	0.091	0.083	1.0942
airports	VOC_IN	0.699	Anderson C	0.051	0.050	0.060	0.059	0.062	0.062	0.064	0.064	0.060	0.063	0.053	0.051	0.091	0.083	1.0942
ptegu	NOX	1299.505	Anderson C	196.485	67.680	0.000	0.000	136.398	182.824	137.308	154.086	114.596	151.177	0.000	158.950	0.106	0.083	1.2679
ptegu	VOC_IN	35.720	Anderson C	5.225	1.988	0.000	0.000	4.141	5.958	3.490	4.354	3.144	4.382	0.000	3.038	0.098	0.083	1.1723
ptnonipm	NOX	117.115	Anderson C	9.952	9.020	9.978	9.592	9.951	9.595	9.856	9.921	9.659	9.998	9.648	9.945	0.084	0.083	1.0099
ptnonipm	VOC_IN	105.025	Anderson C	8.852	8.082	9.010	8.608	8.949	8.681	8.855	8.978	8.636	8.935	8.576	8.864	0.084	0.083	1.0118
rail	NOX	114.473	Anderson C	9.554	8.716	9.263	9.058	9.554	9.338	9.650	10.229	9.712	10.229	9.712	9.457	0.084	0.083	1.0115
rail	VOC_IN	5.279	Anderson C	0.441	0.402	0.427	0.418	0.441	0.431	0.445	0.472	0.448	0.472	0.448	0.436	0.084	0.083	1.0115
airports	NOX	228.176	Blount Co	16.651	16.246	19.650	19.276	20.388	20.289	20.807	20.838	19.492	20.427	17.367	16.746	0.091	0.083	1.0942
airports	VOC_IN	107.224	Blount Co	7.824	7.634	9.234	9.058	9.581	9.534	9.777	9.792	9.160	9.599	8.161	7.869	0.091	0.083	1.0942
ptnonipm	NOX	969.917	Blount Co	88.476	79.916	78.768	76.221	78.765	75.383	77.891	77.896	81.800	84.528	81.799	88.475	0.080	0.083	0.9637
ptnonipm	VOC_IN	439.288	Blount Co	37.637	33.995	37.103	35.906	37.103	35.889	37.085	37.085	36.213	37.420	36.213	37.637	0.084	0.083	1.0130
rail	NOX	67.348	Blount Co	5.621	5.128	5.450	5.329	5.621	5.494	5.677	6.018	5.714	6.018	5.714	5.564	0.084	0.083	1.0116
rail	VOC_IN	3.105	Blount Co	0.259	0.236	0.251	0.246	0.259	0.253	0.262	0.277	0.263	0.277	0.263	0.257	0.084	0.083	1.0115
airports	NOX	2.457	Knox Co	0.179	0.175	0.212	0.208	0.220	0.218	0.224	0.224	0.210	0.220	0.187	0.180	0.091	0.083	1.0942
airports	VOC_IN	5.331	Knox Co	0.389	0.380	0.459	0.450	0.476	0.474	0.486	0.487	0.455	0.477	0.406	0.391	0.091	0.083	1.0942
ptnonipm	NOX	1654.130	Knox Co	140.897	127.262	140.279	135.754	140.279	135.691	140.214	140.214	136.036	140.571	136.036	140.897	0.085	0.083	1.0172
ptnonipm	VOC_IN	620.487	Knox Co	52.722	47.619	52.685	50.985	52.685	50.988	52.688	52.688	51.002	52.702	51.002	52.722	0.085	0.083	1.0190
rail	NOX	307.727	Knox Co	25.683	23.430	24.902	24.351	25.683	25.103	25.940	27.499	26.108	27.499	26.108	25.423	0.084	0.083	1.0115
rail	VOC_IN	14.191	Knox Co	1.184	1.080	1.148	1.123	1.184	1.158	1.196	1.268	1.204	1.268	1.204	1.172	0.084	0.083	1.0115

Appendix C

Point Source Emissions

Point Sources

				2017 (TPY)		2017 (TPD)	2020 (TPD)	2023 (TPD)	2026 (TPD)	2029 (TPD)	2032 (TPD)	2035 (TPD)
County	**Site name**	**SCC**	**Process description**	**NOX**	**GF**	**NOX**	**NOX**	**NOX**	**NOX**	**NOX**	**NOX**	**NOX**
Anderson	TVA BULL RUN FOSSIL PLAI	10100212	BOILER #1: COAL (FGD-Stack)	1296.400	1.293	3.552	4.594	5.942	0.000	0.000	0.000	0.000
Anderson	TVA BULL RUN FOSSIL PLAI	10100501	BOILER #1: OIL (FGD-Stack)	4.568	0.541	0.013	0.007	0.004	0.000	0.000	0.000	0.000
Anderson	TVA BULL RUN FOSSIL PLAI	10200501	AUX. BOILERS A,B: # 2 OIL	11.379	1.167	0.031	0.036	0.042	0.000	0.000	0.000	0.000
Anderson Total	(without SAF)					3.60	4.64	5.99	0.00	0.00	0.00	0.00
Anderson Total	(with SAF)					4.56	5.88	7.59	0.00	0.00	0.00	0.00

				2017 (TPY)		2017 (TPD)	2020 (TPD)	2023 (TPD)	2026 (TPD)	2029 (TPD)	2032 (TPD)	2035 (TPD)
County	**Site name**	**SCC**	**Process description**	**NOX**	**GF**	**NOX**	**NOX**	**NOX**	**NOX**	**NOX**	**NOX**	**NOX**
Blount	ALCOA-MARYVILLE-BLOUN	50100402	SOLID WASTE LANDFILL	1.270	1.243	0.003	0.004	0.005	0.007	0.008	0.010	0.013
Blount	Arconic Tennessee LLC	10100602	120 MILL PROCESS HEATER	1.949	2.509	0.005	0.013	0.034	0.084	0.212	0.531	1.332
Blount	Arconic Tennessee LLC	10100602	80 MILL PROCESS HEATER	1.880	2.509	0.005	0.013	0.032	0.081	0.204	0.512	1.285
Blount	Arconic Tennessee LLC	10100602	96 MILL PROCESS HEATER	1.889	2.509	0.005	0.013	0.033	0.082	0.205	0.515	1.291
Blount	Arconic Tennessee LLC	10100602	CCM PROCESS HEATER	0.369	2.509	0.001	0.003	0.006	0.016	0.040	0.101	0.252
Blount	Arconic Tennessee LLC	20200102	TCM EMERGENCY FIRE WATER PUMP	0.020	1.167	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Blount	Arconic Tennessee LLC	30390003	CONTINUOUS HEAT TREAT FURNACE	0.905	0.894	0.002	0.002	0.002	0.002	0.002	0.001	0.001
Blount	Arconic Tennessee LLC	30390003	PREHEAT FURNACES (27 STACKS)	18.658	0.894	0.051	0.046	0.041	0.036	0.033	0.029	0.026
Blount	Arconic Tennessee LLC	30400112	ANNEALING FURNACES NO. 0-9	6.321	1.115	0.017	0.019	0.022	0.024	0.027	0.030	0.033
Blount	Arconic Tennessee LLC	30490033	NO.1 DELACQUERING FURNACE EXIT	26.750	1.238	0.073	0.091	0.112	0.139	0.172	0.213	0.263
Blount	Arconic Tennessee LLC	30490033	NO.2 DELACQUERING FURNACE	14.507	1.238	0.040	0.049	0.061	0.075	0.093	0.115	0.143
Blount	Arconic Tennessee LLC	30490033	NO.3 DELACQUERING FURNACE	1.301	1.238	0.004	0.004	0.005	0.007	0.008	0.010	0.013
Blount	Arconic Tennessee LLC	30490033	TILTING ROTARY FURNACE	0.873	1.238	0.002	0.003	0.004	0.005	0.006	0.007	0.009
Blount	Arconic Tennessee LLC	30400138	4N HOLDING FURNACE & FILTER	0.964	1.196	0.003	0.003	0.004	0.005	0.005	0.006	0.008
Blount	Arconic Tennessee LLC	30400138	4N MELTING FURNACE	5.785	1.196	0.016	0.019	0.023	0.027	0.032	0.039	0.046
Blount	Arconic Tennessee LLC	30400138	4S HOLDING FURNACE & FILTER	0.437	1.196	0.001	0.001	0.002	0.002	0.002	0.003	0.003
Blount	Arconic Tennessee LLC	30400138	4S MELTING FURNACE	4.445	1.196	0.012	0.015	0.017	0.021	0.025	0.030	0.036
Blount	Arconic Tennessee LLC	30400138	HOLDING FURNACE NO. 10	1.735	1.196	0.005	0.006	0.007	0.008	0.010	0.012	0.014
Blount	Arconic Tennessee LLC	30400138	HOLDING FURNACE NO. 12	2.355	1.196	0.006	0.008	0.009	0.011	0.013	0.016	0.019
Blount	Arconic Tennessee LLC	30400138	HOLDING FURNACE NO. 5	1.645	1.196	0.005	0.005	0.006	0.008	0.009	0.011	0.013
Blount	Arconic Tennessee LLC	30400138	HOLDING FURNACE NO. 6	2.073	1.196	0.006	0.007	0.008	0.010	0.012	0.014	0.017
Blount	Arconic Tennessee LLC	30400138	HOLDING FURNACE NO. 7	1.874	1.196	0.005	0.006	0.007	0.009	0.010	0.013	0.015
Blount	Arconic Tennessee LLC	30400138	MELTING FURNACE NO. 11	14.427	1.196	0.040	0.047	0.057	0.068	0.081	0.097	0.116
Blount	Arconic Tennessee LLC	30400138	MELTING FURNACE NO. 9	11.287	1.196	0.031	0.037	0.044	0.053	0.063	0.076	0.090
Blount	Arconic Tennessee LLC	30400138	NO.1 MELTING FURNACE	12.196	1.196	0.033	0.040	0.048	0.057	0.068	0.082	0.098
Blount	Arconic Tennessee LLC	30400138	NO.2 MELTING FURNACE	11.324	1.196	0.031	0.037	0.044	0.053	0.063	0.076	0.091
Blount	Arconic Tennessee LLC	30400138	NO.3 MELTING FURNACE	4.781	1.196	0.013	0.016	0.019	0.022	0.027	0.032	0.038
Blount	Arconic Tennessee LLC	30400138	NO.4 MELTING FURNACE (MAIN BAY)	12.916	1.196	0.035	0.042	0.051	0.061	0.072	0.087	0.103
Blount	SKIERS CHOICE, INC.	10200603	BUILDING HEATING	1.270	1.188	0.003	0.003	0.004	0.005	0.006	0.007	0.008
Blount Total	(without SAF)					0.46	0.55	0.71	0.98	1.51	2.67	5.38
Blount Total	(with SAF)					0.44	0.53	0.68	0.94	1.45	2.58	5.18

				2017 (TPY)		2017 (TPD)	2020 (TPD)	2023 (TPD)	2026 (TPD)	2029 (TPD)	2032 (TPD)	2035 (TPD)
County	**Site name**	**SCC**	**Process description**	**NOX**	**GF**	**NOX**	**NOX**	**NOX**	**NOX**	**NOX**	**NOX**	**NOX**
Knox	Cemex Construction Mater	30500623	Rotary Kiln	1462.100	1.276	4.006	1.737	2.216	2.829	3.610	4.607	5.880
Knox	CMC Steel US, LLC - CMC St	30400701	Scrap Metal Melting	30.000	1.115	0.082	0.092	0.102	0.114	0.127	0.142	0.158
Knox	CMC Steel US, LLC - CMC St	30400740	Reheating Metal	20.300	1.115	0.056	0.062	0.069	0.077	0.086	0.096	0.107
Knox	CMC Steel US, LLC - CMC St	30400799	Cutting Torches, Laddle Preheaters, e	7.300	1.115	0.020	0.022	0.025	0.028	0.031	0.035	0.038
Knox	University of Tennessee	10300502	Boiler #1: Fuel oil	0.022	1.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Knox	University of Tennessee	10300502	Boiler #2: Fuel Oil	0.004	1.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Knox	University of Tennessee	10300502	Boiler #5: Fuel oil	0.020	1.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Knox	University of Tennessee	10300602	Boiler #1: Natural Gas	0.016	1.256	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Knox	University of Tennessee	10300602	BOILER #2 Gas Fired (Replaced with N	7.273	1.256	0.020	0.025	0.031	0.039	0.050	0.062	0.078
Knox	University of Tennessee	10300602	Boiler #3: Fuel oil	0.004	1.256	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Knox	University of Tennessee	10300602	Boiler #3: Natural Gas	6.151	1.256	0.017	0.021	0.027	0.033	0.042	0.053	0.066
Knox	University of Tennessee	10300602	Boiler #5: Natural Gas	12.070	1.256	0.033	0.042	0.052	0.066	0.082	0.103	0.130
Knox	University of Tennessee	10300602	Duct burner w/turbine	6.065	1.256	0.017	0.021	0.026	0.033	0.041	0.052	0.065
Knox	University of Tennessee	10300602	JARTU Boiler 1	0.268	1.256	0.001	0.001	0.001	0.001	0.002	0.002	0.003
Knox	University of Tennessee	10300603	JARTU Boiler 2	0.179	1.325	0.000	0.001	0.001	0.001	0.002	0.002	0.003
Knox	University of Tennessee	20300209	Turbine through duct burner	0.092	1.038	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Knox Total	(without SAF)					4.25	2.02	2.55	3.22	4.07	5.16	6.53
Knox Total	(with SAF)					4.32	2.06	2.60	3.28	4.14	5.24	6.64

County	NOx, Typical Summer Day, July (tons/day)						
	2017	2020	2023	2026	2029	2032	2035
Anderson (partial)	4.56	5.88	7.59	0.00	0.00	0.00	0.00
Blount	0.44	0.53	0.68	0.94	1.45	2.58	5.18
Knox	4.32	2.06	2.60	3.28	4.14	5.24	6.64
Total Emissions	9.32	8.47	10.87	4.22	5.59	7.82	11.82

County	SAF	Sector
Anderson	1.2679	ptegu
Blount	0.9637	ptnonipm
Knox	1.0172	ptnonipm

Point Sources

County	Site name	SCC	Process description	2017 (TPY) VOC	GF	2017 (TPD) VOC	2020 (TPD) VOC	2023 (TPD) VOC	2026 (TPD) VOC	2029 (TPD) VOC	2032 (TPD) VOC	2035 (TPD) VOC
Anderson	TVA BULL RUN FOSSIL PLAN	10100212	BOILER #1: COAL (FGD-Stack)	35.727	1.293	0.098	0.127	0.164	0.000	0.000	0.000	0.000
Anderson	TVA BULL RUN FOSSIL PLAN	10100501	BOILER #1: OIL (FGD-Stack)	0.038	0.541	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Anderson	TVA BULL RUN FOSSIL PLAN	10200501	AUX. BOILERS A,B: # 2 OIL	0.095	1.167	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Anderson Total	(without SAF)					0.10	0.13	0.16	0.00	0.00	0.00	0.00
Anderson Total	(with SAF)					0.12	0.15	0.19	0.00	0.00	0.00	0.00

County	Site name	SCC	Process description	2017 (TPY) VOC	GF	2017 (TPD) VOC	2020 (TPD) VOC	2023 (TPD) VOC	2026 (TPD) VOC	2029 (TPD) VOC	2032 (TPD) VOC	2035 (TPD) VOC
Blount	ALCOA-MARYVILLE-BLOUN	50100402	SOLID WASTE LANDFILL	5.930	1.243	0.016	0.020	0.025	0.031	0.039	0.048	0.060
Blount	Arconic Tennessee LLC	10100602	120 MILL PROCESS HEATER	0.107	2.509	0.000	0.001	0.002	0.005	0.012	0.029	0.073
Blount	Arconic Tennessee LLC	10100602	80 MILL PROCESS HEATER	0.103	2.509	0.000	0.001	0.002	0.004	0.011	0.028	0.071
Blount	Arconic Tennessee LLC	10100602	96 MILL PROCESS HEATER	0.104	2.509	0.000	0.001	0.002	0.004	0.011	0.028	0.071
Blount	Arconic Tennessee LLC	10100602	CCM PROCESS HEATER	0.020	2.509	0.000	0.000	0.000	0.001	0.002	0.006	0.014
Blount	Arconic Tennessee LLC	20200102	TCM EMERGENCY FIRE WATER PU	0.000	1.167	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Blount	Arconic Tennessee LLC	30390003	CONTINUOUS HEAT TREAT FURN	0.100	0.894	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Blount	Arconic Tennessee LLC	30390003	PREHEAT FURNACES (27 STACKS)	1.026	0.894	0.003	0.003	0.002	0.002	0.002	0.002	0.001
Blount	Arconic Tennessee LLC	30400112	ANNEALING FURNACES NO. 0-9	0.348	1.115	0.001	0.001	0.001	0.001	0.001	0.002	0.002
Blount	Arconic Tennessee LLC	30400150	048 SLITTER	0.898	1.115	0.002	0.003	0.003	0.003	0.004	0.004	0.005
Blount	Arconic Tennessee LLC	30400150	049 SLITTER	2.417	1.115	0.007	0.007	0.008	0.009	0.010	0.011	0.013
Blount	Arconic Tennessee LLC	30400150	050 SLITTER	2.275	1.115	0.006	0.007	0.008	0.009	0.010	0.011	0.012
Blount	Arconic Tennessee LLC	30400150	COLD MILL NO. 2	13.279	1.115	0.036	0.041	0.045	0.050	0.056	0.063	0.070
Blount	Arconic Tennessee LLC	30400150	CONTINUOUS COLD MILL - CCM	69.115	1.115	0.189	0.211	0.236	0.263	0.293	0.327	0.364
Blount	Arconic Tennessee LLC	30400150	CONTINUOUS COLD MILL - MIEB/	0.085	1.115	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Blount	Arconic Tennessee LLC	30400150	HOTLINE	97.744	1.115	0.268	0.299	0.333	0.371	0.414	0.462	0.515
Blount	Arconic Tennessee LLC	30490033	NO.1 DELACQUERING FURNACE I	0.199	1.238	0.001	0.001	0.001	0.001	0.001	0.002	0.002
Blount	Arconic Tennessee LLC	30490033	NO.2 DELACQUERING FURNACE	0.098	1.238	0.000	0.000	0.000	0.001	0.001	0.001	0.001
Blount	Arconic Tennessee LLC	30490033	NO.3 DELACQUERING FURNACE	0.348	1.238	0.001	0.001	0.001	0.002	0.002	0.003	0.003
Blount	Arconic Tennessee LLC	30490033	TILTING ROTARY FURNACE	0.150	1.238	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Blount	Arconic Tennessee LLC	50400151	REMEDIATION	0.000	1.243	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Blount	Arconic Tennessee LLC	30400138	4N HOLDING FURNACE & FILTER	0.096	1.196	0.000	0.000	0.000	0.000	0.001	0.001	0.001
Blount	Arconic Tennessee LLC	30400138	4N MELTING FURNACE	1.653	1.196	0.005	0.005	0.006	0.008	0.009	0.011	0.013
Blount	Arconic Tennessee LLC	30400138	4S HOLDING FURNACE & FILTER	0.044	1.196	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Blount	Arconic Tennessee LLC	30400138	4S MELTING FURNACE	1.270	1.196	0.003	0.004	0.005	0.006	0.007	0.009	0.010
Blount	Arconic Tennessee LLC	30400138	HOLDING FURNACE NO. 10	1.609	1.196	0.004	0.005	0.006	0.008	0.009	0.011	0.013
Blount	Arconic Tennessee LLC	30400138	HOLDING FURNACE NO. 12	2.689	1.196	0.007	0.009	0.011	0.013	0.015	0.018	0.022
Blount	Arconic Tennessee LLC	30400138	HOLDING FURNACE NO. 5	0.164	1.196	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Blount	Arconic Tennessee LLC	30400138	HOLDING FURNACE NO. 6	0.207	1.196	0.001	0.001	0.001	0.001	0.001	0.001	0.002
Blount	Arconic Tennessee LLC	30400138	HOLDING FURNACE NO. 7	0.187	1.196	0.001	0.001	0.001	0.001	0.001	0.001	0.002
Blount	Arconic Tennessee LLC	30400138	MELTING FURNACE NO. 11	1.270	1.196	0.003	0.004	0.005	0.006	0.007	0.009	0.010
Blount	Arconic Tennessee LLC	30400138	MELTING FURNACE NO. 9	1.059	1.196	0.003	0.003	0.004	0.005	0.006	0.007	0.008
Blount	Arconic Tennessee LLC	30400138	NO.1 MELTING FURNACE	2.741	1.196	0.008	0.009	0.011	0.013	0.015	0.018	0.022

Blount	Arconic Tennessee LLC	30400138	NO.2 MELTING FURNACE	1.842	1.196	0.005	0.006	0.007	0.009	0.010	0.012	0.015
Blount	Arconic Tennessee LLC	30400138	NO.3 MELTING FURNACE	0.911	1.196	0.002	0.003	0.004	0.004	0.005	0.006	0.007
Blount	Arconic Tennessee LLC	30400138	NO.4 MELTING FURNACE (MAIN	0.125	1.196	0.000	0.000	0.000	0.001	0.001	0.001	0.001
Blount	Denso Manufacturing Tenn	31303502	001 - SOLDER PASTE APPLICATIO	0.447	1.265	0.001	0.002	0.002	0.002	0.003	0.004	0.005
Blount	Denso Manufacturing Tenn	40202501	003 - SEALER COATING APPLICAT	41.780	1.278	0.114	0.146	0.187	0.239	0.306	0.391	0.500
Blount	Denso Manufacturing Tenn	40202501	004 - WAVE SOLDERING OPERAT	29.060	1.278	0.080	0.102	0.130	0.166	0.213	0.272	0.348
Blount	SKIERS CHOICE, INC.	10200603	BUILDING HEATING	0.070	1.188	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Blount	SKIERS CHOICE, INC.	31401501	MOLD PREPARATIONS - OPEN AR	2.510	1.229	0.007	0.008	0.010	0.013	0.016	0.019	0.024
Blount	SKIERS CHOICE, INC.	31401512	GELCOAT - BOOTH 1-5	50.280	1.229	0.138	0.169	0.208	0.256	0.314	0.386	0.474
Blount	SKIERS CHOICE, INC.	31401517	LAMINATING - OPEN AREAS	57.260	1.229	0.157	0.193	0.237	0.291	0.358	0.439	0.540
Blount	SKIERS CHOICE, INC.	31401553	GLUEING - OPEN AREAS	3.440	1.229	0.009	0.012	0.014	0.017	0.021	0.026	0.032
Blount Total	(without SAF)					1.08	1.28	1.52	1.82	2.19	2.67	3.33
Blount Total	(with SAF)					1.10	1.30	1.54	1.84	2.22	2.71	3.37

				2017 (TPY)		2017 (TPD)	2020 (TPD)	2023 (TPD)	2026 (TPD)	2029 (TPD)	2032 (TPD)	2035 (TPD)
County	**Site name**	**SCC**	**Process description**	**VOC**	**GF**	**VOC**	**VOC**	**VOC**	**VOC**	**VOC**	**VOC**	**VOC**
Knox	Cemex Construction Mater	30500623	Rotary Kiln	12.400	1.276	0.034	0.043	0.055	0.071	0.090	0.115	0.147
Knox	CMC Steel US, LLC - CMC St	30400701	Scrap Metal Melting	10.900	1.115	0.030	0.033	0.037	0.041	0.046	0.052	0.057
Knox	CMC Steel US, LLC - CMC St	30400740	Reheating Metal	0.170	1.115	0.000	0.001	0.001	0.001	0.001	0.001	0.001
Knox	CMC Steel US, LLC - CMC St	30400799	Cutting Torches, Laddle Preheate	0.400	1.115	0.001	0.001	0.001	0.002	0.002	0.002	0.002
Knox	Leisure Pools and Spas Mar	30800720	Pool Lamination, Gelcoating, and	146.800	1.371	0.402	0.551	0.756	1.037	1.422	1.949	2.672
Knox	Leisure Pools and Spas Mar	31401501	Boat Lamination, Gelcoating, and	14.100	1.229	0.039	0.047	0.058	0.072	0.088	0.108	0.133
Knox	Leisure Pools and Spas Mar	30800791	Resin Storage Tanks	0.042	1.371	0.000	0.000	0.000	0.000	0.000	0.001	0.001
Knox	Schick Manufacturing Inc.	40100225	HSC Cleaning System	6.050	1.217	0.017	0.020	0.025	0.030	0.036	0.044	0.054
Knox	Schick Manufacturing Inc.	40202501	Blade Oilers	7.220	1.278	0.020	0.025	0.032	0.041	0.053	0.068	0.086
Knox	University of Tennessee	10300502	Boiler #1: Fuel oil	0.002	1.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Knox	University of Tennessee	10300502	Boiler #2: Fuel Oil	0.001	1.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Knox	University of Tennessee	10300502	Boiler #5: Fuel oil	0.000	1.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Knox	University of Tennessee	10300602	Boiler #1: Natural Gas	0.000	1.256	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Knox	University of Tennessee	10300602	BOILER #2 Gas Fired (Replaced w	0.727	1.256	0.002	0.003	0.003	0.004	0.005	0.006	0.008
Knox	University of Tennessee	10300602	Boiler #3: Fuel oil	0.002	1.256	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Knox	University of Tennessee	10300602	Boiler #3: Natural Gas	0.615	1.256	0.002	0.002	0.003	0.003	0.004	0.005	0.007
Knox	University of Tennessee	10300602	Boiler #5: Natural Gas	0.349	1.256	0.001	0.001	0.002	0.002	0.002	0.003	0.004
Knox	University of Tennessee	10300602	Duct burner w/o turbine	0.000	1.256	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Knox	University of Tennessee	10300602	Duct burner w/turbine	0.176	1.256	0.000	0.001	0.001	0.001	0.001	0.002	0.002
Knox	University of Tennessee	10300602	JARTU Boiler 1	0.029	1.256	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Knox	University of Tennessee	10300603	JARTU Boiler 2	0.020	1.325	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Knox	University of Tennessee	20300107	Emergency Generator: Fuel oil	0.000	1.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Knox	University of Tennessee	20300209	Turbine through duct burner	0.588	1.038	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Knox	University of Tennessee	20300209	Turbine through dump stack	0.000	1.038	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Knox	Republic Plastics, L.P. - K1 P	30800899	Extruder and Associated Process	282.200	1.371	0.773	1.060	1.454	1.993	2.733	3.747	5.137
Knox	Republic Plastics, L.P. - K2 P	30800899	Extruder and Associated Process	131.000	1.371	0.359	0.492	0.675	0.925	1.269	1.739	2.385
Knox Total	(without SAF)					1.68	2.28	3.10	4.22	5.75	7.84	10.70
Knox Total	(with SAF)					1.71	2.33	3.16	4.30	5.86	7.99	10.90

County	VOC, Typical Summer Day, July (tons/day)						
	2017	2020	2023	2026	2029	2032	2035
Anderson (partial)	0.12	0.15	0.19	0.00	0.00	0.00	0.00
Blount	1.10	1.30	1.54	1.84	2.22	2.71	3.37
Knox	1.71	2.33	3.16	4.30	5.86	7.99	10.90
Total Emissions	2.93	3.78	4.89	6.14	8.08	10.70	14.27

County	SAF	Sector
Anderson	1.1723	ptegu
Blount	1.0130	ptnonipm
Knox	1.0190	ptnonipm

Appendix D

Nonpoint Source Emissions

Sectors Included in the Nonpoint Emission Inventory
Fuel Comb - Industrial Boilers, ICEs - Oil
Fuel Comb - Industrial Boilers, ICEs - Natural Gas
Fuel Comb - Comm/Institutional - Natural Gas
Fuel Comb - Comm/Institutional - Other
Fuel Comb - Comm/Institutional - Oil
Fuel Comb - Residential - Oil
Fuel Comb - Residential - Natural Gas
Fuel Comb - Residential - Other
Fuel Comb - Residential - Wood
Commercial Cooking
Solvent - Non-Industrial Surface Coating
Solvent - Industrial Surface Coating & Solvent Use
Solvent - Degreasing
Solvent - Dry Cleaning
Solvent - Consumer & Commercial Solvent Use
Bulk Gasoline Terminals
Gas Stations
Industrial Processes - Storage and Transfer
Waste Disposal

SCCs Included in the Nonpoint Emission Inventory	Sector	Month of July Weighting Fraction of Annual Emissions
2102005000	Fuel Comb - Industrial Boilers, ICEs - Oil	0.0833
2102006000	Fuel Comb - Industrial Boilers, ICEs - Natural Gas	0.0833
2102011000	Fuel Comb - Industrial Boilers, ICEs - Oil	0.0833
2103006000	Fuel Comb - Comm/Institutional - Natural Gas	0.0501
2103007000	Fuel Comb - Comm/Institutional - Other	0.0833
2103011000	Fuel Comb - Comm/Institutional - Oil	0.0833
2104004000	Fuel Comb - Residential - Oil	0.005
2104006000	Fuel Comb - Residential - Natural Gas	0.005
2104007000	Fuel Comb - Residential - Other	0.0833
2104008100	Fuel Comb - Residential - Wood	0.005
2104008210	Fuel Comb - Residential - Wood	0
2104008220	Fuel Comb - Residential - Wood	0
2104008230	Fuel Comb - Residential - Wood	0
2104008320	Fuel Comb - Residential - Wood	0
2104008330	Fuel Comb - Residential - Wood	0
2104011000	Fuel Comb - Residential - Oil	0
2302002100	Commercial Cooking	0.0833
2302002200	Commercial Cooking	0.0833
2302003000	Commercial Cooking	0.0833
2302003100	Commercial Cooking	0.0833
2302003200	Commercial Cooking	0.0833
2401001000	Solvent - Non-Industrial Surface Coating	0.0833
2401005000	Solvent - Industrial Surface Coating & Solvent Use	0.0833
2401008000	Solvent - Industrial Surface Coating & Solvent Use	0.0833
2401015000	Solvent - Industrial Surface Coating & Solvent Use	0.0858
2401020000	Solvent - Industrial Surface Coating & Solvent Use	0.0841
2401025000	Solvent - Industrial Surface Coating & Solvent Use	0.0841
2401030000	Solvent - Industrial Surface Coating & Solvent Use	0.0841
2401040000	Solvent - Industrial Surface Coating & Solvent Use	0.0841
2401055000	Solvent - Industrial Surface Coating & Solvent Use	0.0841
2401060000	Solvent - Industrial Surface Coating & Solvent Use	0.0833
2401070000	Solvent - Industrial Surface Coating & Solvent Use	0.0871
2401080000	Solvent - Industrial Surface Coating & Solvent Use	0.0841
2401090000	Solvent - Industrial Surface Coating & Solvent Use	0.0846
2401100000	Solvent - Industrial Surface Coating & Solvent Use	0.0846
2401200000	Solvent - Industrial Surface Coating & Solvent Use	0.0846
2415000000	Solvent - Degreasing	0.0841
2420000000	Solvent - Dry Cleaning	0.0851
2460100000	Solvent - Consumer & Commercial Solvent Use	0.0833
2460200000	Solvent - Consumer & Commercial Solvent Use	0.0833
2460400000	Solvent - Consumer & Commercial Solvent Use	0.0833
2460500000	Solvent - Consumer & Commercial Solvent Use	0.0833
2460600000	Solvent - Consumer & Commercial Solvent Use	0.0833

2460800000	Solvent - Consumer & Commercial Solvent Use	0.0833
2460900000	Solvent - Consumer & Commercial Solvent Use	0.0833
2461022000	Solvent - Consumer & Commercial Solvent Use	0.0838
2461850000	Solvent - Consumer & Commercial Solvent Use	0.0838
2501050120	Bulk Gasoline Terminals	0.0833
2501060201	Gas Stations	0.0833
2505040120	Industrial Processes - Storage and Transfer	0.0833
2610000100	Waste Disposal	0.0833
2610000500	Waste Disposal	0.0616
2630020000	Waste Disposal	0.0833

FIPS	County	SCC	Pollutant	2017	2020	2023	2026	2029	2032	2035
47001	Anderson	2102005000	NOx	0.1212172	0.09096	0.060703	0.030446	0.000189	0	0
47009	Blount	2102005000	NOx	0.1103326	0.101311	0.09229	0.083269	0.074248	0.065227	0.056206
47093	Knox	2102005000	NOx	0.123868	0.061773	0.006345	0	0	0	0
47001	Anderson	2102006000	NOx	120.0887	122.69005	125.2914	127.89275	130.4941	133.09545	135.6968
47009	Blount	2102006000	NOx	109.3055	123.38075	137.456	151.53125	165.6065	179.68175	193.757
47093	Knox	2102006000	NOx	214.4538	260.1269	305.74055	351.3542	396.96785	442.5815	488.19515
47001	Anderson	2102011000	NOx	0.0890773	0.043353	0.00828	0	0	0	0
47009	Blount	2102011000	NOx	0.0810787	0.053781	0.038083	0.022385	0.006687	0	0
47093	Knox	2102011000	NOx	0.1484567	0.098367	0.069768	0.041169	0.01257	0	0
47001	Anderson	2103006000	NOx	27.30436	22.821747	16.974127	11.126507	5.278887	0	0
47009	Blount	2103006000	NOx	33.87239	27.88097	23.587215	19.29346	14.999705	10.70595	6.412195
47093	Knox	2103006000	NOx	225.5857	249.1591	266.7902	284.4213	302.0524	319.6835	337.3146
47001	Anderson	2103007000	NOx	1.824946	3.104053	4.006228	4.908403	5.810579	6.712754	7.614929
47009	Blount	2103007000	NOx	2.263935	3.611447	4.732203	5.852959	6.973715	8.094471	9.215227
47093	Knox	2103007000	NOx	13.17445	21.005474	27.532329	34.059184	40.586039	47.112894	53.639749
47001	Anderson	2103011000	NOx	0.0267615	0.016751	0.001829	0	0	0	0
47009	Blount	2103011000	NOx	0.0331989	0.017666	0.003451	0	0	0	0
47093	Knox	2103011000	NOx	0.1931936	0.08164	0.012311	0	0	0	0
47001	Anderson	2104004000	NOx	0.556286	0.4169972	0.32608	0.222466	0.118852	0.015238	0
47009	Blount	2104004000	NOx	1.1953575	0.76262	0.375876	0	0	0	0
47093	Knox	2104004000	NOx	3.4764201	3.4249308	2.971601	2.658031	2.344461	2.030891	1.717321
47001	Anderson	2104006000	NOx	37.35728	34.062373	28.040763	22.019153	15.997543	9.975933	3.954323
47009	Blount	2104006000	NOx	40.85052	39.611627	34.759837	29.908047	25.056257	20.204467	15.352677
47093	Knox	2104006000	NOx	207.448	224.644	220.992	217.34	213.688	210.036	206.384
47001	Anderson	2104007000	NOx	2.78501	2.2157	1.77319	1.33068	0.88817	0.44566	0.00315
47009	Blount	2104007000	NOx	13.55816	7.715047	3.542427	0	0	0	0
47093	Knox	2104007000	NOx	11.48191	6.384347	2.266902	0	0	0	0
47001	Anderson	2104008100	NOx	1.067765	1.170217	1.356467	1.542717	1.728967	1.915217	2.101467
47009	Blount	2104008100	NOx	1.554092	1.670009	1.873425	2.076841	2.280257	2.483673	2.687089
47093	Knox	2104008100	NOx	4.167791	3.516638	3.391893	3.267149	3.142404	3.01766	2.892915
47001	Anderson	2104008210	NOx	0.477866	0.326727	0.26498	0.203233	0.141486	0.079739	0.017992
47009	Blount	2104008210	NOx	0.8629612	0.644997	0.580076	0.515155	0.450234	0.385313	0.320392
47093	Knox	2104008210	NOx	2.863357	2.38805	1.907774	1.446471	0.985168	0.523865	0.062562
47001	Anderson	2104008220	NOx	0.38073	0.439076	0.55118	0.663284	0.775388	0.887492	0.999596
47009	Blount	2104008220	NOx	0.6875467	0.805388	1.019309	1.23323	1.447151	1.661072	1.874993
47093	Knox	2104008220	NOx	1.484592	1.468059	1.711244	1.954428	2.197613	2.440797	2.683982
47001	Anderson	2104008230	NOx	0.2297142	0.285432	0.37774	0.470048	0.562356	0.654664	0.746972
47009	Blount	2104008230	NOx	0.4148327	0.518249	0.687588	0.856927	1.026266	1.195605	1.364944
47093	Knox	2104008230	NOx	0.8957312	1.039235	1.341045	1.642855	1.944665	2.246475	2.548285
47001	Anderson	2104008320	NOx	0.7494955	1.24544	1.518637	1.791834	2.065031	2.338228	2.611425
47009	Blount	2104008320	NOx	1.42268	2.330676	2.87445	3.418225	3.961999	4.505774	5.049548
47093	Knox	2104008320	NOx	2.837758	4.036391	4.809955	5.583519	6.357083	7.130647	7.904211
47001	Anderson	2104008330	NOx	0.4522096	0.788214	0.984741	1.181268	1.377795	1.574322	1.770849
47009	Blount	2104008330	NOx	0.8583766	1.466588	1.847033	2.227478	2.607923	2.988368	3.368813
47093	Knox	2104008330	NOx	1.712167	2.687474	3.355281	4.023088	4.690895	5.358702	6.026509
47001	Anderson	2104011000	NOx	0.1950291	0.145996	0.126866	0.107736	0.088606	0.069476	0.050346
47009	Blount	2104011000	NOx	0.3437864	0.1829565	0.076977	0	0	0	0
47093	Knox	2104011000	NOx	0.5945243	0.6216968	0.540312	0.487953	0.435594	0.383235	0.330876

47001	Anderson	2610000100	NOx	0.3097835	0.290385	0.261883	0.233381	0.204879	0.176377	0.147875
47009	Blount	2610000100	NOx	0.477505	0.451667	0.407733	0.363799	0.319865	0.275931	0.231997
47093	Knox	2610000100	NOx	0.5615502	0.554893	0.548236	0.541579	0.534922	0.528265	0.521608
47001	Anderson	2610000500	NOx	11.3559	13.469467	13.495217	13.520967	13.546717	13.572467	13.598217
47009	Blount	2610000500	NOx	29.87582	34.48396	39.86772	45.25148	50.63524	56.019	61.40276
47093	Knox	2610000500	NOx	53.30301	61.524633	71.13008	80.735527	90.340974	99.946421	109.55187
47001	Anderson	2102005000	VOC	0.0006171	0.000463	0.000309	0.000155	0.000001	0	0
47009	Blount	2102005000	VOC	0.0005617	0.000516	0.00047	0.000424	0.000378	0.000332	0.000286
47093	Knox	2102005000	VOC	0.000427	0.000043	0	0	0	0	0
47001	Anderson	2102006000	VOC	6.60488	6.747945	6.89101	7.034075	7.17714	7.320205	7.46327
47009	Blount	2102006000	VOC	6.0118	6.785933	7.560065	8.334198	9.10833	9.882463	10.656595
47093	Knox	2102006000	VOC	11.79496	14.30698	16.815735	19.32449	21.833245	24.342	26.850755
47001	Anderson	2102011000	VOC	0.0008774	0.000427	0.000082	0	0	0	0
47009	Blount	2102011000	VOC	0.0007986	0.00053	0.000375	0.000221	0.000066	0	0
47093	Knox	2102011000	VOC	0.0014622	0.000969	0.000687	0.000405	0.000123	0	0
47001	Anderson	2103006000	VOC	1.50174	1.128943	0.807323	0.485703	0.164083	0	0
47009	Blount	2103006000	VOC	1.862981	1.42135	1.185193	0.949036	0.712879	0.476722	0.240565
47093	Knox	2103006000	VOC	12.40721	13.703747	14.673452	15.643157	16.612862	17.582567	18.552272
47001	Anderson	2103007000	VOC	0.0666881	0.11343	0.146398	0.179366	0.212334	0.245302	0.27827
47009	Blount	2103007000	VOC	0.0827299	0.131971	0.172926	0.213881	0.254836	0.295791	0.336746
47093	Knox	2103007000	VOC	0.4814276	0.767593	1.006101	1.244609	1.483117	1.721625	1.960133
47001	Anderson	2103011000	VOC	0.0004549	0.000112	0	0	0	0	0
47009	Blount	2103011000	VOC	0.0005644	0.000317	0.000072	0	0	0	0
47093	Knox	2103011000	VOC	0.0032843	0.001371	0.000176	0	0	0	0
47001	Anderson	2104004000	VOC	0.0061907	0.0006733	0	0	0	0	0
47009	Blount	2104004000	VOC	0.0077383	0.0049534	0	0	0	0	0
47093	Knox	2104004000	VOC	0.0188715	0.016832	0	0	0	0	0
47001	Anderson	2104006000	VOC	2.185799	1.993009	1.640678	1.288348	0.936017	0.583687	0.231356
47009	Blount	2104006000	VOC	2.39019	2.317697	2.033812	1.749927	1.466042	1.182157	0.898272
47093	Knox	2104006000	VOC	12.13792	13.14406	12.93037	12.71668	12.50299	12.2893	12.07561
47001	Anderson	2104007000	VOC	0.1084214	0.067359	0.035956	0.004553	0	0	0
47009	Blount	2104007000	VOC	0.527824	0.333435	0.195802	0.058169	0	0	0
47093	Knox	2104007000	VOC	0.4469948	0.278328	0.140366	0.002404	0	0	0
47001	Anderson	2104008100	VOC	7.761829	8.506575	9.86047	11.214364	12.568259	13.922153	15.276048
47009	Blount	2104008100	VOC	11.29705	12.13965	13.61831	15.09697	16.57563	18.05429	19.53295
47093	Knox	2104008100	VOC	30.29664	25.563287	24.656507	23.749727	22.842947	21.936167	21.029387
47001	Anderson	2104008210	VOC	9.045321	6.184461	5.015672	3.846882	2.678093	1.509303	0.340514
47009	Blount	2104008210	VOC	16.33462	12.208903	10.980063	9.751223	8.522383	7.293543	6.064703
47093	Knox	2104008210	VOC	35.27068	6.14814	0	0	0	0	0
47001	Anderson	2104008220	VOC	2.003842	2.310924	2.900945	3.490966	4.080987	4.671008	5.261029
47009	Blount	2104008220	VOC	3.618666	4.238884	5.364782	6.49068	7.616578	8.742476	9.868374
47093	Knox	2104008220	VOC	7.813639	7.726619	9.006533	10.286448	11.566362	12.846277	14.126191
47001	Anderson	2104008230	VOC	1.722856	2.140738	2.833046	3.525354	4.217662	4.90997	5.602278
47009	Blount	2104008230	VOC	3.111245	3.88687	5.156914	6.426958	7.697002	8.967046	10.23709
47093	Knox	2104008230	VOC	6.717984	7.794264	10.057841	12.321418	14.584995	16.848572	19.112149
47001	Anderson	2104008320	VOC	3.944712	6.554939	7.99282	9.430701	10.868582	12.306463	13.744344
47009	Blount	2104008320	VOC	7.487787	12.266716	15.128685	17.990653	20.852622	23.71459	26.576559
47093	Knox	2104008320	VOC	14.93556	21.24416	25.31555	29.38694	33.45833	37.52972	41.60111
47001	Anderson	2104008330	VOC	3.391572	5.911608	7.385561	8.859513	10.333466	11.807418	13.281371

47009	Blount	2104008330	VOC	6.437825	10.999403	13.852743	16.706083	19.559423	22.412763	25.266103
47093	Knox	2104008330	VOC	12.84125	20.156067	25.164617	30.173167	35.181717	40.190267	45.198817
47001	Anderson	2104011000	VOC	0.0075978	0.00651	0.001884	0	0	0	0
47009	Blount	2104011000	VOC	0.0094973	0.0071275	0	0	0	0	0
47093	Knox	2104011000	VOC	0.0231612	0.0242197	0	0	0	0	0
47001	Anderson	2302002100	VOC	1.292248	1.534492	1.866823	2.199154	2.531485	2.863816	3.196147
47009	Blount	2302002100	VOC	1.708867	1.987061	2.404352	2.821642	3.238933	3.656224	4.073514
47093	Knox	2302002100	VOC	6.748142	10.661584	14.575026	18.488468	22.40191	26.315352	30.228794
47001	Anderson	2302002200	VOC	3.3744	3.952533	4.729733	5.506933	6.284133	7.061333	7.838533
47009	Blount	2302002200	VOC	5.276584	6.222322	7.640929	9.059536	10.478143	11.89675	13.315357
47093	Knox	2302002200	VOC	20.63981	33.69942	46.75903	59.81864	72.87825	85.93786	98.99747
47001	Anderson	2302003000	VOC	0.8573972	1.048944	1.320746	1.592548	1.86435	2.136152	2.407954
47009	Blount	2302003000	VOC	1.071833	1.288793	1.614233	1.939674	2.265114	2.590554	2.915995
47093	Knox	2302003000	VOC	4.671128	5.068611	6.04178	7.014949	7.988118	8.961287	9.934456
47001	Anderson	2302003100	VOC	0.4426787	0.517978	0.61903	0.720082	0.821134	0.922186	1.023238
47009	Blount	2302003100	VOC	0.7523732	0.89163	1.100515	1.3094	1.518285	1.72717	1.936055
47093	Knox	2302003100	VOC	2.706927	4.448054	6.189181	7.930308	9.671435	11.412562	13.153689
47001	Anderson	2302003200	VOC	0.0297684	0.036552	0.04621	0.055868	0.065526	0.075184	0.084842
47009	Blount	2302003200	VOC	0.0267694	0.032095	0.040083	0.048071	0.056059	0.064047	0.072035
47093	Knox	2302003200	VOC	0.1479234	0.176735	0.225675	0.274615	0.323555	0.372495	0.421435
47001	Anderson	2401001000	VOC	88.57076	88.936347	89.271227	89.606107	89.940987	90.275867	90.610747
47009	Blount	2401001000	VOC	150.9096	154.03263	157.52668	161.02073	164.51478	168.00883	171.50288
47093	Knox	2401001000	VOC	545.1145	562.97933	582.68408	602.38883	622.09358	641.79833	661.50308
47001	Anderson	2401005000	VOC	13.75644	11.11222	8.78184	6.45146	4.12108	1.7907	0
47009	Blount	2401005000	VOC	38.3971	38.5677	38.757225	38.94675	39.136275	39.3258	39.515325
47093	Knox	2401005000	VOC	121.6538	122.0359	121.36155	120.6872	120.01285	119.3385	118.66415
47001	Anderson	2401008000	VOC	11.32299	18.966781	24.564435	30.162088	35.759742	41.357395	46.955049
47009	Blount	2401008000	VOC	19.29246	32.140385	41.686806	51.233227	60.779648	70.326069	79.87249
47093	Knox	2401008000	VOC	68.57912	114.432	148.50931	182.58662	216.66394	250.74125	284.81856
47001	Anderson	2401015000	VOC	4.910272	4.781496	3.907782	3.034068	2.160354	1.28664	0.412926
47009	Blount	2401015000	VOC	1.243511	1.174728	1.115514	1.056299	0.997085	0.93787	0.878656
47093	Knox	2401015000	VOC	5.90157	7.89348	8.858105	9.82273	10.787355	11.75198	12.716605
47001	Anderson	2401020000	VOC	3.008823	2.526207	2.101994	1.67778	1.253567	0.829353	0.40514
47009	Blount	2401020000	VOC	28.76054	30.826803	27.976248	25.125693	22.275138	19.424583	16.574028
47093	Knox	2401020000	VOC	38.37209	30.801953	20.546748	10.291543	0.036338	0	0
47093	Knox	2401025000	VOC	18.90512	14.523927	12.200587	9.877247	7.553907	5.230567	2.907227
47093	Knox	2401030000	VOC	2.570956	2.389486	2.444389	2.499292	2.554195	2.609098	2.664001
47001	Anderson	2401040000	VOC	53.69569	38.902587	27.634432	16.366277	5.098122	0	0
47009	Blount	2401040000	VOC	8.949281	6.356791	4.478756	2.600721	0.722686	0	0
47093	Knox	2401040000	VOC	2.762194	1.805273	0.848352	0	0	0	0
47001	Anderson	2401055000	VOC	2.35357	3.660889	4.729437	5.797985	6.866533	7.935081	9.003629
47093	Knox	2401055000	VOC	4.676272	3.48984	0	0	0	0	0
47009	Blount	2401060000	VOC	0.61398	0.502815	0.39165	0.280485	0.16932	0.058155	0
47093	Knox	2401060000	VOC	4.435728	5.449009	7.136615	8.824222	10.511828	12.199435	13.887041
47001	Anderson	2401070000	VOC	95.05681	124.67425	133.07515	141.47606	149.87696	158.27787	166.67877
47009	Blount	2401070000	VOC	117.4895	96.4115	75.3335	54.2555	33.1775	12.0995	0
47093	Knox	2401070000	VOC	97.16445	79.8776	68.838575	57.79955	46.760525	35.7215	24.682475
47009	Blount	2401080000	VOC	15.42152	13.552693	12.656353	11.760013	10.863673	9.967333	9.070993
47093	Knox	2401080000	VOC	0.5901945	0.450854	0.311514	0.172173	0.032833	0	0

47001	Anderson	2401090000	VOC	1.857255	1.272712	0.771502	0.270292	0	0	0
47009	Blount	2401090000	VOC	0.3887825	0.269555	0.150327	0.0311	0	0	0
47093	Knox	2401090000	VOC	10.89518	10.55954	7.044855	3.53017	0.015485	0	0
47001	Anderson	2401100000	VOC	13.89927	11.017043	6.638678	2.260313	0	0	0
47009	Blount	2401100000	VOC	23.68201	19.415563	12.709043	6.002523	0	0	0
47093	Knox	2401100000	VOC	124.18268	123.34807	120.26816	117.18825	114.10834	111.02843	107.94852
47001	Anderson	2401200000	VOC	0.2241861	0.214133	0.20602	0.197906	0.189793	0.181679	0.173566
47009	Blount	2401200000	VOC	3.819752	3.719239	3.660955	3.602671	3.544387	3.486103	3.427819
47093	Knox	2401200000	VOC	1.357811	1.332681	1.320024	1.307367	1.29471	1.282053	1.269396
47001	Anderson	2415000000	VOC	159.279	164.35883	161.89908	159.43933	156.97958	154.51983	152.06008
47009	Blount	2415000000	VOC	112.935	129.55983	139.18233	148.80483	158.42733	168.04983	177.67233
47093	Knox	2415000000	VOC	249.4117	177.71543	170.61553	163.51563	156.41573	149.31583	142.21593
47001	Anderson	2420000000	VOC	0.0562186	0.060604	0.069622	0.078641	0.087659	0.096678	0.105696
47009	Blount	2420000000	VOC	0.357	0.392794	0.456749	0.520703	0.584658	0.648612	0.712567
47093	Knox	2420000000	VOC	2.244	2.453667	2.813167	3.172667	3.532167	3.891667	4.251167
47001	Anderson	2460100000	VOC	74.68977	77.16936	78.827995	80.48663	82.145265	83.8039	85.462535
47009	Blount	2460100000	VOC	127.2587	133.45327	138.65262	143.85197	149.05132	154.25067	159.45002
47093	Knox	2460100000	VOC	452.3679	477.5312	498.40815	519.2851	540.16205	561.039	581.91595
47001	Anderson	2460200000	VOC	76.05661	84.012647	88.232952	92.453257	96.673562	100.89387	105.11417
47009	Blount	2460200000	VOC	129.5876	144.8273	154.2666	163.7059	173.1452	182.5845	192.0238
47093	Knox	2460200000	VOC	460.6463	517.7874	553.60855	589.4297	625.25085	661.072	696.89315
47001	Anderson	2460400000	VOC	47.204876	45.993501	44.052189	42.110877	40.169565	38.228253	36.286941
47009	Blount	2460400000	VOC	72.27589	68.946687	63.261132	57.575577	51.890022	46.204467	40.518912
47093	Knox	2460400000	VOC	43.63723	45.327307	47.450222	49.573137	51.696052	53.818967	55.941882
47001	Anderson	2460500000	VOC	36.22208	36.458457	36.726347	36.994237	37.262127	37.530017	37.797907
47009	Blount	2460500000	VOC	61.71628	63.133873	64.777013	66.420153	68.063293	69.706433	71.349573
47093	Knox	2460500000	VOC	219.3835	225.99467	233.03242	240.07017	247.10792	254.14567	261.18342
47001	Anderson	2460600000	VOC	69.54674	85.626387	109.69386	133.76133	157.8288	181.89627	205.96374
47009	Blount	2460600000	VOC	118.4959	146.50193	188.22098	229.94003	271.65908	313.37813	355.09718
47093	Knox	2460600000	VOC	421.2185	521.71533	670.73258	819.74983	968.76708	1117.7843	1266.8016
47001	Anderson	2460800000	VOC	67.86873	68.311473	68.813338	69.315203	69.817068	70.318933	70.820798
47009	Blount	2460800000	VOC	115.6368	118.29307	121.37197	124.45087	127.52977	130.60867	133.68757
47093	Knox	2460800000	VOC	411.0554	423.4437	436.6309	449.8181	463.0053	476.1925	489.3797
47001	Anderson	2460900000	VOC	2.668995	2.68641	2.706148	2.725885	2.745623	2.76536	2.785098
47009	Blount	2460900000	VOC	4.547515	4.651978	4.77306	4.894143	5.015225	5.136307	5.25739
47093	Knox	2460900000	VOC	16.1651	16.652283	17.170883	17.689483	18.208083	18.726683	19.245283
47001	Anderson	2461022000	VOC	29.6957	41.835033	50.898933	59.962833	69.026733	78.090633	87.154533
47009	Blount	2461022000	VOC	33.33937	44.707827	53.422062	62.136297	70.850532	79.564767	88.279002
47093	Knox	2461022000	VOC	380.9869	570.13013	726.64553	883.16093	1039.6763	1196.1917	1352.7071
47001	Anderson	2461850000	VOC	2.425101	2.563434	3.02425	3.485066	3.945882	4.406698	4.867514
47009	Blount	2461850000	VOC	10.61216	7.83004	7.05347	6.2769	5.50033	4.72376	3.94719
47093	Knox	2461850000	VOC	5.285057	4.360026	4.463309	4.566593	4.669876	4.77316	4.876443
47001	Anderson	2501050120	VOC	9.246095	7.709247	7.460925	7.212603	6.964281	6.715959	6.467637
47009	Blount	2501050120	VOC	57.35078	51.829907	47.673097	43.516287	39.359477	35.202667	31.045857
47093	Knox	2501050120	VOC	168.6872	134.17207	102.99027	71.808467	40.626667	9.444867	0
47001	Anderson	2501060201	VOC	21.94554	23.054687	24.454207	25.853727	27.253247	28.652767	30.052287
47009	Blount	2501060201	VOC	25.98282	26.23516	25.86447	25.49378	25.12309	24.7524	24.38171
47093	Knox	2501060201	VOC	149.151	149.65857	163.19407	176.72957	190.26507	203.80057	217.33607
47001	Anderson	2505040120	VOC	6.744873	5.269301	5.014832	4.760364	4.505895	4.251427	3.996958

47009	Blount	2505040120	VOC	41.83644	34.531653	31.005123	27.478593	23.952063	20.425533	16.899003
47093	Knox	2505040120	VOC	108.4649	110.18453	76.039983	41.895433	7.750883	0	0
47001	Anderson	2610000100	VOC	1.399022	1.311413	1.182694	1.053975	0.925256	0.796537	0.667818
47009	Blount	2610000100	VOC	2.156474	2.039789	1.841381	1.642973	1.444565	1.246157	1.047749
47093	Knox	2610000100	VOC	2.536033	2.505968	2.475903	2.445838	2.415773	2.385708	2.355643
47001	Anderson	2610000500	VOC	32.0804	38.895467	41.822567	44.749667	47.676767	50.603867	53.530967
47009	Blount	2610000500	VOC	84.39919	100.11915	120.1531	140.18704	160.22099	180.25493	200.28888
47093	Knox	2610000500	VOC	150.581	141.632	132.683	123.734	114.785	105.836	96.887
47001	Anderson	2630020000	VOC	0.961775	0.68432	0.461673	0.239025	0.016378	0	0
47009	Blount	2630020000	VOC	1.3787	0.871467	0.408217	0	0	0	0
47093	Knox	2630020000	VOC	10.42355	11.63844	12.771245	13.90405	15.036855	16.16966	17.302465

Nonpoint Emission Inventory

County	VOC, Typical Summer Day , July, (ton/day)						
	2017	2020	2023	2026	2029	2032	2035
Anderson (partial)	0.58	0.62	0.64	0.67	0.69	0.72	0.75
Blount	3.79	3.96	4.13	4.29	4.46	4.64	4.86
Knox	11.64	12.55	13.53	14.52	15.51	16.61	17.80
Total Emissions	16.01	17.13	18.30	19.48	20.66	21.97	23.41

County	NOx, Typical Summer Day , July, (ton/day)						
	2017	2020	2023	2026	2029	2032	2035
Anderson (partial)	0.09	0.10	0.09	0.09	0.09	0.09	0.10
Blount	0.46	0.48	0.52	0.55	0.59	0.64	0.68
Knox	1.15	1.34	1.51	1.69	1.88	2.07	2.25
Total Emissions	1.70	1.92	2.12	2.33	2.56	2.80	3.03

Appendix E

Nonroad Mobile Source Emissions

Nonroad Emission Inventory

County		SCC Category	NOX Typical Summer Day, July (ton/day)						
			2017	2020	2023	2026	2029	2032	2035
Anderson	1	Agricultural Equipment	0.020966	0.017441	0.014508	0.012068	0.010039	0.008351	0.006946
	2	Airport Support Equipment	0.003144	0.002615	0.002175	0.001809	0.001505	0.001252	0.001042
	3	Commercial Equipment	0.053061	0.044138	0.036716	0.030542	0.025406	0.021134	0.017580
	4	Construction and Mining Equipment	0.174524	0.145176	0.120763	0.100455	0.083563	0.069511	0.057822
	5	Industrial Equipment	0.038627	0.032132	0.026728	0.022234	0.018495	0.015385	0.012798
	6	Lawn and Garden Equipment	0.060732	0.050519	0.042024	0.034957	0.029079	0.024189	0.020121
	7	Logging Equipment	0.000553	0.000460	0.000382	0.000318	0.000265	0.000220	0.000183
	8	Pleasure Craft	0.010756	0.008947	0.007442	0.006191	0.005150	0.004284	0.003563
	9	Railroad Equipment	0.000813	0.000676	0.000563	0.000468	0.000389	0.000324	0.000269
	10	Recreational Equipment	0.006144	0.005110	0.004251	0.003536	0.002942	0.002447	0.002035
Blount	1	Agricultural Equipment	0.143073	0.119014	0.099001	0.082353	0.068504	0.056985	0.047402
	2	Airport Support Equipment	0.001458	0.001213	0.001009	0.000839	0.000698	0.000581	0.000483
	3	Commercial Equipment	0.128135	0.106588	0.088664	0.073754	0.061352	0.051035	0.042453
	4	Construction and Mining Equipment	0.681429	0.566840	0.471520	0.392229	0.326271	0.271406	0.225766
	5	Industrial Equipment	0.211345	0.175805	0.146242	0.121650	0.101193	0.084176	0.070021
	6	Lawn and Garden Equipment	0.283747	0.236032	0.196341	0.163324	0.135859	0.113013	0.094009
	7	Logging Equipment	0.000724	0.000602	0.000501	0.000417	0.000347	0.000288	0.000240
	8	Pleasure Craft	0.088263	0.073420	0.061074	0.050804	0.042261	0.035154	0.029243
	9	Railroad Equipment	0.003745	0.003115	0.002591	0.002155	0.001793	0.001491	0.001241
	10	Recreational Equipment	0.054752	0.045545	0.037886	0.031515	0.026215	0.021807	0.018140
Knox	1	Agricultural Equipment	0.022498	0.018714	0.015567	0.012950	0.010772	0.008961	0.007454
	2	Airport Support Equipment	0.001405	0.001169	0.000972	0.000809	0.000673	0.000560	0.000465
	3	Commercial Equipment	0.273386	0.227413	0.189171	0.157360	0.130898	0.108887	0.090576
	4	Construction and Mining Equipment	1.095867	0.911586	0.758293	0.630778	0.524707	0.436472	0.363074
	5	Industrial Equipment	0.314175	0.261343	0.217396	0.180838	0.150429	0.125132	0.104090
	6	Lawn and Garden Equipment	0.288233	0.239764	0.199445	0.165906	0.138007	0.114800	0.095495
	7	Logging Equipment	0.000717	0.000597	0.000496	0.000413	0.000343	0.000286	0.000238
	8	Pleasure Craft	0.083766	0.069680	0.057963	0.048216	0.040108	0.033363	0.027753
	9	Railroad Equipment	0.005019	0.004175	0.003473	0.002889	0.002403	0.001999	0.001663
	10	Recreational Equipment	0.019929	0.016578	0.013790	0.011471	0.009542	0.007938	0.006603
		Grand Total	4.07	3.39	2.82	2.34	1.95	1.62	1.35

	NO$_X$, Typical Summer Day, July (tons/day)						
County	2017	2020	2023	2026	2029	2032	2035
Anderson (partial)	0.37	0.31	0.26	0.21	0.18	0.15	0.12
Blount	1.60	1.33	1.10	0.92	0.76	0.64	0.53
Knox	2.10	1.75	1.46	1.21	1.01	0.84	0.70
Totals	4.07	3.39	2.82	2.34	1.95	1.63	1.35

		NOx Typical Summer Day, July (tons/day)						
	SCC Category	2017	2020	2023	2026	2029	2032	2035
1	Agricultural Equipment Total	0.186538	0.155169	0.129076	0.107371	0.089315	0.074296	0.061802
2	Airport Support Equipment Total	0.006007	0.004997	0.004156	0.003457	0.002876	0.002392	0.001990
3	Commercial Equipment Total	0.454582	0.378139	0.314551	0.261656	0.217656	0.181055	0.150609
4	Construction and Mining Equipment Total	1.951820	1.623601	1.350576	1.123463	0.934541	0.777388	0.646662
5	Industrial Equipment Total	0.564148	0.469280	0.390366	0.324722	0.270117	0.224694	0.186909
6	Lawn and Garden Equipment Total	0.632712	0.526315	0.437809	0.364187	0.302945	0.252002	0.209625
7	Logging Equipment Total	0.001994	0.001659	0.001380	0.001148	0.000955	0.000794	0.000661
8	Pleasure Craft Total	0.182784	0.152047	0.126479	0.105210	0.087518	0.072801	0.060559
9	Railroad Equipment Total	0.009577	0.007966	0.006627	0.005512	0.004585	0.003814	0.003173
10	Recreational Equipment Total	0.080825	0.067233	0.055927	0.046522	0.038699	0.032192	0.026778
	Total	4.07	3.39	2.82	2.34	1.95	1.62	1.35

Values in summary tables may not be the same due to rounding

Nonroad Emission Inventory

County		SCC Category	VOC Typical Summer Day, July (ton/day)						
			2017	2020	2023	2026	2029	2032	2035
Anderson	1	Agricultural Equipment	0.002387	0.002051	0.001762	0.001514	0.001301	0.001118	0.000960
	2	Airport Support Equipment	0.000387	0.000332	0.000286	0.000245	0.000211	0.000181	0.000156
	3	Commercial Equipment	0.049880	0.042857	0.036824	0.031639	0.027185	0.023357	0.020069
	4	Construction and Mining Equipment	0.022311	0.019170	0.016471	0.014152	0.012160	0.010448	0.008977
	5	Industrial Equipment	0.011144	0.009575	0.008227	0.007069	0.006073	0.005218	0.004484
	6	Lawn and Garden Equipment	0.202128	0.173671	0.149220	0.128211	0.110160	0.094651	0.081325
	7	Logging Equipment	0.000466	0.000400	0.000344	0.000295	0.000254	0.000218	0.000187
	8	Pleasure Craft	0.022261	0.019127	0.016434	0.014120	0.012132	0.010424	0.008957
	9	Railroad Equipment	0.000157	0.000135	0.000116	0.000099	0.000085	0.000073	0.000063
	10	Recreational Equipment	0.063094	0.054211	0.046579	0.040021	0.034386	0.029545	0.025385
Blount	1	Agricultural Equipment	0.015333	0.013174	0.011319	0.009726	0.008356	0.007180	0.006169
	2	Airport Support Equipment	0.000174	0.000150	0.000129	0.000110	0.000095	0.000082	0.000070
	3	Commercial Equipment	0.191016	0.164123	0.141016	0.121163	0.104104	0.089447	0.076854
	4	Construction and Mining Equipment	0.157418	0.135255	0.116212	0.099851	0.085793	0.073714	0.063336
	5	Industrial Equipment	0.017141	0.014728	0.012654	0.010873	0.009342	0.008027	0.006897
	6	Lawn and Garden Equipment	0.568693	0.488627	0.419833	0.360725	0.309938	0.266302	0.228810
	7	Logging Equipment	0.004894	0.004205	0.003613	0.003104	0.002667	0.002292	0.001969
	8	Pleasure Craft	0.145586	0.125089	0.107478	0.092346	0.079345	0.068174	0.058576
	9	Railroad Equipment	0.000653	0.000561	0.000482	0.000414	0.000356	0.000306	0.000263
	10	Recreational Equipment	0.895775	0.769659	0.661298	0.568194	0.488198	0.419465	0.360408
Knox	1	Agricultural Equipment	0.002471	0.002123	0.001824	0.001568	0.001347	0.001157	0.000994
	2	Airport Support Equipment	0.000260	0.000223	0.000192	0.000165	0.000142	0.000122	0.000105
	3	Commercial Equipment	0.146600	0.125960	0.108226	0.092989	0.079897	0.068649	0.058984
	4	Construction and Mining Equipment	0.198913	0.170908	0.146846	0.126171	0.108408	0.093145	0.080031
	5	Industrial Equipment	0.070119	0.060247	0.051765	0.044477	0.038215	0.032835	0.028212
	6	Lawn and Garden Equipment	1.113770	0.956962	0.822232	0.706470	0.607006	0.521546	0.448117
	7	Logging Equipment	0.001239	0.001064	0.000914	0.000786	0.000675	0.000580	0.000498
	8	Pleasure Craft	0.106669	0.091651	0.078748	0.067661	0.058135	0.049950	0.042918
	9	Railroad Equipment	0.000990	0.000851	0.000731	0.000628	0.000540	0.000464	0.000398
	10	Recreational Equipment	0.570530	0.490205	0.421189	0.361890	0.310940	0.267163	0.229549
		Grand Total	4.58	3.94	3.38	2.91	2.50	2.15	1.84

	VOC, Typical Summer Day, July (ton/day)						
County	2017	2020	2023	2026	2029	2032	2035
Anderson	0.37	0.32	0.28	0.24	0.20	0.18	0.15
Blount	2.00	1.72	1.47	1.27	1.09	0.93	0.80
Knox	2.21	1.90	1.63	1.40	1.21	1.04	0.89
Totals	4.58	3.94	3.38	2.91	2.50	2.15	1.84

		VOC Typical Summer Day, July (tons/day)						
	SCC Category	2017	2020	2023	2026	2029	2032	2035
1	Agricultural Equipment Total	0.020191	0.017348	0.014906	0.012807	0.011004	0.009455	0.008124
2	Airport Support Equipment Total	0.000821	0.000705	0.000606	0.000521	0.000447	0.000384	0.000330
3	Commercial Equipment Total	0.387496	0.332941	0.286066	0.245791	0.211186	0.181453	0.155906
4	Construction and Mining Equipment Total	0.378642	0.325333	0.279529	0.240174	0.206360	0.177307	0.152344
5	Industrial Equipment Total	0.098404	0.084550	0.072646	0.062418	0.053630	0.046080	0.039592
6	Lawn and Garden Equipment Total	1.884592	1.619260	1.391284	1.195406	1.027104	0.882498	0.758252
7	Logging Equipment Total	0.006598	0.005669	0.004871	0.004185	0.003596	0.003089	0.002655
8	Pleasure Craft Total	0.274517	0.235867	0.202660	0.174127	0.149612	0.128548	0.110450
9	Railroad Equipment Total	0.001800	0.001546	0.001329	0.001142	0.000981	0.000843	0.000724
10	Recreational Equipment Total	1.529399	1.314075	1.129066	0.970105	0.833524	0.716172	0.615342
	Total	4.58	3.94	3.38	2.91	2.50	2.15	1.84

Values in summary tables may not be the same due to rounding

Appendix F

Commercial Marine, Aircraft, and Rail Emissions

Marine, Airport, and Rail

AIRPORT				2017	2020	2023	2026	2029	2032	2035
County	**SCC**	**process description**	**GF**	**NOX**	**NOX**	**NOX**	**NOX**	**NOX**	**NOX**	**NOX**
Anderson	2275050011	Aircraft /General Aviation /Piston	0.98959	0.00031	0.00030	0.00030	0.00030	0.00029	0.00029	0.00029
Anderson	2275050012	Aircraft /General Aviation /Turbine	1.02520	0.00057	0.00059	0.00060	0.00062	0.00063	0.00065	0.00066
Anderson Total	(without SAF)			0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anderson Total	(with SAF)			0.00	0.00	0.00	0.00	0.00	0.00	0.00

AIRPORT				2017	2020	2023	2026	2029	2032	2035
County	**SCC**	**process description**	**GF**	**NOX**	**NOX**	**NOX**	**NOX**	**NOX**	**NOX**	**NOX**
Blount	2265008005	Aircraft/GSE/4-Stroke	1.02750	0.00606	0.00622	0.00640	0.00657	0.00675	0.00694	0.00713
Blount	2270008005	Aircraft/GSE/Diesel	0.20240	0.00490	0.00099	0.00020	0.00004	0.00001	0.00000	0.00000
Blount	2275001000	Military Aircraft: Total	1.02750	0.37567	0.38600	0.39662	0.40753	0.41873	0.43025	0.44208
Blount	2275020000	Aircraft/Commercial	1.50590	0.15088	0.22721	0.34215	0.51524	0.77591	1.16844	1.75955
Blount	2275020000	Commercial Aircraft: Total All Types	1.50590	0.02163	0.03258	0.04906	0.07388	0.11126	0.16754	0.25230
Blount	2275050011	Aircraft /General Aviation /Piston	0.98959	0.00113	0.00112	0.00111	0.00110	0.00108	0.00107	0.00106
Blount	2275050012	Aircraft /General Aviation /Turbine	1.02520	0.00214	0.00220	0.00225	0.00231	0.00237	0.00243	0.00249
Blount	2275050012	General Aviation: Turbine	1.02520	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
Blount	2275060011	Aircraft /Air Taxi /Piston	0.75930	0.00072	0.00055	0.00041	0.00031	0.00024	0.00018	0.00014
Blount	2275060012	Aircraft /Air Taxi /Turbine	1.02590	0.05158	0.05291	0.05428	0.05569	0.05713	0.05861	0.06013
Blount	2275070000	Aircraft Auxiliary Power Units: Total	1.02590	0.01300	0.01334	0.01369	0.01404	0.01440	0.01478	0.01516
Blount Total	(without SAF)			0.63	0.72	0.87	1.08	1.39	1.85	2.54
Blount Total	(with SAF)			0.69	0.79	0.95	1.18	1.52	2.02	2.78

AIRPORT

County	SCC	process description	GF	2017 NOX	2020 NOX	2023 NOX	2026 NOX	2029 NOX	2032 NOX	2035 NOX
Knox	2275050011	Aircraft /General Aviation /Piston	0.98959	0.00226	0.00224	0.00222	0.00219	0.00217	0.00215	0.00212
Knox	2275050012	Aircraft /General Aviation /Turbine	1.02520	0.00432	0.00443	0.00454	0.00466	0.00477	0.00489	0.00502
Knox	2275060011	Aircraft /Air Taxi /Piston	0.75930	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
Knox	2275060012	Aircraft /Air Taxi /Turbine	1.02590	0.00017	0.00017	0.00017	0.00018	0.00018	0.00019	0.00019
Knox Total	(without SAF)			0.01	0.01	0.01	0.01	0.01	0.01	0.01
Knox Total	(with SAF)			0.01	0.01	0.01	0.01	0.01	0.01	0.01

RAIL

County	SCC	process description	GF	2017 NOX	2020 NOX	2023 NOX	2026 NOX	2029 NOX	2032 NOX	2035 NOX
Knox	28500201	Yard locomotives	0.82800	0.28017	0.23198	0.19208	0.15904	0.13169	0.10904	0.09028
Knox Total	(without SAF)			0.28	0.23	0.19	0.16	0.13	0.11	0.09
Knox Total	(with SAF)			0.28	0.23	0.19	0.16	0.13	0.11	0.09

AIRPORT + RAIL

				2017	2020	2023	2026	2029	2032	2035
Knox Total	(with SAF)			0.29	0.24	0.20	0.17	0.14	0.12	0.10

County	NOx, Typical Summer Day, July, (ton/day)						
	2017	2020	2023	2026	2029	2032	2035
Anderson (partial)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blount	0.69	0.79	0.95	1.18	1.52	2.02	2.78
Knox	0.29	0.24	0.20	0.17	0.14	0.12	0.10
Total Emissions	0.98	1.03	1.15	1.35	1.66	2.14	2.88

SAF

Anderson	1.0942	Airport
Blount	1.0942	Airport
Knox	1.0942	Airport
Knox	1.0115	Rail

Marine, Airport, and Rail

AIRPORT				2017	2020	2023	2026	2029	2032	2035
County	**SCC**	**process description**	**GF**	**VOC**	**VOC**	**VOC**	**VOC**	**VOC**	**VOC**	**VOC**
Anderson	2275050011	Aircraft /General Aviation /Piston	0.98959	0.00071	0.00070	0.00069	0.00068	0.00068	0.00067	0.00066
Anderson	2275050012	Aircraft /General Aviation /Turbine	1.02520	0.00122	0.00125	0.00128	0.00131	0.00134	0.00138	0.00141
Anderson Total	(without SAF)			0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anderson Total	(with SAF)			0.00	0.00	0.00	0.00	0.00	0.00	0.00

AIRPORT				2017	2020	2023	2026	2029	2032	2035
County	**SCC**	**process description**	**GF**	**VOC**	**VOC**	**VOC**	**VOC**	**VOC**	**VOC**	**VOC**
Blount	2265008005	Aircraft/GSE/4-Stroke	1.02750	0.00291	0.00299	0.00307	0.00316	0.00324	0.00333	0.00342
Blount	2270008005	Aircraft/GSE/Diesel	0.20240	0.00085	0.00017	0.00003	0.00001	0.00000	0.00000	0.00000
Blount	2275001000	Military Aircraft: Total	1.02750	0.18277	0.18780	0.19296	0.19827	0.20372	0.20932	0.21508
Blount	2275020000	Aircraft/Commercial	1.50590	0.02921	0.04398	0.06624	0.09975	0.15021	0.22620	0.34063
Blount	2275020000	Commercial Aircraft: Total All Types	1.50590	0.01175	0.01770	0.02665	0.04013	0.06043	0.09101	0.13705
Blount	2275050011	Aircraft /General Aviation /Piston	0.98959	0.00262	0.00259	0.00256	0.00254	0.00251	0.00248	0.00246
Blount	2275050012	Aircraft /General Aviation /Turbine	1.02520	0.00464	0.00476	0.00488	0.00500	0.00513	0.00526	0.00539
Blount	2275050012	General Aviation: Turbine	1.02520	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
Blount	2275060011	Aircraft /Air Taxi /Piston	0.75930	0.00077	0.00059	0.00045	0.00034	0.00026	0.00020	0.00015
Blount	2275060012	Aircraft /Air Taxi /Turbine	1.02590	0.05752	0.05901	0.06053	0.06210	0.06371	0.06536	0.06705
Blount	2275070000	Aircraft Auxiliary Power Units: Total	1.02590	0.00193	0.00198	0.00203	0.00208	0.00213	0.00219	0.00225
Blount Total	(without SAF)			0.29	0.32	0.36	0.41	0.49	0.61	0.77
Blount Total	(with SAF)			0.32	0.35	0.39	0.45	0.54	0.66	0.85

AIRPORT				2017	2020	2023	2026	2029	2032	2035
County	**SCC**	**process description**	**GF**	**VOC**	**VOC**	**VOC**	**VOC**	**VOC**	**VOC**	**VOC**
Knox	2275050011	Aircraft /General Aviation /Piston	0.98959	0.00524	0.00518	0.00513	0.00507	0.00502	0.00497	0.00492
Knox	2275050012	Aircraft /General Aviation /Turbine	1.02520	0.00920	0.00943	0.00967	0.00992	0.01017	0.01042	0.01068
Knox	2275060011	Aircraft /Air Taxi /Piston	0.75930	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
Knox	2275060012	Aircraft /Air Taxi /Turbine	1.02590	0.00022	0.00022	0.00023	0.00023	0.00024	0.00024	0.00025
Knox Total	(without SAF)			0.01	0.01	0.02	0.02	0.02	0.02	0.02
Knox Total	(with SAF)			0.02	0.02	0.02	0.02	0.02	0.02	0.02

RAIL				2017	2020	2023	2026	2029	2032	2035
County	**SCC**	**process description**	**GF**	**VOC**	**VOC**	**VOC**	**VOC**	**VOC**	**VOC**	**VOC**
Knox	28500201	Yard locomotives	0.82800	0.01835	0.01519	0.01258	0.01042	0.00862	0.00714	0.00591
Knox Total	(without SAF)			0.02	0.02	0.01	0.01	0.01	0.01	0.01
Knox Total	(with SAF)			0.02	0.02	0.01	0.01	0.01	0.01	0.01

AIRPORT + RAIL				2017	2020	2023	2026	2029	2032	2035
Knox Total	(with SAF)			0.04	0.04	0.03	0.03	0.03	0.03	0.03

County	VOC, Typical Summer Day, July, (ton/day)						
	2017	2020	2023	2026	2029	2032	2035
Anderson (partial)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blount	0.32	0.35	0.39	0.45	0.54	0.66	0.85
Knox	0.04	0.04	0.03	0.03	0.03	0.03	0.03
Total Emissions	0.36	0.39	0.42	0.48	0.57	0.69	0.88

	SAF	
Anderson	1.0942	Airport
Blount	1.0942	Airport
Knox	1.0942	Airport
Knox	1.0115	Rail

Appendix G

Onroad Mobile Source Emissions

Appendix G Onroad Mobile Source Emissions

1.0 INTRODUCTION

This appendix documents the process used in the development of the onroad mobile sources emissions inventory for the ozone maintenance plan. The development of the onroad emissions inventory was conducted in conjunction with the Knoxville Regional Transportation Planning Organization (TPO), the Knox County Department of Air Quality Management, TDOT, EPA and various other stakeholders. Notes from the Interagency Consultation (IAC) are included in Appendix B of this document.

As a requirement of the Clean Air Act Section 175a(b)[1], eight years after an area is redesignated to attainment, the State must submit to the EPA a second 10-year maintenance plan that encompasses the last 10 years of the required 20-year maintenance period. In the development of this document, a key guiding document of this maintenance plan is EPA's Implementation Guidance for the 2008 8-hour ozone NAAQS[2]. The Knoxville 2008 8-hour ozone maintenance area was redesignated to attainment for the 2008 8-hour ozone NAAQS effective August 12th, 2015. Thus, the second 10-year maintenance plan should assure maintenance through August 12th, 2035.

Onroad mobile sources emit oxides of nitrogen (NO_x), volatile organic compounds (VOCs) and a number of other pollutants. One thing a maintenance plan must do is to demonstrate that emissions from all sources do not increase above those of the base year of the first maintenance plan, which in this case, is 2011. The base year is determined by selecting one of the years for which the attaining three year design value is calculated. As stated earlier, the last year of the maintenance period for the second 10-year maintenance plan should be a minimum of 20 years from the effective date of redesignation. The final year of this emission inventory was selected to be 2035. The emissions inventories are developed for a typical July ozone season day. To estimate emissions, as much locally developed data was used as possible to provide input to EPA's most current version of the MOVES model.

2.0 METHODOLOGY

The Knoxville Area 8-hour Ozone Maintenance Area includes all of Blount and Knox Counties and a small portion of Anderson County. The onroad mobile source emissions

[1] 42 U.S.C §7505a available at: U.S.C. Title 42 - *THE PUBLIC HEALTH AND WELFARE* (govinfo.gov).
[2] *Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements*. 80 FR 44 12264.

for the Knoxville 8-hour Ozone Maintenance Area were estimated for a typical summer day for the month of July using the latest version of the Environmental Protection Agency's (EPA) MOVES emission factor model. The version of the MOVES model used is the most recently released version of the model, MOVES3.1.0 with the 20221007 default database. The input parameters for the model runs were developed, reviewed and agreed to through Interagency Consultation (IAC).

Generally, base year 2017 VMT (Vehicle Miles Traveled) data was obtained from the Tennessee Department of Transportation (TDOT) through the HPMS (Highway Performance Monitoring System) system. Future VMT estimates, as well as a number of other MOVES inputs were provided by the Knoxville Regional TPO (Transportation Planning Organization) based on travel demand modeling performed for the three maintenance counties. A summary of the modeling inputs used and the results of the emission estimates are described in this document. Onroad emissions for base year 2017 and the last year of the maintenance plan, 2035, were developed jointly by the State of Tennessee, Knox County Air Quality Management Department and the Knoxville Regional TPO. For all interim years between the years 2017 and 2035 (2020, 2023, 2026, 2029, 2032) onroad emissions were interpolated.

In November of 2022 EPA released its newest model for onroad mobile sources, MOVES (MOtor Vehicle Emissions Simulator) version 3.1.0. The MOVES model is a computer program designed by the EPA to estimate air pollution emissions from onroad mobile sources. MOVES can be used to estimate exhaust and evaporative emissions as well as brake and tire wear emissions from all types of onroad vehicles.

MOVES can either export emissions factors or emissions inventories. If emissions factors are exported, the output will need to be post-processed. These emissions factors will need to be multiplied by vehicle population and vehicle miles traveled. Alternatively, if these, VMT and vehicle population, are input into MOVES, MOVES can conduct the post-processing internally and output total emissions for a selected period of time. For simplicity and consistency, the onroad emissions inventories developed in this document were developed using MOVES' emissions inventory output option.

Onroad mobile sources produce NO_x and VOC, along with a host of other pollutants. Emissions of these two pollutants are estimated in the onroad mobile source inventory for this maintenance plan. The objective of the following section is to describe the input files and the emissions estimation procedures. This document also includes tables summarizing the estimated emissions for each analysis year and county. Onroad mobile source emissions are estimated by the methodologies suggested in the EPA's Technical Guidance[3] ("Technical Guidance").

2.1 MOVES RUNSPEC PARAMETERS

In setting up a MOVES run, a number of parameters need to be established to define the timespan, geographic bounds, vehicle and road types, pollutants and output options for the run. Which options are selected will have an impact on the overall result. The specifics for the "run specification" or "runspec" (sic) for a particular MOVES run saved in a ".mrs" file, are outlined below.

MOVES Runspec Parameter	Settings
Scale	County level scale, inventory mode
Time Span	Year: 2017, 2035; July weekday, all hours
Geographic bounds	Anderson (partial) Blount and Knox Counties
Onroad Vehicles	Gasoline, ethanol (E85), diesel and CNG fuels, all valid vehicle combinations
Road type	All road types
Pollutants and Processes	NO_x and VOC and all other required supporting prerequisite pollutants (**do not** uncheck "Refueling Displacement Vapor Loss" and "Refueling Spillage Loss")
General Output	Units: grams, joules and miles Activity: distance traveled, population
Output Emissions Detail	Output aggregation: hour and county Onroad: road type and source use type
Advanced Features	None

Once the runspec is developed for each county and year combination, the input data can be imported through the County Data Manager. A separate run needs to be executed for each county and calendar year of analysis.

3.0 MOVES COUNTY DATA MANAGER INPUT DATA

Due to the size and the complexity of the MOVES input and output files, the MOVES input files and output files will be provided electronically. Some of the smaller datasets, or parts of datasets for illustration, are included in this document. MOVES requires a

[3]*Using MOVES to Prepare Emissions Inventories for State Implementation Plans and Transportation Conformity, US EPA, EPA-420-B-20-052, November 2020*.

large amount of locally derived data in order to complete a MOVES run. Some of the inputs required include vehicle population, VMT, speeds, meteorology, day, month and hour fractions, and distribution of the VMT on different road types (road type distribution). Some of this data was developed by the Tennessee Department of Transportation (TDOT). Details on how these data elements were developed by TDOT are contained in the document titled: *Methodology for Developing Input Datasets for the MOVES Model*, contained in the appendix of this document. Although this document explicitly references data developed for calendar year 2014, the same general methodology was used in developing calendar year 2017 data by TDOT. The development of other MOVES inputs is described in the sections below.

The EPA designated only a portion of Anderson County encompassing the TVA Bull Run Fossil Plant (2000 Census tracts: 202, 213.02) in the Knoxville Area. MOVES inputs were developed for this portion of the county; for example, the VMT in the input file only includes the VMT for the portion of Anderson County designated as maintenance.

Each MOVES input and the source of the data used is described below.

3.1 Meteorology

Local temperature and humidity data are required inputs for SIP and regional conformity analyses with MOVES. Ambient temperature is a key factor in estimating emission rates for onroad vehicles with substantial effects on most pollutant processes. Relative humidity is also important for estimating NO_x emissions from motor vehicles. MOVES requires a temperature (in degrees Fahrenheit) and relative humidity (in percent) by hour. MOVES requires a 24-hour temperature and humidity profile to model a full day of emissions on an hourly basis.

MOVES meteorological inputs are very specific. MOVES requires average hourly temperature and relative humidity for each hour averaged for the month. This data is not always readily available or available for sufficient duration, to develop MOVES-ready meteorological data.

Available data for Tennessee was obtained from the National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC) at: http://www.ncdc.noaa.gov/oa/ncdc.html. Data was captured for all weather stations in Tennessee that collected hourly temperature and relative humidity data. Observations were collected only for those observations that were 'on the hour'. After the data was compiled and formatted, the data was reviewed to determine data completeness. The data was then compiled for the nearest location – the Knoxville Municipal Airport in Blount County. The data used was averaged from the 2009-2011 years. July's data for Anderson County is illustrated in Table 1 below.

Table 1. Sample Temperature and Humidity Data.

monthID	zoneID	hourID	temperature	relHumidity
7	470010	1	73.7	81.7
7	470010	2	72.8	84.3
7	470010	3	72.2	85.4
7	470010	4	71.7	86.1
7	470010	5	71.1	88.0
7	470010	6	71.0	88.5
7	470010	7	72.2	86.0
7	470010	8	74.6	80.4
7	470010	9	77.2	74.0
7	470010	10	80.0	67.7
7	470010	11	82.1	63.5
7	470010	12	83.7	59.0
7	470010	13	85.5	54.6
7	470010	14	86.1	53.7
7	470010	15	86.1	53.5
7	470010	16	86.4	52.8
7	470010	17	85.7	53.7
7	470010	18	84.7	56.1
7	470010	19	82.8	59.9
7	470010	20	79.9	65.8
7	470010	21	78.4	69.6
7	470010	22	76.8	73.3
7	470010	23	75.7	76.5
7	470010	24	74.7	78.9

The same temperatures and relative humidity were used for all three counties: Anderson, Blount and Knox. This data developed for the first 10-year maintenance plan was used in this second 10-year maintenance plan.

3.2 Source Type Population

Source type (i.e., vehicle type) population is used by MOVES to calculate start and evaporative emissions. In MOVES, start and resting evaporative emissions are related to the population of vehicles in an area. Since vehicle type population directly determines start and evaporative emission, users must develop local data for this input. MOVES classifies vehicles based on the way vehicles are classified in the Federal

Highway Administration's HPMS (Highway Performance Monitoring System) rather than on the way they are classified in the EPA's emissions regulations.

MOVES categorizes vehicles into 13 source types, which are subsets of 6 HPMS vehicle types, as shown in the crosswalk in Table 2. The EPA believes that states should be able to develop population data for some of these source type categories from state motor vehicle registration data (e.g., motorcycles, passenger cars, passenger trucks and light commercial trucks) and from local transit agencies, school districts, bus companies, and refuse haulers (other buses, transit buses, and school buses, and refuse trucks).

Table 2. Source Type Definitions and Crosswalk to HPMS Vehicle Type ID.

MOVES Source Type ID	HPMS Vehicle Type ID	Source Type Name	Definition
11	10	Motorcycle	Vehicles with less than four wheels.
21	25	Passenger Car	Four wheel, two axle vehicles whose primary function is passenger transport.
31	25	Passenger Truck	Four wheel, two axle trucks whose primary functional design is for cargo, but are used primarily for passenger transport.
32	25	Light Commercial Truck	Four wheel, two axle trucks used primarily for cargo transport.
41	40	Other Bus	Passenger vehicles that are not school or transit buses.
42	40	Transit Bus	Passenger vehicles with a capacity of 15 or more persons primarily used for transport within cities.
43	40	School Bus	Passenger vehicles with a capacity of 15 or more persons used primarily for transport of students for school.
51	50	Refuse Truck	Trucks primarily used to haul refuse to a central location.
52	50	Single Unit Short-haul Truck	Single unit trucks with more than four tires with a range of operation of up to 200 miles.
53	50	Single Unit Long-haul Truck	Single unit trucks with more than four tires with a range of operation of over 200 miles.
54	50	Motor Home	Trucks whose primary functional design is to provide sleeping quarters.
61	60	Combination Short-haul Truck	Combination tractor/trailer trucks with more than four tires with a range of operation of up to 200 miles.

MOVES Source Type ID	HPMS Vehicle Type ID	Source Type Name	Definition
62	60	Combination Long-haul Truck	Combination tractor/trailer trucks with more than four tires with a range of operation of over 200 miles.

TDOT developed source type populations for calendar year 2017 for Anderson, Blount and Knox Counties. See the *Methodology for Developing Input Datasets for the MOVES Model* in the appendix to this document for a detailed description of how source type population was developed at the county level by TDOT.

Data sources for developing the source type population for calendar year 2017 varied. For motorcycles, data developed by TDOT from vehicle registration data was used. For passenger cars, passenger trucks and light commercial trucks and single unit short-haul trucks, Coordinating Research Council Study A-115[4] scenario two data was used for vehicle populations. Several vehicle populations were estimated using a combination of local and national default data. Local VMT is used along with a VMT-to-population ratio from MOVES to estimate vehicle populations based on the locally observed VMT. This approach (national default-local data (or NDLD) method) was used to estimate populations for other bus, single unit long-haul trucks, motor homes, combination short-haul trucks and combination long-haul trucks. Local data developed by the Knoxville TPO was used for transit buses, school buses and refuse trucks.

Since only a portion of Anderson County was designated nonattainment, the vehicles in that part of the county need to be apportioned from the total county source type population. Source type, or vehicle population, for Anderson County in 2017 and subsequent years was apportioned from the whole county vehicle population based on U.S. Census Bureau 2020 data. Two variables were examined to proportion the source types in the partial Anderson County area (see Table 3). The first approach considered was the use of the U.S. Census Bureau's people population in the Anderson County portion of the maintenance area as compared to all of Anderson County. A second method considered was the Census Bureau's count of occupied households. Table 3 illustrates that the various approaches yield about the same result. Twenty-three (23%) percent was used to parse the maintenance portion of Anderson County vehicle population from the vehicle population of the entire county.

[4] *Developing Improved Vehicle Population Inputs for the 2017 National Emissions Inventory* available online at: https://crcao.org/wp-content/uploads/2019/05/CRC-Project-A-115-Final-Report_20190411.pdf.

Table 3. Various U.S. Census Metrics for Anderson County, Total and Partial Areas, for 2020.

Metric for Calendar Year 2020	Anderson County Total	Anderson County Partial[a]	Partial County as a Percent of Total County
People Population[b]	77,123	16,619	22
Occupied Households[b]	31,735	7,522	24

[a]2020 Census Tracts 202.01, 202.02, 213.03 and 213.04

[b]US Census Bureau Website: https://data.census.gov

Source type population projections for 2035 were obtained from the Knoxville TPO's most recent Metropolitan Transportation Plan's (MTP) conformity determination. The conformity determination projected vehicle population growth based on a number of variables out to year 2035. The proportion used in allocating the vehicle population to the maintenance portion of Anderson County is different than that used in the conformity analysis, which reflects slightly different vehicle populations. The vehicle population used for this maintenance plan was 23% of the county total vehicle population, as compared to 21% used in the latest conformity analysis. This new percentage reflect changes in growth in Anderson County since the development of the first maintenance plan. See table 4 for source type populations for 2017 and 2035.

Table 4. Source Type Population by County, 2017 and 2035.

		Calendar Year 2017			Calendar Year 2035		
Source Type ID	Source Type	Anderson[a]	Blount	Knox	Anderson[a]	Blount	Knox
11	Motorcycle	578	4,979	9,003	610	5,817	10,456
21	Passenger Car	7,427	58,825	179,418	7,832	68,723	208,380
31	Passenger Truck	9,258	69,482	190,664	9,763	81,173	221,441
32	Light Commercial Truck	427	9,055	16,731	479	11,518	20,556
41	Other Bus	3	9	95	0	1	8
42	Transit Bus	0	0	154	0	0	177
43	School Bus	20	164	449	19	172	536
51	Refuse Truck	8	33	213	9	38	245
52	Single Unit Short-haul Truck	229	1,731	8,408	260	2,043	10,004
53	Single Unit Long-haul Truck	13	68	381	12	63	360
54	Motor Home	30	148	825	68	408	2,207
61	Combination Short-haul Truck	83	338	2,986	124	365	4,017
62	Combination Long-haul Truck	155	388	4,737	144	409	4,599
	Total:	18,231	145,220	414,064	19,320	170,730	482,986

[a]Only for the maintenance portion of Anderson County.

3.3 Age Distribution

The age distribution of the vehicle fleet can vary significantly from area to area. Fleets with a higher percentage of older vehicles will typically have higher emissions for two reasons: older vehicles have typically been driven more miles and have experienced more deterioration in the emission control system and older vehicles generally do not meet newer, more stringent emissions standards.

For SIP and conformity purposes, the EPA recommends and encourages states to develop local age distribution where local data is available. The MOVES model categorizes the vehicle fleet into a 31-year range of vehicle ages, with vehicles 30 years and older grouped together. MOVES requires the user to specify the fraction of vehicles in each of 30 vehicle ages for each of the 13 vehicle (or source) types.

The development of the age distribution for the thirteen source types is a combination of age distributions from several sources, including data developed by TDOT from local registration data, studies, TPO developed data and default MOVES data. Local age distributions, sometimes with considerable work, can be estimated from local vehicle registration data. Some of the vehicle age distribution data comes from annual registration data for Tennessee as prepared by TDOT. For this analysis, the age distribution data developed by TDOT was generated based on 2017 vehicle registration data. Additionally, some of the age distribution data was taken from a study conducted by the Coordinating Research Council (CRC Project No. A-115[5]). Age distribution for school buses was developed by the Knoxville TPO and used in this analysis. Additionally, the Knoxville TPO developed age distribution for transit buses in Knox County. MOVES default data was used for a number of source types where local data was not available, or the source type category (like long-haul trucks) is better represented by a national average. MOVES default age distribution data was used for other bus, refuse truck, single unit long-haul truck, motor homes, combination short-haul and long-haul trucks. The age distribution data was held constant between the 2017 and the 2035.

3.4 Vehicle Type Vehicle Miles Traveled (VMT)

MOVES defines roadways into five different functional types (see Table 5). The TPO's Travel Demand Model uses a different roadway classification system. The Vehicle Miles Traveled (VMT) from the TDM are aggregated into the respective MOVES road types based on the mapping shown in Table 6.

Table 5. MOVES Road Types.

MOVES Road Types		Description
1	Off-Network	All locations where the predominant activity is vehicle starts, parking and idling (parking lots, truck stops, rest areas, freight or bus terminals)
2	Rural Restricted Access	Rural highways that can only be accessed by an on-ramp
3	Rural Unrestricted Access	All other rural roads (arterials, collectors, and local streets)
4	Urban Restricted Access	Urban highways or freeways that can only be accessed by an on-ramp
5	Urban Unrestricted Access	All other urban roads (arterials, collectors, and local streets)

[5] *Developing Improved Vehicle Population Inputs for the 2017 National Emissions Inventory* available online at: https://crcao.org/wp-content/uploads/2019/05/CRC-Project-A-115-Final-Report_20190411.pdf.

Table 6. Federal Highway Administration Highway Functional System and MOVES Road Type ID.

Federal Highway Administration Highway Functional System	MOVES Road Type	MOVES Road Type ID
Rural interstate	Rural restricted access	2
Rural other principal arterial	Rural restricted access	2
Rural minor arterial	Rural unrestricted access	3
Rural major collector	Rural unrestricted access	3
Ruaral minor collector	Rural unrestricted access	3
Rural local	Rural unrestricted access	3
Urban interstate	Urban restricted access	4
Urban other freeways	Urban restricted access	4
Urban other principal arterial	Urban unrestricted access	5
urban minor arterial	Urban unrestricted access	5
Urban colector	Urban unrestricted access	5
Urban local	Urban unrestricted access	5

The Knoxville Regional TPO's TDM predicts average weekday traffic volumes for all roadway classes in Knox and Blount Counties and major arterials and collectors in Anderson County. The model's roadway network covers just over 3,250 centerline miles of roadway in total over an area of about 2,677 square miles represented by 1,173 traffic analysis zones. The current version of the model also predicts the Knoxville Area Transit (KAT) average weekday system ridership and the number of average weekday bicycle and pedestrian trips within the region. The 2008 8-hour ozone nonattainment area is completely contained within the domain of the TDM.

VMT for those road types (principally local roads) that were not represented in the TDM were grown from the base year HPMS VMT in proportion to a higher order road type classification (e.g. collector roads). Even though these lower order road types were not explicitly contained in the TDM, the VMT from these roads is accounted for and included in the emissions analysis.

Vehicle miles traveled (VMT) for year 2017 were developed from TDOT's 2017 HPMS data. The VMT for the portion of the nonattainment area in Anderson County was fractioned from the total using fractions developed from the Knoxville TPO's TDM for calendar year 2018 (25.8% total), applied to the total HPMS VMT for calendar year 2017. Future year, 2035 VMT for all areas were derived from the TPO's TDM. Source type July weekday VMT for 2017 and 2035 are shown in Table 7.

Table 7. Average July Weekday VMT by Source Type, County and Year.

		Anderson[a]		Blount		Knox	
		2017	2035	2017	2035	2017	2035
Source Type	Source Type ID	----- *Average July Weekday Vehicle Miles Traveled* -----					
Motorcycle	11	5,769	6,356	27,383	29,482	137,043	118,810
Passenger Car	21	290,167	326,148	1,433,967	1,789,524	6,970,291	8,607,021
Passenger Truck	31	381,623	428,951	1,718,948	2,145,161	8,074,681	9,970,724
Light Commercial Truck	32	20,316	24,292	309,642	420,733	817,102	1,067,345
Other Bus	41	438	-	377	30	5,487	348
Transit Bus	42	-	-	-	-	10,120	8,751
School Bus	43	1,043	489	2,096	1,565	8,718	7,829
Refuse Truck	51	625	632	1,907	1,872	8,683	9,953
Single Unit Short-haul Truck	52	10,089	10,285	63,968	64,358	313,460	371,664
Single Unit Long-haul Truck	53	1,114	923	4,307	3,402	17,023	16,028
Motor Home	54	644	1,312	2,351	5,524	9,242	24,638
Combination Short-haul Truck	61	1,175	1,883	33,906	38,227	244,532	417,203
Combination Long-haul Truck	62	5,630	5,609	99,825	109,862	994,932	1,225,050
Total:		718,634	806,878	3,698,677	4,609,740	17,611,314	21,845,364

[a]Only for the maintenance portion of Anderson County.

EPA's MOVES model uses fractions to parse out monthly, daily, and hourly VMT. These fractions are often locally developed to represent local conditions as much as possible. The report developed by the University of Tennessee (UT) for TDOT discusses the development of month and day VMT fractions. These fractions were developed from historical 5-year average HPMS data. These fractions were used internally by MOVES to adjust annual VMT to July average weekday VMT. Month and day fractions developed by UT for 2014 were used for both years 2017 and 2035. More information on the development of these fractions is available in the appendix to this document.

Hourly VMT fractions by road type were developed by the Knoxville Regional TPO. These fractions are calculated from the TDM and post-processed to all hours in the day. The post-processing is required in order to disaggregate the TDM traffic volume outputs from three time periods (AM, PM and rest of day) into individual hourly volumes for each of the twenty-four hours in a day. The hourly volumes are developed primarily by pattern matching based on the MOVES defaults for VMT by hour. The post-processing software uses the four vehicle types from the TDM (passenger vehicles, four-tire commercial vehicles, single-unit trucks and multi-unit trucks) to generate hourly VMT fractions for the different source types that are associated with those categories. In addition, special hourly distributions were applied to source types 42 and 43 (transit bus and school bus) to reflect the unique operating characteristics of these vehicles; for example, school buses basically only operate during school beginning and dismissal periods.

Hourly VMT fractions from the Knoxville TPO's TDM for calendar year 2018 were used for analysis year 2017. Calendar year 2035 hourly VMT fractions data from the Knoxville TPO's TDM was used for calendar year 2035.

3.5 Average Speed Distribution

Average speed distribution is the speed of each source type by road type for each hour of the day. MOVES uses 16 speed bins to group source type speed fractions. These fractions represent the amount of time a source type spends traveling at that speed on a particular road type. Note, these fractions represent the time spent in these speed bins; these fractions do not reflect instantaneous speeds, but the average speed, including delays like congestion and traffic signals.

Speed distribution profiles for the Knoxville Maintenance Area developed by the Knoxville TPO for calendar year 2018 were used for analysis year 2017. Speed distributions for year 2035 were developed from the TPO's TDM. Similar to the hourly VMT fractions, there is a need for post processing of the raw TDM outputs for average speeds on roadway links primarily for the disaggregate level of detail needed for MOVES inputs. Speed is a direct function of several roadway characteristics and the amount of congestion that is present. The change in speeds over time accounts for increased congestion and the impact of any changes to the transportation network such as road widening or new roadway construction projects.

The Knoxville TDM does not have all the local roadway functional classifications contained within the modeling network. The speeds for these facilities that are not represented in the modeling network are assumed to be equivalent to the next higher order road type represented in the TDM.

3.6 Road Type Distribution

Road type distribution is the distribution of VMT on each road type by source type. Road type distribution data for calendar year 2018 was provided by the Knoxville TPO for calendar year 2017. Road type distribution for calendar year 2035 was also obtained from the Knoxville TPO's TDM. The off-network road type represents areas where start and idling activity occur; no VMT is assigned to this road type.

3.7 Fuel Type and Technology

Fuel Type and Technology is entered on the fuels tab in the County Data Manager in MOVES. This input allows users to define the split between different fuel types, including gasoline, diesel and CNG (compressed natural gas) for each vehicle type and model year.

EPA's guidance recommends the use of local data where available. Default information can be used where no local information is available. The default information for transit buses (source type 42) includes CNG buses as part of the fleet mix. In most areas of Tennessee there are no transit buses fueled with CNG. Therefore, at a minimum, these buses should be allocated to another fuel.

Local information for the Knoxville Area Transit (KAT) fleet was obtained by the Knoxville Regional TPO. This information included bus type, fuel type, model year and number of miles driven in the calendar year 2022. This data was examined to update locally developed fuelEngFraction fractions.

EPA states in their Technical Guidance: "In making projections, users should assume no future changes in activity associated with alternate fuel or engine technologies unless those alternate fuels or technologies are required by regulation or law.". This necessitates the assumption that all future-year analyses will need to have the same distribution. After examining the distribution of gasoline and diesel transit buses and their VMT, a homogenized approach was considered. The VMT were used to develop overall fractions based on fuel type (Table 8). Previously developed fractions were retained for years 2002 through 2021.

Table 8. Overall KAT Transit Bus Fleet FuelEngFraction.

fuelTypeID	Fuel	Years 2002-2021	Years 2022 Forward
1	Gasoline	0.2580	0.2187
2	Diesel	0.7420	0.7813
	Total	1.0000	1.0000

Using the total fraction of VMT attributable to gasoline vehicles versus diesel vehicles homogenizes the distribution of VMT across all model years while still maintaining the contribution from both diesel vehicles and gasoline vehicles to the overall vehicle miles traveled by the transit fleet. This approach is more appropriate for the application of future-year analysis since the specific model year makeup in the future is unknown.

3.8 Fuel Formulation and Supply

MOVES requires fuel formulation information for each county in the domain being modeled. Similarly, these formulations should also have the associated fuel supply, or the fraction of each fuel used, by month, in each county. EPA's default data is derived and expanded from a series of samples taken at the PADD (Petroleum Administration Defense Districts) level. EPA's default data in MOVES is used for 2017, since this is based on sampling data.

EPA's Technical Guidance[3] suggests changing the values that reflect RVP properties to reflect the regulatory requirements in the area being modeled. After reviewing the default MOVES fuel formulation data for July of 2035, the RVP values reflect the regulatory maximum of 10 psi RVP. Thus, no changes to the fuel formulation or supply were made for fuel inputs in 2035.

4.0 EMISSIONS FROM ONROAD MOBILE SOURCES

Using the inventory approach in MOVES, emissions in tons per typical July weekday were developed by county. Table 9 summarizes the NO_x and VOC emissions by County. Table 10 provides a more detailed breakdown of emissions of NO_x and VOC by road type and source type for each county (note, Anderson County includes only the partial area of Anderson County designated maintenance).

MOVES output was summarized using a pivot table in Microsoft Excel. All of the input and output files, too extensive to include as tables in this appendix, are included in an associated 'zip' file, available upon request.

Table 9. Emissions of VOC and NOx by County and Year.

	2017	2020	2023	2026	2029	2032	2035
County	----- VOC (tons/day) -----						
Anderson (partial)	0.48	0.42	0.37	0.31	0.25	0.20	0.14
Blount	2.66	2.38	2.09	1.81	1.53	1.24	0.96
Knox	8.58	7.67	6.76	5.85	4.94	4.03	3.12
Total	11.72	10.47	9.22	7.97	6.72	5.47	4.22

Note: Emissions for 2020, 2023, 2026, 2029 and 2032 are interpolated between 2017 and 2035.

	2017	2020	2023	2026	2029	2032	2035
County	----- NO_x (tons/day) -----						
Anderson (partial)	0.69	0.59	0.49	0.39	0.28	0.18	0.08
Blount	3.75	3.26	2.77	2.29	1.80	1.31	0.82
Knox	18.66	16.51	14.37	12.22	10.07	7.93	5.78
Total	23.10	20.36	17.63	14.90	12.15	9.42	6.68

Note: Emissions for 2020, 2023, 2026, 2029 and 2032 are interpolated between 2017 and 2035.

Table 10. NO_x and VOC Emissions by Year, County, Road Type and Source Type.

Year/County/Road Type/Source Type	NOx	VOC
2017	**----- tons/day -----**	
Anderson		
Off-Network		
Combination Long-haul Truck	0.0014	0.0001
Combination Short-haul Truck	0.0009	0.0001
Light Commercial Truck	0.0037	0.0042
Motor Home	0.0001	0.0004
Motorcycle	0.0000	0.0060
Other Bus	0.0004	0.0001
Passenger Car	0.0202	0.0850
Passenger Truck	0.0701	0.1429
Refuse Truck	0.0008	0.0001
School Bus	0.0003	0.0001
Single Unit Long-haul Truck	0.0003	0.0001
Single Unit Short-haul Truck	0.0060	0.0037
Transit Bus	-	-
Rural Restricted Access	-	-
Combination Long-haul Truck	-	-
Combination Short-haul Truck	-	-
Light Commercial Truck	-	-
Motor Home	-	-
Motorcycle	-	-
Other Bus	-	-
Passenger Car	-	-
Passenger Truck	-	-
Refuse Truck	-	-
School Bus	-	-
Single Unit Long-haul Truck	-	-
Single Unit Short-haul Truck	-	-

Year/County/Road Type/Source Type	NOx	VOC
Transit Bus	-	-
Rural Unrestricted Access	-	-
Combination Long-haul Truck	0.0018	0.0001
Combination Short-haul Truck	0.0003	0.0000
Light Commercial Truck	0.0010	0.0003
Motor Home	0.0002	0.0001
Motorcycle	0.0003	0.0007
Other Bus	0.0001	0.0000
Passenger Car	0.0080	0.0037
Passenger Truck	0.0260	0.0106
Refuse Truck	0.0002	0.0000
School Bus	0.0002	0.0000
Single Unit Long-haul Truck	0.0001	0.0000
Single Unit Short-haul Truck	0.0015	0.0002
Transit Bus	-	-
Urban Restricted Access	-	-
Combination Long-haul Truck	-	-
Combination Short-haul Truck	-	-
Light Commercial Truck	-	-
Motor Home	-	-
Motorcycle	-	-
Other Bus	-	-
Passenger Car	-	-
Passenger Truck	-	-
Refuse Truck	-	-
School Bus	-	-
Single Unit Long-haul Truck	-	-
Single Unit Short-haul Truck	-	-
Transit Bus	-	-
Urban Unrestricted Access	-	-
Combination Long-haul Truck	0.0353	0.0019

Year/County/Road Type/Source Type	NOx	VOC
Combination Short-haul Truck	0.0065	0.0004
Light Commercial Truck	0.0134	0.0047
Motor Home	0.0030	0.0011
Motorcycle	0.0036	0.0091
Other Bus	0.0027	0.0003
Passenger Car	0.1001	0.0508
Passenger Truck	0.3374	0.1513
Refuse Truck	0.0042	0.0004
School Bus	0.0036	0.0006
Single Unit Long-haul Truck	0.0024	0.0004
Single Unit Short-haul Truck	0.0296	0.0050
Transit Bus	-	-
Anderson Total	**0.6857**	**0.4845**
Blount	-	-
Off-Network	-	-
Combination Long-haul Truck	0.0242	0.0025
Combination Short-haul Truck	0.0202	0.0020
Light Commercial Truck	0.0229	0.0367
Motor Home	0.0003	0.0022
Motorcycle	0.0001	0.0520
Other Bus	0.0003	0.0001
Passenger Car	0.1247	0.5570
Passenger Truck	0.4308	0.9257
Refuse Truck	0.0024	0.0004

Year/County/Road Type/Source Type	NOx	VOC
School Bus	0.0010	0.0003
Single Unit Long-haul Truck	0.0013	0.0005
Single Unit Short-haul Truck	0.0382	0.0232
Transit Bus	-	-
Rural Restricted Access	-	-
Combination Long-haul Truck	-	-
Combination Short-haul Truck	-	-
Light Commercial Truck	-	-
Motor Home	-	-
Motorcycle	-	-
Other Bus	-	-
Passenger Car	-	-
Passenger Truck	-	-
Refuse Truck	-	-
School Bus	-	-
Single Unit Long-haul Truck	-	-
Single Unit Short-haul Truck	-	-
Transit Bus	-	-
Rural Unrestricted Access	-	-
Combination Long-haul Truck	0.0778	0.0042
Combination Short-haul Truck	0.0231	0.0014
Light Commercial Truck	0.0019	0.0008
Motor Home	0.0014	0.0004
Motorcycle	0.0030	0.0063
Other Bus	0.0003	0.0000
Passenger Car	0.0638	0.0292
Passenger Truck	0.0547	0.0212
Refuse Truck	0.0017	0.0001
School Bus	0.0016	0.0003
Single Unit Long-haul Truck	0.0011	0.0002

Year/County/Road Type/Source Type	NOx	VOC
Single Unit Short-haul Truck	0.0202	0.0033
Transit Bus	-	-
Urban Restricted Access	-	-
Combination Long-haul Truck	0.0667	0.0034
Combination Short-haul Truck	0.0199	0.0011
Light Commercial Truck	0.0044	0.0017
Motor Home	0.0012	0.0003
Motorcycle	0.0013	0.0025
Other Bus	0.0003	0.0000
Passenger Car	0.0274	0.0111
Passenger Truck	0.1335	0.0467
Refuse Truck	0.0014	0.0001
School Bus	0.0014	0.0002
Single Unit Long-haul Truck	0.0009	0.0001
Single Unit Short-haul Truck	0.0170	0.0026
Transit Bus	-	-
Urban Unrestricted Access	-	-
Combination Long-haul Truck	0.5252	0.0289
Combination Short-haul Truck	0.1572	0.0097
Light Commercial Truck	0.0470	0.0227
Motor Home	0.0089	0.0033
Motorcycle	0.0137	0.0378
Other Bus	0.0019	0.0002
Passenger Car	0.3342	0.1830
Passenger Truck		

Year/County/Road Type/Source Type	NOx	VOC
	1.3015	0.6045
Refuse Truck	0.0108	0.0009
School Bus	0.0109	0.0020
Single Unit Long-haul Truck	0.0079	0.0013
Single Unit Short-haul Truck	0.1374	0.0240
Transit Bus	-	-
Blount Total	**3.7489**	**2.6581**
Knox	-	-
Off-Network	-	-
Combination Long-haul Truck	0.4911	0.0614
Combination Short-haul Truck	0.1283	0.0127
Light Commercial Truck	0.1038	0.1233
Motor Home	0.0017	0.0124
Motorcycle	0.0001	0.0893
Other Bus	0.0041	0.0008
Passenger Car	0.4164	1.6945
Passenger Truck	1.1186	2.1199
Refuse Truck	0.0096	0.0016
School Bus	0.0034	0.0008
Single Unit Long-haul Truck	0.0044	0.0023
Single Unit Short-haul Truck	0.1366	0.0637
Transit Bus	0.0042	0.0011
Rural Restricted Access	-	-
Combination Long-haul Truck	0.7363	0.0377
Combination Short-haul Truck	0.1582	0.0088

Year/County/Road Type/Source Type	NOx	VOC
Light Commercial Truck	0.0019	0.0005
Motor Home	0.0053	0.0014
Motorcycle	0.0029	0.0051
Other Bus	0.0043	0.0004
Passenger Car	0.0591	0.0211
Passenger Truck	0.0289	0.0094
Refuse Truck	0.0075	0.0005
School Bus	0.0044	0.0006
Single Unit Long-haul Truck	0.0040	0.0006
Single Unit Short-haul Truck	0.0511	0.0086
Transit Bus	0.0024	0.0006
Rural Unrestricted Access	-	-
Combination Long-haul Truck	0.0970	0.0053
Combination Short-haul Truck	0.0209	0.0013
Light Commercial Truck	0.0083	0.0029
Motor Home	0.0007	0.0002
Motorcycle	0.0027	0.0058
Other Bus	0.0005	0.0001
Passenger Car	0.0568	0.0261
Passenger Truck	0.1154	0.0470
Refuse Truck	0.0009	0.0001
School Bus	0.0005	0.0001
Single Unit Long-haul Truck	0.0006	0.0001
Single Unit Short-haul Truck		

Year/County/Road Type/Source Type	NOx	VOC
	0.0075	0.0012
Transit Bus	0.0003	0.0001
Urban Restricted Access	-	-
Combination Long-haul Truck	3.4956	0.1848
Combination Short-haul Truck	0.7519	0.0438
Light Commercial Truck	0.1089	0.0320
Motor Home	0.0253	0.0074
Motorcycle	0.0367	0.0704
Other Bus	0.0202	0.0019
Passenger Car	0.7283	0.2944
Passenger Truck	1.5711	0.5552
Refuse Truck	0.0349	0.0026
School Bus	0.0208	0.0033
Single Unit Long-haul Truck	0.0195	0.0031
Single Unit Short-haul Truck	0.2526	0.0426
Transit Bus	0.0115	0.0029
Urban Unrestricted Access	-	-
Combination Long-haul Truck	1.8263	0.1015
Combination Short-haul Truck	0.3964	0.0248
Light Commercial Truck	0.2815	0.1171
Motor Home	0.0119	0.0047
Motorcycle	0.0482	0.1524
Other Bus	0.0094	0.0010
Passenger Car	1.2582	0.7209

Year/County/Road Type/Source Type	NOx	VOC
Passenger Truck	3.7535	1.8082
Refuse Truck	0.0169	0.0015
School Bus	0.0108	0.0018
Single Unit Long-haul Truck	0.0111	0.0018
Single Unit Short-haul Truck	0.1505	0.0245
Transit Bus	0.0065	0.0013
Knox Total	**18.6593**	**8.5752**
2017 Total	**23.0938**	**11.7178**
2035	-	-
Anderson	-	-
Off-Network	-	-
Combination Long-haul Truck	0.0014	0.0000
Combination Short-haul Truck	0.0015	0.0001
Light Commercial Truck	0.0008	0.0015
Motor Home	0.0001	0.0003
Motorcycle	0.0000	0.0050
Other Bus	-	-
Passenger Car	0.0047	0.0351
Passenger Truck	0.0139	0.0496
Refuse Truck	0.0006	0.0001
School Bus	0.0002	0.0000
Single Unit Long-haul Truck	0.0002	0.0000
Single Unit Short-haul Truck	0.0038	0.0011
Transit Bus	-	-
Rural Restricted Access	-	-
Combination Long-haul Truck	-	-

Year/County/Road Type/Source Type	NOx	VOC
Combination Short-haul Truck	-	-
Light Commercial Truck	-	-
Motor Home	-	-
Motorcycle	-	-
Other Bus	-	-
Passenger Car	-	-
Passenger Truck	-	-
Refuse Truck	-	-
School Bus	-	-
Single Unit Long-haul Truck	-	-
Single Unit Short-haul Truck	-	-
Transit Bus	-	-
Rural Unrestricted Access	-	-
Combination Long-haul Truck	0.0007	0.0000
Combination Short-haul Truck	0.0002	0.0000
Light Commercial Truck	0.0001	0.0001
Motor Home	0.0001	0.0000
Motorcycle	0.0003	0.0006
Other Bus	-	-
Passenger Car	0.0003	0.0009
Passenger Truck	0.0010	0.0015
Refuse Truck	0.0001	0.0000
School Bus	0.0000	0.0000
Single Unit Long-haul Truck	0.0000	0.0000
Single Unit Short-haul Truck	0.0003	0.0001
Transit Bus	-	-
Urban Restricted Access	-	-
Combination Long-haul Truck	-	-
Combination Short-haul Truck	-	-
Light Commercial Truck	-	-
Motor Home	-	-
Motorcycle	-	-
Other Bus	-	-

Year/County/Road Type/Source Type	NOx	VOC
Passenger Car	-	-
Passenger Truck	-	-
Refuse Truck	-	-
School Bus	-	-
Single Unit Long-haul Truck	-	-
Single Unit Short-haul Truck	-	-
Transit Bus	-	-
Urban Unrestricted Access	-	-
Combination Long-haul Truck	0.0150	0.0006
Combination Short-haul Truck	0.0045	0.0002
Light Commercial Truck	0.0008	0.0009
Motor Home	0.0015	0.0009
Motorcycle	0.0037	0.0079
Other Bus	-	-
Passenger Car	0.0043	0.0131
Passenger Truck	0.0149	0.0219
Refuse Truck	0.0011	0.0001
School Bus	0.0005	0.0000
Single Unit Long-haul Truck	0.0006	0.0001
Single Unit Short-haul Truck	0.0075	0.0014
Transit Bus	-	-
Anderson Total	**0.0844**	**0.1431**
Blount	-	-
Off-Network	-	-
Combination Long-haul Truck	0.0230	0.0009
Combination Short-haul Truck	0.0204	0.0009
Light Commercial Truck	0.0125	0.0193
Motor Home	0.0006	0.0015
Motorcycle		

Year/County/Road Type/Source Type	NOx	VOC
	0.0001	0.0477
Other Bus	0.0000	0.0000
Passenger Car	0.0369	0.2590
Passenger Truck	0.1055	0.3674
Refuse Truck	0.0017	0.0002
School Bus	0.0011	0.0000
Single Unit Long-haul Truck	0.0006	0.0001
Single Unit Short-haul Truck	0.0264	0.0079
Transit Bus	-	-
Rural Restricted Access	-	-
Combination Long-haul Truck	-	-
Combination Short-haul Truck	-	-
Light Commercial Truck	-	-
Motor Home	-	-
Motorcycle	-	-
Other Bus	-	-
Passenger Car	-	-
Passenger Truck	-	-
Refuse Truck	-	-
School Bus	-	-
Single Unit Long-haul Truck	-	-
Single Unit Short-haul Truck	-	-
Transit Bus	-	-
Rural Unrestricted Access	-	-
Combination Long-haul Truck	0.0323	0.0015
Combination Short-haul Truck	0.0103	0.0006
Light Commercial Truck	0.0002	0.0004
Motor Home	0.0007	0.0005
Motorcycle	0.0029	0.0054
Other Bus	0.0000	0.0000
Passenger Car		

Year/County/Road Type/Source Type	NOx	VOC
	0.0031	0.0089
Passenger Truck	0.0028	0.0039
Refuse Truck	0.0004	0.0000
School Bus	0.0002	0.0000
Single Unit Long-haul Truck	0.0002	0.0001
Single Unit Short-haul Truck	0.0046	0.0010
Transit Bus	-	-
Urban Restricted Access	-	-
Combination Long-haul Truck	0.0428	0.0019
Combination Short-haul Truck	0.0136	0.0007
Light Commercial Truck	0.0008	0.0015
Motor Home	0.0009	0.0006
Motorcycle	0.0027	0.0042
Other Bus	0.0000	0.0000
Passenger Car	0.0027	0.0064
Passenger Truck	0.0115	0.0152
Refuse Truck	0.0005	0.0001
School Bus	0.0002	0.0000
Single Unit Long-haul Truck	0.0003	0.0001
Single Unit Short-haul Truck	0.0062	0.0013
Transit Bus	-	-
Urban Unrestricted Access	-	-
Combination Long-haul Truck	0.2348	0.0093
Combination Short-haul Truck	0.0729	0.0037
Light Commercial Truck	0.0052	0.0085

Year/County/Road Type/Source Type	NOx	VOC
Motor Home	0.0048	0.0029
Motorcycle	0.0127	0.0296
Other Bus	0.0000	0.0000
Passenger Car	0.0148	0.0509
Passenger Truck	0.0603	0.0921
Refuse Truck	0.0027	0.0003
School Bus	0.0013	0.0001
Single Unit Long-haul Truck	0.0018	0.0003
Single Unit Short-haul Truck	0.0354	0.0063
Transit Bus	-	-
Blount Total	**0.8155**	**0.9631**
Knox	-	-
Off-Network	-	-
Combination Long-haul Truck	0.3504	0.0163
Combination Short-haul Truck	0.1943	0.0086
Light Commercial Truck	0.0289	0.0526
Motor Home	0.0032	0.0082
Motorcycle	0.0002	0.0832
Other Bus	0.0002	0.0000
Passenger Car	0.1156	0.7902
Passenger Truck	0.2791	0.8543
Refuse Truck	0.0080	0.0008
School Bus	0.0040	0.0002
Single Unit Long-haul Truck	0.0025	0.0007

Year/County/Road Type/Source Type	NOx	VOC
Single Unit Short-haul Truck	0.1241	0.0306
Transit Bus	0.0044	0.0008
Rural Restricted Access	-	-
Combination Long-haul Truck	0.2707	0.0150
Combination Short-haul Truck	0.0878	0.0056
Light Commercial Truck	0.0001	0.0002
Motor Home	0.0024	0.0020
Motorcycle	0.0023	0.0035
Other Bus	0.0001	0.0000
Passenger Car	0.0031	0.0065
Passenger Truck	0.0015	0.0020
Refuse Truck	0.0014	0.0002
School Bus	0.0006	0.0001
Single Unit Long-haul Truck	0.0008	0.0002
Single Unit Short-haul Truck	0.0161	0.0049
Transit Bus	0.0010	0.0004
Rural Unrestricted Access	-	-
Combination Long-haul Truck	0.0463	0.0020
Combination Short-haul Truck	0.0142	0.0008
Light Commercial Truck	0.0006	0.0008
Motor Home	0.0004	0.0002
Motorcycle	0.0021	0.0041
Other Bus	0.0000	0.0000
Passenger Car	0.0028	0.0083

Year/County/Road Type/Source Type	NOx	VOC
Passenger Truck	0.0058	0.0092
Refuse Truck	0.0003	0.0000
School Bus	0.0001	0.0000
Single Unit Long-haul Truck	0.0001	0.0000
Single Unit Short-haul Truck	0.0032	0.0006
Transit Bus	0.0001	0.0000
Urban Restricted Access	-	-
Combination Long-haul Truck	1.5603	0.0765
Combination Short-haul Truck	0.4939	0.0289
Light Commercial Truck	0.0078	0.0099
Motor Home	0.0133	0.0100
Motorcycle	0.0306	0.0537
Other Bus	0.0003	0.0001
Passenger Car	0.0394	0.1021
Passenger Truck	0.0823	0.1218
Refuse Truck	0.0084	0.0011
School Bus	0.0041	0.0003
Single Unit Long-haul Truck	0.0047	0.0012
Single Unit Short-haul Truck	0.1007	0.0251
Transit Bus	0.0057	0.0018
Urban Unrestricted Access	-	-
Combination Long-haul Truck	1.0995	0.0395
Combination Short-haul Truck	0.3308	0.0154
Light Commercial Truck	0.0208	0.0282

Year/County/Road Type/Source Type	NOx	VOC
Motor Home	0.0088	0.0048
Motorcycle	0.0368	0.1046
Other Bus	0.0002	0.0000
Passenger Car	0.0590	0.2274
Passenger Truck	0.1976	0.3435
Refuse Truck	0.0061	0.0007
School Bus	0.0026	0.0002
Single Unit Long-haul Truck	0.0037	0.0006
Single Unit Short-haul Truck	0.0819	0.0125
Transit Bus	0.0037	0.0007
Knox Total	**5.7821**	**3.1234**
2035 Total	**6.6819**	**4.2295**

Appendix A

Methodology for Developing Input Datasets for the MOVES Model

This Appendix documents the development of certain MOVES inputs referenced in Appendix G (Onroad Mobile Source Emissions), developed by the University of Tennessee (UT) for TDOT.

Methodology for Developing Input Datasets for the MOVES Model

The University of Tennessee, Knoxville

Department of Civil & Environmental Engineering

851 Neyland Drive

Room 325, John D. Tickle Engineering Bldg.

Knoxville, TN 37996

Contact Person: James Calcagno

Post-doc Research Associate

Room 432, John D. Tickle Engineering Bldg.

Office phone: 865-974-7723

Email: jacal@utk.edu

August 2016

TABLE OF CONTENTS

LIST OF TABLES

LIST OF EQUATIONS

Introduction

In April 2004, the U.S. Environmental Protection Agency (EPA) released a new regulatory (computer) model for estimating mobile source emissions called the MOtor Vehicle Emission Simulator (MOVES). This model replaces an earlier one called MOBILE (Mobile Source Emission Factor Model) because the EPA must update its regulatory computer models periodically, as stipulated by the Clean Air Acts.

MOVES is considered to be superior to MOBILE, as it incorporates the most recent advances in the science to better estimate vehicle emissions. More importantly, MOVES has new input data requirements that are not only different but much larger in scope than the data requirements necessary to run the older model. As of March 2, 2013, the EPA requires that MOVES is used for inventory development in State Implementation Plans (SIP) and regional emissions analysis for showing transportation conformity by all states except for California. Currently several versions of the model exist for these purposes: MOVES2010, MOVES2010a, and MOVES2010b. Each version in the series incorporated certain performance enhancements which did not significantly impact any changes on emissions in computer runs at the County or Project Level Scales. However, a newer version of the model (MOVES2014) was released in July 31, 2014 that contains modifications which may impact changes in emissions. Likewise, certain modifications occurred in the format of the MySQL tables that receive the input data between the 2010 and 2014 versions of the model.

On November 4, 2014, EPA released still another version of the model (MOVES2014a) that contains minor revisions to the previously released model (MOVES2014). Since significant changes in criteria pollution emissions did not result, MOVES2014a is not considered to be a new model for SIP and transportation conformity purposes. In the future, MOVES2014 and the minor revisions (currently, only MOVES2014a) will replace MOVES2010 and its minor revisions (MOVES2010a and MOVES2010b) for regulatory purposes. The grace period between using MOVES2010 and MOVES2014 will end on October 7, 2016. Nonetheless, the EPA strongly recommends states use the latest version of MOVES that is available instead of relying on previous versions of the model. The EPA also recommends that states derive input data for the model from local sources. At the moment, adequate data in the appropriate format to run MOVES are not available for many states in the country, and Tennessee is not an exception.

The purpose of this project was to develop several of these new datasets for the State of Tennessee. The input datasets are listed in Table 1. (Note: all tables mentioned in this document are included in Appendix A.) These input files will also be formatted to MOVES2014a, which is the most recent version of the model, as of the writing of this document. Thereafter, MOVES2014a will be referred to simply as MOVES.

The CDM (County Data Manager) tab is the dialog box of the importer tool in MOVES; it allows the user to import data into MySQL, which is the data management software package included with the model. Other input datasets, located in the CDM, such as the Average Speed Distribution, Meteorological Data, Fuel, and I/M Programs, will not be discussed in this report; these datasets will be developed by other entities. It is assumed that the reader of this document has some familiarity with using MOVES, so only a minimal discussion of the mechanics of the model will be forthcoming in the following paragraphs. For the interested reader, details concerning MOVES can be found in the EPA documentation on the Internet: http://www.epa.gov/otaq/models/moves/index.htm

Input data (based on the calendar year 2014) were first developed for five counties in Tennessee: Anderson, Blount, Knox, Loudon, and Roane. This region has recently been in non-attainment for two criteria pollutants (ground-level ozone and fine particulate matter), and data were needed as soon as possible by the Tennessee Department of Environment and Conservation (TDEC) to use for modeling transportation conformity analysis. The year 2014 also corresponds to a reporting year for state supplied data to the EPA National Emission Inventory (NEI). Thus, input data developed by this project can also be used to develop mobile source emission inventories using MOVES for the 2014 NEI submission.

Microsoft Excel files will be included with this document to exhibit sample calculations or data manipulation in spreadsheet format for each the five counties mentioned above. Knox County data will discussed independently using formulas or equations to show how the input datasets were developed in a mathematical layout. The Excel files for the five counties will be supplied in a single compressed (zip) file. The input data that are intended for running MOVES will also be supplied in a separate compressed (zip) file containing a total of 95 Excel files (one for each county in Tennessee). These files are named by the county in which the data are intended. The names of zip files will be listed in the Summary section of this document. The input data will be provided in the appropriate format for use with the CDM importer tool in MOVES. The following methodology will describe the preparation of these input datasets, as well as any quality assurance measures that were taken to ensure the integrity of the data.

Source Type Population

Vehicles in MOVES are categorized into 13 source types: Motorcycle, Passenger Car, Passenger Truck, Light Commercial Truck, Intercity Bus, Transit Bus, School Bus, Refuse Truck, Single Unit Short-haul Truck, Single Unit Long-haul Truck, Motor Home, Combination Short-haul Truck, and Combination Long-haul Truck. The source type population is the actual number of vehicles of each source type in the modeling domain. Vehicles are called source types in MOVES because the model relies more on the activity or use of the vehicles to simulate emissions rather than on engine and/or body style configurations.

Two methods were used to develop the source type populations: the vehicle registration data method and the national default-local data method. The former utilizes statewide motor vehicle registration data or other reliable databases at the state or federal level. This is the preferred EPA procedure when actual road count data are not available. The latter method utilizes the ratio of default population and vehicle miles traveled (VMT) data generated by MOVES, as well as local VMT and vehicle classification data via a calculation procedure. This method is also acceptable by EPA but is used only when motor vehicle registration data are not available and/or inappropriate to use for the source types.

Vehicle Registration Data Method

Motor vehicle registration data were provided by the Tennessee Department of Revenue (TDOR) in the format of a text file. This file contained the vehicles currently registered or scheduled for a license renewal in the state at the time the database query was executed. For the current project, vehicle data were extracted to reflect the end of the calendar year 2014. Each record or row of data in the text file indicated a single motor vehicle. The start- and end-length of each record contains 49 integers and/or spaces; these represented coded or abbreviated information that could be used to identify or clarify source types. Information contained in the record are vehicle identification number (VIN), year, make, model, use, type, body style, fuel, county of registration, and license plate class. Descriptions of the coding were provided by

TDOR for interpretation of the information contained in the text file. Several of the codes, such as use, type, body style, and license class are specific to the state. These codes can change over time as manufacturing adapts to meet changing consumer demand for different body or frame styles and as road tax legislation may alter classifications which are based on gross weight.

Several group discussions were held with TDOR personnel to explain the source type population requirements for MOVES before the motor vehicle data were extracted to the text file. States typically report to the Federal Highway Administration (FHWA) on the operating characteristic of their road systems using Highway Performance Monitoring System (HPMS) classifications, so personnel were somewhat familiar applying these terms. Therefore, the text file contained preliminary MOVES source type and HPMS designations for each record.

Presently, 13 vehicle classes are contained in HPMS, but these should not be confused with the 13 source types used in MOVES. The HPMS classes rely more heavily on frame or body style, number of wheels and/or axles, and gross vehicle weight. The HPMS classes can be reordered into six general categories: Motorcycle, Passenger Car, Other 2-axle 4-tire Vehicles, Buses, Single Unit Trucks, and Combination Trucks. More details of the HPMS format can be found in the FHWA documentation on the Internet:
https://www.fhwa.dot.gov/policyinformation/hpms.cfm

Starting with the 2014 release of the model, the EPA decided that only five subsets of HPMS will be used because of trouble distinguishing between all types of light-duty vehicles using traffic or road tube counters. For this situation, the two HPMS classes (i.e., Passenger Car and Other 2-axle 4-tire Vehicles) were combined into a single class called Light Duty Vehicles. This HPMS (defined by EPA) will include both short and long wheelbases. More will be said later in the paper about this effect on developing the input data for MOVES.

The total number of vehicles in the initial data extraction was 5,513,062. Source types associated with MOVES and the HPMS vehicle categories are listed in Table 2. Heavy-duty freight trucks, utility trailers, and special government vehicles were not included in the extraction. As may be the case, county registered heavy duty vehicles used for hauling freight over short or long distances are not necessarily representative of that portion of the fleet because these vehicles may typically transport freight across state and county borders.

Inspecting the results in the table reveals that the percentages for Passenger Car (HPMS 20 or MOVES 21) and Other 2 axle-4 tire Vehicles (HPMS 30) or Passenger Truck plus Light Commercial Truck (MOVES 32 & 33) are approximately 76% and 16%, respectively. It is believed the number of vehicles initially assigned to Passenger Car in the data extraction were overstated by TDOR. The reason for this is other published data normally show comparable percentages between Passenger Car and Passenger Truck for states that are less urbanized. For example, FHWA highway statistics compiled for Tennessee during 2014 showed about 42% automobiles and 55% trucks. As a second illustration, Polk data for cars and light-duty trucks for the end of the calendar year 2013 showed about 45% cars and 55% light-duty trucks for Tennessee. R.L. Polk & Co. currently operating as IHS Automotive, is a private company that provides automotive information for a fee. The EPA has customarily relied on Polk as one of its sources for quality assurance in developing default vehicle population data for MOVES. For more information on Polk, the Internet site is https://www.ihs.com/btp/polk.html.

The FHWA and Polk data are summarized in Table 3. Several factors may account for the disagreement in the data. For instance, the method in which vehicles were classified and the time period when the data were compiled are not the same across the collection sources. On the other hand, it is believed that further action was needed to transform the state's motor vehicle registration data into results that were more in line with the reported data from FHWA and Polk.

Using a VIN decoder on the Internet and other abbreviated or coded information contained in the text file, such as make, model, type, use, class, body, etc., the vehicles were rearranged into source types by a repetitive trial-and-error procedure using database query software (i.e., Microsoft Access®). The source type population resulting from this activity are shown in Table 4. As can be seen, the percentage for Passenger Car (MOVES 21), Passenger Truck (MOVES 32), and Light Commercial Truck (MOVES 33) are approximately 47%, 41%, and 6%, respectively (or 47% each for cars and light-duty trucks). The data at this stage compares favorably with the FHWA and Polk data.

It should also be noted in the table that the total number of vehicles after redistributing the data were now 5,410,717 because 111,345 vehicles had been removed from the initial data extraction. These vehicles were registered as antique or show cars which were assumed to be driven somewhat rarely on the public roads. It was more difficult to distinguish between buses

(Intercity, Transit, and School Buses), Refuse Truck, and Motor Home with a high level of certainty because these vehicle had similar engine, body, and weight configurations, so other methods were used to develop population data for these source types. In the following paragraphs, the approach is discussed for the two bus source types where other reliable data were available: Transit Bus and School Bus.

Transit Bus

To meet the needs of the public transportation system, the Federal Transit Administration (FTA) maintains a National Transit Database (NTD). Recipients or beneficiaries of grants for public transportation from the FTA are required to submit operating and financial data to the NTD. Among other information, fleet size, vehicle model and year, fuel type, seating and standing capacity, and average mileage per vehicle on a county basis are contained in the database. Data are available at http://www.ntdprogram.gov/ntdprogram/. Statistics from the NTD were used to determine source type population data for Transit Bus. Thus, it was estimated that a total of 827 transit buses, as classified by EPA, were operating in the state during 2014. These buses were found to be operated in just 10 counties of the state.

School Bus

A statistical report is published annually for the public school systems of Tennessee: http://www.tn.gov/assets/entities/education/attachments/asr_1314.pdf. This report contains a record for the school buses that are operated in the state at the county level. From this data source, it was estimated that a total of 8,864 school buses operated throughout all 95 counties of the state during 2014.

National Default-Local Data Method

Local vehicle data were not available for the Single Unit Long-haul Truck and the Combination Short- and Long-haul Trucks. Population data for the Intercity Bus, Refuse Truck, and Motor Home also were not adequately resolved using motor vehicle registration data. In these circumstances, the EPA recommends using other auxiliary methods. For this situation, population data were derived by a ratio computation method using national default data in conjunction with local VMT and statewide vehicle classification summaries.

The ratio factor is the population data for the source type (numerator) by the distance traveled for the road type (denominator). This (activity) data were obtained by running MOVES at the National Scale for the calendar year of interest (2014) on a per county basis. The multiplying factor (numerator) is the local or county VMT data for the vehicle or source type. These data were obtained from the Tennessee Department of Transportation (TDOT) in the form of the annual average daily vehicle miles traveled (DVMT) and the statewide vehicle classification summaries. The DVMT and vehicle summaries for 2014 are shown in Table 5 and Table 6, respectively. Note that the DVMT for rural freeway is zero for all counties because this road classification is not used in Tennessee. Additionally, vehicle class count summaries for Urban Freeways were not compiled for 2014, so data from 2013 were used.

The vehicle and road data for the state are categorized by HPMS, and as mentioned earlier, MOVES does not directly use the HPMS based classifications. Thus, additional preprocessing is required to distribute or map HPMS to MOVES. In HPMS, six (general) functional road classifications exist: Interstate & Freeways, Principal Arterial, Minor Arterial, Major Collector, Minor Collector, and Local, which are further subdivided into Urban and Rural. In MOVES, only four primary road types are used: Rural Restricted, Rural Unrestricted, Urban Restricted, and Urban Unrestricted. A fifth road type is Off-network, but it accounts for locations where the predominant vehicle activity is essentially not conducted on the roadway, such as starting, parking, and idling. Summaries of the mapping scheme between the HPMS and MOVES classifications are shown in Table 7 for both source and road types.

To smooth out yearly fluctuations in the vehicle classification summaries, a five-year average (i.e., years 2010 through 2014) was used. The raw data from these previous years are not shown in this document, however a summary of the data is built-into the Excel files that will demonstrate the sample calculations in spreadsheet format. The name of this spreadsheet is called “5-Year Average”. The final averages were adjusted proportionally across the EPA five HPMS vehicle types, so that the sum of the averaged percentages would equal 100%. In several instances, TDOT did not include a road category in the dataset, so data from the next higher category was used if this data were applicable. For example, Rural Minor Collector data were used for Rural Local data because vehicle traffic on a Rural Minor Collector ultimately passes through a Rural Local road.

The general formula that was used to calculate population source type data is Equation 1. It has three parts represented by the symbols A, B, and C. (Note: all equations mentioned are included in the Appendix B of this document.) The "A" expression evaluates local DVMT for the HPMS vehicle type. The MOVES default population to VMT ratio is the "B" expression. The "C" expression (also a ratio) maps the HPMS vehicle type to the MOVES source type. The C value will equal unity (or 1.0) when the HPMS vehicle type is equivalent to the MOVES source type. Currently this is only the case for Motorcycle, otherwise it is equal to a fraction that sums to unity within MOVES source types that were mapped from the HPMS vehicle type. Sample calculations for the Passenger Car and Combination Long-haul Truck using the equations for Knox County data are include in Appendix B.

The supplemental Microsoft Excel file that will show all calculations or data manipulations in spreadsheet format for this section using Knox County data is named Sample Calculations for SourceType Populations - Knox 2014.xlsx. This file contains two spreadsheets. The first spreadsheet is called "SourceType Population" which contains several tables that are used to calculate source type population data using the raw data received from TDOT. The second spreadsheet is called "5-Year Average". This spreadsheet demonstrates how the five-year averages were calculated also using raw data received from TDOT. The sample calculations for Knox County data (shown in Appendix B for Passenger Car and Combination Long-haul Truck, mentioned above) will match the sample calculations shown in the Excel spreadsheets for Knox County.

Lastly, the final results from the national default-local data method are shown in Table 8 for the entire state. The data in the table are for comparison purposes only because all source type population data derived by this method were not used for final population data. Source types used from this method will only include, Intercity Bus, Refuse Truck, Single Unit Long-haul Truck, Motor Home, and Combination Short- and Long-haul Trucks.

Final Statewide Dataset

A summary of the final population data that will be used by source types are shown in Table 9. Motorcycle, Passenger Car, Passenger Truck, Light Commercial Truck, Transit Bus, School Bus, and Single Unit Short-haul Truck were derived from motor vehicle registration data and other datasets. Intercity Bus, Refuse Truck, Single Unit Long-haul Truck, Motor Home, and Combination Short- and Long-haul Trucks were determined using the calculation method. The data were distributed across counties as per county designation in the respective datasets. The final input data for MOVES are included in the compressed (zip) on a per county basis.

Age Distribution

Age distribution is the age fractions of fleet by age and source type. Vehicle ages in MOVES cover a range of 31 years with vehicles 30 years and older grouped together. States were again encouraged by EPA to develop age distributions with local data. In the present study, local population data were available for only seven of the 13 source types using the motor vehicle registration data and/or other valid data sources. Since the motor vehicle registration data received from TDOT was just a snapshot of registrations for the end of the year, population data needed to be adjusted. Case in point: model year 2015 vehicles were removed from the database and model year 2014 vehicles were assigned to the Age 0 category. Where local population were not available to determine the age distributions, the default age distributions for the year 2014 were used instead. These distributions were obtained from the EPA MOVES Internet site. Default age distributions were used for Intercity Bus, Refuse Truck, Single Unit Long-haul Truck, Motor Home, and Combination Short- and Long-haul Trucks. The final input data for MOVES are included in the compressed (zip) on a per county basis.

Road Type Distribution

Road type distribution is the fraction of source type VMT on each of the four road types. Once again, data in this format are not available for Tennessee, so a calculation method was used to convert HPMS road data into MOVES data. The five-year average vehicle summary classifications by road type (2010-2014) and the 2014 DVMT (both mentioned previously as received from TDOT) were used to develop the road type distributions. Note that local data are classified by HPMS, so the mapping scheme shown in Table 7 had to be applied.

Equation 2 is the overall formula that was used to calculate the VMT road type distributions. It has two parts which are represented by the symbols A and B. The "A" expression evaluates local DVMT for the MOVES road types per HPMS vehicle type. The "B" expression is the MOVES road type ratio that distributes the road type fractions across source types. Sample calculations for the Passenger Car and Combination Long-haul Truck using the equations for Knox County data are include in Appendix B. Off-network was assigned a value of zero. It should be noted that the road type VMT fractions are the same for those source types that were mapped from the HPMS vehicle type. For example, Passenger Car, Passenger Truck, and Light Commercial Truck in MOVES were mapped together from Passenger Car, and Other 2-axle 4-tire Vehicles in HPMS, which are now under the EPA term Light Duty Vehicles - Short and Long Wheelbase, and thus, VMT fractions will be the same for these three source types.

The supplemental Microsoft Excel file showing calculations in spreadsheet format for this section using Knox County data is named Sample Calculations for RoadType VMT Distributions - Knox 2014.xlsx. This file contains two spreadsheets. The first spreadsheet is called “SourceType Pop”, which contains several tables that are used to calculate source type VMT distribution data using the raw data received from TDOT. The second spreadsheet is called “5-Year Average”. It is the same spreadsheet which was mentioned earlier in the discussion of source type population. The sample calculations for Knox County data (shown in Appendix B for Passenger Car and Combination Long-haul Truck, mentioned above) will match the sample calculations shown in the Excel spreadsheets for Knox County. The final input data for MOVES are included in the compressed (zip) on a per county basis.

Vehicle Type VMT

Annual VMT by the HPMS vehicle classes are required by MOVES. Vehicle type VMT is the total annual or daily VMT by HPMS vehicle type or source type. It includes month, day, and hour VMT fractions. Month VMT fractions are the fraction of annual VMT (per source type) occurring per month. Day VMT fractions are the fraction of monthly VMT (per source type) occurring on one of the two day types (weekday or weekend-day). Hour VMT fractions are the fraction of daily VMT (per source type) occurring per hour.

Once again, the vehicle type VMT data in this format are not available for Tennessee. However, to help the user develop inputs for MOVES, the EPA created several Microsoft Excel spreadsheet-based converter or calculator tools. A modified version of the file named “aadvmtcalculator_hpms.xls” was used to develop the data for vehicle type VMT. First, some general information will be given about the original EPA file which can be downloaded from the MOVES Internet site listed earlier in the report.

The EPA tool uses annual average weekday (AAD) VMT at the HPMS level to calculate type of day, monthly and yearly VMT in terms of HPMS and/or MOVES source types. The tool contains default vehicle type VMT datasets for monthly, daily, and hourly VMT fractions and provides default monthly and weekend-day adjustment factors if local inputs are not available. However, the decision was made to modify the EPA converter tool after some discussion among stakeholders. The primary concern was that the annual VMT (i.e., the MOVES input for the HPMSBaseYearVMT as calculated via the tool) should equal 365 times the HPMS DVMT data (or 366 if the year for the model run was a leap year).

It is assumed this tool was designed to handle average annual weekday VMT (AAWDVMT) rather than average annual daily traffic (AADVMT). Raw HPMS data from TDOT are reported in terms of AADVMT and by definition represents an average day regardless of weekday or weekend. For their roads analysis, TDOT will normally apply a daily variation factors to represent traffic for a particular weekday or weekend-day. Thus, the EPA tool was modified to essentially multiply daily VMT by 365 (because 2014 was not a leap year) to create the HPMSVTypeYear data. Also since TDOT determines seven-day adjustment factors by months of the year, the weekday and weekend-day adjustment factors could be determined separately. These factors were also added to the modified EPA calculator tool which originally included only default monthly and weekend-day adjustment factors.

A copy of the TDOT five year seasonal variation factors that were used for 2014 are shown in Table 10. Note that the final factors used in the modified tool will be the inverse of the variation factors shown in the table. They are listed for Rural Interstate, Rural Other, Urban, and Recreational. This required preprocessing of the road categories into HPMS road types and averaging the results before the adjustment factors could be applied to the modified EPA calculator tool. The averaging pattern is represented in the Excel file showing the AADVMT sample calculations. It should be noted that the variation factors for Recreational were not used because they are for road traffic in state parks. In effect, weighting factors were created from the road categories that had been mapped to HPMS road types, and then these weighting factors were applied to the averaged adjustment factors to create monthly, weekday, and weekend-day factors for use in the modified calculator tool. The method of averaging these seasonal variation factors are shown in the Microsoft Excel preprocessing data file mentioned below. One final comment is in order: as of the writing of this document, the EPA has a new converter tool that permits entering ADDVMT data as average day or as an average weekday. This file is called "aadvmt-converter-tool-moves2014.xlsx", but it was decided to say with the original EPA tool because the modified version includes the monthly, weekday and weekend-day adjustment factors.

Once more, it was necessary that local data be preprocessed before it could be used. The general formula that was applied to prepare AADVMT data is Equation 3. Note that this formula is identical to the "A" expression of Equation 1. (It was listed again only to maintain continuity in the narrative.) Sample calculations for the Passenger Car and Combination Long-haul Truck using the equation for Knox County data are include in Appendix B.

Two Microsoft Excel file will accompany this section. The names of these files are Sample Calculations for AADVMT - Knox 2014.xlsx and Sample Modified AADVMT Calculator HPMS - Knox 2014.xlsx. The former file includes calculations in spreadsheet format for Knox County that were used to develop the AADVMT input data for the calculation tool. This file contains three spreadsheets. The first spreadsheet is called "AADVMT" which contains several tables that are used to calculate the AADVMT data. The second spreadsheet is called "Adjustment Factors" which contains several tables that are used to calculate the monthly, weekday, and weekend-day adjustment factors. Both of these spreadsheets use raw data received from TDOT. The third spreadsheet is called "5-Year Average". Calculation in this spreadsheet demonstrates how the five-year averages were calculated, using the yearly vehicle summaries by the functional road classes. It is the same spreadsheet that was mentioned earlier in the discussion of source type population and road type distribution. The Sample calculations for Knox County data (shown in Appendix B for Passenger Car and Combination Long-haul Truck, mentioned above) will match the sample calculations shown in the Excel spreadsheets for Knox County.

The latter file is the modified EPA calculator tool that was run using the Knox County AADVMT data. This file contains eight spreadsheets. The main spreadsheet is called "Import HPMS AADVMT and Factors". This spreadsheet accepts the AADVMT and adjustment factor data generated by the former file (previously discussed). Calculations are shown in the spreadsheet called "Intermediate Calculations". The final calculations become the input data for MOVES which are shown in the three spreadsheets named: "HPMSVTypeYear", "monthVMTFraction-calculated", and "dayVMTFraction-calculated". For closure, the EPA default VMT fractions were included in the file as the following spreadsheets: "monthVMTFraction-default", "dayVMTFraction-default", and "hourVMTFraction-default". The modified tool will only generate the HPMS base year VMT data and the monthly and daily VMT fractions required by MOVES. Therefore, the default hourly VMT fractions are used as input data for MOVES because, at the moment, no hourly vehicle data are available at the local level to aid in calculating hourly fractions. The other two default VMT fractions (month and day) were included for comparison purposes. The final input data for MOVES are included in the compressed (zip) on a per county basis.

Summary

Two compressed (or zip type) files are included with this document. The file named MOVES Input Data files for 2014.zip contains the Excel input data files for the 95 counties of Tennessee. Each file contains eight spreadsheets; seven spreadsheets contain the input data listed in Table 1, and the last spreadsheet contains general comments about the input data. The prefix of the file name is the county name. For example, Knox Input File 2014.xlxs is the Excel file containing MOVES input data for Knox County. The second zip or compressed file contains the Excel files that demonstrate all sample calculations in spreadsheet format for Anderson, Blount, Knox, Loudon, and Roane Counties. The name of this file is Sample Calculations for Five Counties 2014.zip; it contains a total of 20 files, i.e., four sets of sample calculation files per county. Only the files for Knox County were mentioned in this document. However, the naming convention for the files is similar for the other four counties.

Conclusions

Two areas need improvement to enhance the quality of the input data: the motor vehicle registration database and the statewide vehicle classification summaries. A trial-and-error method was required to match vehicles with the MOVES and/or HPMS categories using motor vehicle registration data to generate source type population data. This method is time consuming and may produce inconsistent results because many of the vehicle categories listed in the registration database are labeled incorrectly and often require a judgment call. For example, vehicle type, use, and body codes exist for commercial bus, school bus, motor home, pick-up truck, and garbage truck in the database, but in many instances, these abbreviations do not match the information derived by querying the VIN. Additional evidence for this problem is shown by the initial data extraction which disclosed almost 80% passenger cars. This is not an attempt to fault TDOR because the purpose of vehicle registration is to collect title information, such as for the establishment of legal ownership of property and to collect road-use taxes, which in turn help finance the construction and/or maintenance of the public roadways. This is to say, the intent of motor vehicle registration data is not to serve as input for the MOVES model.

The final concern involves using statewide data to predict local (county) conditions. The EPA requires that states develop local data for MOVES. Although the quality of data received from TDOT is very high, much of the data have been abridged to generate statewide summaries. In this project, the abridged data were used in various calculation methods to predict local conditions that possibly do not represent the true local condition. The most reliable data are from physical traffic volume counts, which are actual counts of vehicles along a particular road way. However at present, it is very difficult to classify vehicles or distinguish between source types using pneumatic and/or electronic counters. Also the method would be costly and time consuming to perform on all roadways. Therefore, sampling is typically performed on certain roadways on a seasonal basis, and the data are projected to similar locations (i.e., as statewide summaries). Inputs to MOVES require highly detailed data. Concluding: state and local agencies must use computer models for SIPs and transportation conformity analyses. Ultimately the results from these computer programs will influence policy decisions that can have significant economic effects on the community in which they are applied. Therefore, it is paramount that the highest quality of data is used to run the models.

References

1. U.S. Environmental Protection Agency. *Motor Vehicle Emission Simulator (MOVES): User Guide for MOVES2014a*. Assessment and Standards Division, Office of Transportation and Air Quality; EPA-420-B-15-095; November 2015.

2. U.S. Environmental Protection Agency. *MOVES2014 and MOVES2014a Technical Guidance: Using MOVES to Prepare Emission Inventories in State Implementation Plans and Transportation Conformity*. Assessment and Standards Division, Office of Transportation and Air Quality; EPA-420-R-15-093; November 2015.

3. U.S. Environmental Protection Agency. *Population and Activity of On-road Vehicles in MOVES2014*. Assessment and Standards Division, Office of Transportation and Air Quality; EPA-420-R-16-003a; March 2016.

4. U.S. Department of Transportation. *Highway Performance Monitoring System – Field Manual*. Federal Highway Administration (FHWA); Office of Highway Policy Information; Office of Management & Budget (OMB) Control No. 2125-0028; March 2014.

5. U.S. Department of Transportation. *Traffic Monitoring Guide*. Federal Highway Administration (FHWA); Office of Highway Policy Information; September 2013.

Appendix

Appendix A - Tables mentioned in body of document

Table 1: Input Data Files

CDM (tab) Name	Data Source (file) Name
Source Type Population	sourceTypeYear
Age Distribution	sourceTypeAgeDistribution
Road Type Distribution	roadTypeDistribution
Vehicle Type VMT	HPMSVTypeYear
	monthVMTFraction
	dayVMTFraction
	hourVMTFraction

Table 2: Number of Vehicles in the TDOR Initial Data Extraction

HPMS ID	HPMS Vehicle Type	TDOR Extraction	MOVES ID	MOVES Source Type	TDOR Extraction
10	Motorcycle	158,643	11	Motorcycle	158,643
20	Passenger Car	4,215,201	21	Passenger Car	4,215,201
30	Other 2 axle-4 tire Vehicles	872,451	31	Passenger Truck	872,247
			32	Light Commercial Truck	204
40	Buses	3,261	41	Intercity Bus	772
			42	Transit Bus	1,459
			43	School Bus	1,030
50	Single Unit Trucks	263,506	51	Refuse Truck	326
			52	Single Unit Short-haul Truck	256,030
			53	Single Unit Long-haul Truck	na
			54	Motor Home	7,150
60	Combination Trucks	na	61	Combination Short-haul Truck	na
			62	Combination Long-haul Truck	na
	Total	**5,513,062**		**Total**	**5,513,062**

Note: vehicle data from HPMS ID 20 & 30 will be combined, assigned ID 25, and called Light Duty Vehicles - Short and Long Wheelbase for evaluation in MOVES; na = not available

Table 3: FHWA and Polk Vehicle Registration Data for Tennessee

Source	Vehicle Type	Private and Commercial	Publicly Owned	Total
FHWA (2014)	Motorcycles	162,396	2,314	**164,710**
	Automobiles *	2,236,150	37,362	**2,273,512**
	Trucks	2,945,617	85,779	**3,031,396**
	Buses	2,069	23,960	**26,029**
	Total	**5,346,232**	**149,415**	**5,495,647**
Polk **	Cars	-		2,456,340
	Light-duty Trucks	-		3,062,978
	Total	-		**5,519,318**

*** Including Taxicabs; Source: FHWA Highway Statistics; State Motor-Vehicle Registrations, abridged Table MV-1; ** Polk car and light-duty truck registration database; condensed data for end of year 2013.**

Table 4: Number of Vehicles after Redistribution of Data

MOVES ID	MOVES sourceTypeName	TDOR Extraction
11	Motorcycle	158,643
21	Passenger Car	2,565,518
31	Passenger Truck	2,209,403
32	Light Commercial Truck	327,352
41	Intercity Bus	892
42	Transit Bus	1,459
43	School Bus	3,105
51	Refuse Truck	326
52	Single Unit Short-haul Truck	118,362
53	Single Unit Long-haul Truck	na
54	Motor Home	16,657
61	Combination Short-haul Truck	na
62	Combination Long-haul Truck	na
	Total	**5,401,717**

Note: total reflects 111,345 antique vehicles removed from initial TDOT data extraction

Table 5: HPMS 2014 DVMT Rural and Urban

Reg	Co #	County	Interstate		Freeways		Principal Arterial		Minor Arterial		Major Collector	Major Collector	Minor Collector	Minor Collector	Local		County Total
			Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Urban	Rural	Rural	Urban	
1	1	ANDERSON	504,792	0	0	0	32,921	665,757	0	303,626	171,309	153,153	31,696	64,809	69,801	311,192	2,309,056
3	2	BEDFORD	17,519	0	0	0	204,120	223,371	160,467	64,756	111,747	31,894	0	99,898	99,624	67,392	1,080,788
4	3	BENTON	260,616	0	0	0	130,096	0	64,282	0	89,868	0	0	45,880	39,902	0	630,644
2	4	BLEDSOE	0	0	0	0	124,352	0	38,423	0	24,279	0	0	46,467	42,601	0	276,122
1	5	BLOUNT	0	89,422	0	27,928	195,499	1,016,348	84,877	464,579	19,685	368,747	43,606	65,741	136,140	564,908	3,077,480
2	6	BRADLEY	154,368	809,944	0	148,857	0	566,353	34,650	480,515	62,492	178,797	50,618	33,423	56,380	635,809	3,212,206
1	7	CAMPBELL	936,417	0	0	0	158,482	150,132	36,338	8,627	112,700	11,292	0	120,861	125,609	21,348	1,681,806
2	8	CANNON	0	0	0	0	118,413	0	76,107	0	32,652	0	0	43,052	35,879	0	306,103
4	9	CARROLL	19,906	0	0	0	204,487	57,072	180,738	16,590	98,515	14,074	723	59,773	59,481	22,686	734,045
1	10	CARTER	0	52,240	0	0	61,288	325,137	112,559	190,917	55,508	93,643	523	26,905	42,189	118,477	1,079,386
3	11	CHEATHAM	549,278	0	0	0	0	0	331,153	0	170,875	0	0	99,633	113,293	0	1,264,232
4	12	CHESTER	0	0	0	0	44,321	69,746	84,706	16,051	38,240	35,892	0	36,620	34,637	28,893	389,106
1	13	CLAIBORNE	0	0	0	0	372,091	0	144,582	0	34,545	0	0	96,649	94,812	0	742,679
2	14	CLAY	0	0	0	0	65,118	0	42,841	0	11,085	0	0	18,070	28,620	0	165,734
1	15	COCKE	316,413	243,209	0	0	0	150,315	211,345	69,928	46,635	11,122	13,235	62,170	82,996	46,068	1,253,436
2	16	COFFEE	803,585	372,455	0	0	72,086	310,820	29,899	230,497	115,929	88,144	16,674	116,564	97,939	203,835	2,458,427
4	17	CROCKETT	0	0	0	0	260,321	0	41,500	0	115,916	0	0	45,980	35,336	0	499,053
2	18	CUMBERLAND	876,509	233,563	0	0	106,921	160,240	90,305	119,736	184,682	143,217	7,171	75,725	114,813	369,848	2,482,730
3	19	DAVIDSON	711,778	8,995,052	0	1,630,206	149,716	3,284,898	412,949	3,019,604	63,731	903,094	0	104,161	121,768	3,201,874	22,598,831
4	20	DECATUR	171,268	0	0	0	167,322	0	20,066	0	38,751	0	0	30,363	31,330	0	459,100
2	21	DE KALB	0	0	0	0	0	0	282,995	0	58,722	0	0	47,314	73,048	0	462,079
3	22	DICKSON	612,227	30,011	0	0	58,531	227,988	398,200	48,804	117,494	48,895	0	82,982	102,020	56,285	1,783,437
4	23	DYER	122,297	52,973	0	25,772	151,023	276,408	31,742	105,606	80,447	104,513	28,911	60,020	47,542	151,971	1,239,225
4	24	FAYETTE	495,162	0	0	0	282,527	241,304	234,960	35,621	117,271	37,380	0	82,815	79,483	72,684	1,679,207
2	25	FENTRESS	0	0	0	0	160,493	0	90,684	0	43,266	0	0	77,360	116,143	0	487,946
2	26	FRANKLIN	0	0	0	0	167,002	178,923	59,590	89,028	147,681	31,969	8,009	61,977	85,926	78,925	909,030
4	27	GIBSON	0	0	0	0	222,740	219,331	160,971	46,891	175,775	22,153	2,659	106,709	92,578	40,875	1,090,682
3	28	GILES	370,353	0	0	0	134,417	66,787	192,808	72,655	89,271	11,085	5,970	87,352	80,595	21,957	1,133,250
1	29	GRAINGER	0	0	0	0	232,710	0	156,822	0	70,883	0	0	58,857	71,663	0	590,935
1	30	GREENE	864,019	0	0	0	105,693	478,259	155,392	140,174	142,195	64,819	42,193	159,383	156,851	174,734	2,483,712
2	31	GRUNDY	258,186	0	0	0	370	0	126,547	0	75,918	0	0	13,191	34,071	0	508,283
1	32	HAMBLEN	275,070	29,650	0	0	482	657,804	0	234,516	58,260	139,758	24,488	37,147	49,081	256,076	1,762,332
2	33	HAMILTON	0	2,768,873	0	1,156,147	167,270	2,041,882	61,099	2,024,321	10,885	404,106	85,908	64,500	63,678	1,352,142	10,200,811
1	34	HANCOCK	0	0	0	0	0	0	56,752	0	15,264	0	0	13,395	14,060	0	99,471
4	35	HARDEMAN	0	0	0	0	149,631	89,822	181,901	12,168	29,185	5,802	1,445	78,837	56,395	13,290	618,476
4	36	HARDIN	0	0	0	0	90,548	120,040	190,064	55,511	41,315	39,825	3,044	48,312	51,958	65,535	706,152

24

(continued)

Reg	Co #	County	Interstate		Freeways		Principal Arterial		Minor Arterial		Major Collector	Major Collector	Minor Collector	Minor Collector	Local		County Total
			Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Urban	Rural	Rural	Urban	
1	37	HAWKINS	0	0	0	0	305,562	224,039	148,060	53,996	74,135	34,565	0	95,704	145,357	53,830	1,135,248
4	38	HAYWOOD	716,706	24,212	0	0	0	62,841	129,209	48,675	93,641	14,852	1,397	36,959	35,715	26,562	1,190,769
4	39	HENDERSON	732,888	0	0	0	149,401	164,372	104,969	20,887	73,763	22,845	1,546	47,240	54,239	50,049	1,422,199
4	40	HENRY	0	0	0	0	269,990	164,767	26,788	35,007	130,920	33,861	7,224	44,727	68,934	56,381	838,599
3	41	HICKMAN	479,774	0	0	0	15,415	0	309,160	0	66,709	0	0	63,062	70,101	0	1,004,221
3	42	HOUSTON	0	0	0	0	0	0	82,132	0	36,556	0	0	14,229	19,192	0	152,109
3	43	HUMPHREYS	439,010	0	0	0	0	0	284,417	0	20,702	0	0	93,977	60,131	0	898,237
2	44	JACKSON	0	0	0	0	0	0	133,053	0	42,503	0	0	24,970	30,126	0	230,652
1	45	JEFFERSON	1,253,496	23,315	0	0	0	168,883	307,213	83,700	199,362	18,529	10,183	101,715	125,253	40,471	2,332,120
1	46	JOHNSON	0	0	0	0	3,870	0	172,061	0	87,534	0	0	27,890	40,688	0	332,043
1	47	KNOX	498,500	5,194,493	0	58,604	0	2,662,076	81,947	2,278,761	87,171	810,233	51,429	114,023	117,858	2,815,096	14,770,191
4	48	LAKE	0	0	0	0	0	0	60,434	0	11,334	0	0	12,888	9,013	0	93,669
4	49	LAUDERDALE	0	0	0	0	166,417	114,980	10,090	41,393	87,404	17,655	376	50,870	52,333	23,290	564,808
3	50	LAWRENCE	0	0	0	0	325,996	156,709	20,453	76,530	118,226	18,279	0	115,445	156,300	34,869	1,022,807
3	51	LEWIS	0	0	0	0	84,594	0	65,341	0	9,021	0	0	16,146	18,407	0	193,509
3	52	LINCOLN	0	0	0	0	197,497	267,687	38,929	20,685	113,124	33,467	26,522	81,463	83,134	82,155	944,663
1	53	LOUDON	425,354	712,839	0	0	123,144	236,222	56,845	131,482	34,913	165,584	33,335	75,017	53,020	320,137	2,367,892
2	54	MC MINN	837,204	151,234	0	0	101,467	157,408	225,975	153,961	113,649	83,512	9,771	101,864	121,978	129,272	2,187,295
4	55	MC NAIRY	0	0	0	0	406,230	0	102,677	0	84,588	0	0	86,528	68,751	0	748,774
3	56	MACON	0	0	0	0	184,109	0	41,257	0	84,372	0	0	67,349	62,739	0	439,826
4	57	MADISON	544,216	506,818	0	0	383,706	738,649	54,744	491,513	85,554	238,401	18,537	121,011	81,284	428,274	3,692,707
2	58	MARION	1,294,143	0	0	0	178,499	0	82,272	0	238,016	0	0	60,339	72,999	0	1,926,268
3	59	MARSHALL	252,895	19,336	0	0	0	88,326	268,779	76,839	81,858	22,511	965	44,998	62,799	41,997	961,303
3	60	MAURY	464,675	36,701	0	209,080	294,858	602,808	224,917	162,054	146,204	125,251	0	122,944	105,358	219,575	2,714,425
2	61	MEIGS	0	0	0	0	29,817	0	186,098	0	34,279	0	0	32,802	40,659	0	323,655
1	62	MONROE	190,318	73,365	0	0	215,739	70,298	262,859	34,931	77,723	15,432	9,085	135,025	169,279	30,833	1,284,887
3	63	MONTGOMERY	254,951	529,693	0	0	76,428	1,032,011	233,009	897,830	106,245	215,084	850	111,703	156,820	588,553	4,203,177
3	64	MOORE	0	0	0	0	88,696	941	0	0	21,465	0	0	29,711	25,231	0	166,044
1	65	MORGAN	0	0	0	0	96,554	0	121,897	1,517	35,093	0	60	65,377	51,096	0	371,594
4	66	OBION	0	0	0	0	313,108	135,283	92,458	38,597	106,131	25,015	464	69,626	75,268	28,356	884,306
2	67	OVERTON	0	0	0	0	270,705	0	97,441	0	60,613	0	0	53,661	69,623	0	552,043
3	68	PERRY	0	0	0	0	61,263	0	76,498	0	20,351	0	0	24,310	28,502	0	210,924
2	69	PICKETT	0	0	0	0	69,264	0	1,605	0	16,183	0	0	13,629	19,987	0	120,668
2	70	POLK	0	0	0	0	300,732	0	34,526	0	21,917	0	0	50,272	88,310	0	495,757
2	71	PUTNAM	1,111,229	533,278	0	146,551	10,977	267,623	76,594	301,189	107,924	129,866	51,563	74,207	101,076	372,023	3,284,100
2	72	RHEA	0	0	0	0	217,995	185,123	127,254	58,543	28,684	24,406	16,944	50,989	57,209	49,717	816,864

(continued)

Reg	Co #	County	Interstate		Freeways		Principal Arterial		Minor Arterial		Major Collector	Major Collector	Minor Collector	Minor Collector	Local		County Total
			Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Urban	Rural	Rural	Urban	
1	73	ROANE	258,148	595,334	0	0	58,862	338,293	61,713	184,610	58,359	29,439	43,383	54,854	55,823	123,163	1,861,981
3	74	ROBERTSON	1,225,565	149,162	0	0	4,337	272,330	280,103	61,118	192,339	90,800	0	105,985	125,753	133,035	2,640,527
3	75	RUTHERFORD	233,113	2,324,945	0	257,255	597,556	1,302,462	144,330	1,337,504	228,074	647,124	0	124,469	145,092	1,413,584	8,755,508
1	76	SCOTT	0	0	0	0	182,332	0	90,405	0	52,565	0	0	50,579	71,628	0	447,509
2	77	SEQUATCHIE	0	0	0	0	267,409	0	3,399	149	44,936	0	0	35,590	47,050	0	398,533
1	78	SEVIER	0	309,868	0	0	231,153	989,100	425,109	266,983	142,182	258,441	35,947	119,357	416,818	587,979	3,782,937
4	79	SHELBY	111,617	5,820,404	0	1,437,471	304,233	5,332,115	197,829	5,928,365	15,308	1,508,953	6,233	158,652	140,709	3,471,543	24,433,432
3	80	SMITH	648,175	0	0	0	0	0	221,134	0	62,314	0	0	45,535	38,451	0	1,015,609
3	81	STEWART	0	0	0	0	183,794	0	41,632	0	44,027	0	0	28,167	52,424	0	350,044
1	82	SULLIVAN	57,023	932,670	0	164,912	84,717	1,157,609	27,410	815,503	56,096	205,736	12,887	50,073	107,360	509,517	4,181,513
3	83	SUMNER	0	362,619	0	607,853	292,113	738,958	253,753	319,005	142,932	452,716	0	109,926	151,327	750,767	4,181,969
4	84	TIPTON	0	0	0	0	111,242	330,349	101,046	102,462	84,199	28,981	2,150	120,222	128,021	69,296	1,077,968
3	85	TROUSDALE	0	0	0	0	60,541	0	97,620	0	23,459	0	0	19,595	18,021	0	219,236
1	86	UNICOI	133,805	213,619	0	0	0	0	1,895	68,837	45,983	36,999	3,594	13,249	11,511	72,194	601,686
1	87	UNION	0	0	0	0	0	0	142,415	0	89,821	0	0	38,505	58,204	0	328,945
2	88	VAN BUREN	0	0	0	0	81,472	0	24,781	0	18,231	0	0	22,228	19,605	0	166,317
2	89	WARREN	0	0	0	39,344	179,280	166,710	74,835	94,636	86,694	24,317	4,765	60,483	69,625	52,545	853,234
1	90	WASHINGTON	171,539	634,639	0	0	115,673	512,688	145,535	688,479	76,928	182,783	16,649	78,607	90,719	383,398	3,097,637
3	91	WAYNE	0	0	0	0	82,823	0	102,142	0	47,849	0	0	50,950	52,582	0	336,346
4	92	WEAKLY	0	0	0	0	249,445	104,523	31,554	64,386	162,684	13,745	618	62,391	74,274	37,573	801,193
2	93	WHITE	0	0	0	0	91,428	198,000	81,984	47,533	42,432	27,957	14,949	53,372	44,462	61,781	663,898
3	94	WILLIAMSON	639,041	1,413,470	0	0	777,749	717,750	517,500	555,295	193,017	477,084	0	313,435	263,302	1,028,484	6,896,127
3	95	WILSON	424,271	1,158,077	0	34,687	372,969	565,233	283,792	376,496	170,114	210,532	0	195,259	126,605	301,660	4,219,695
STATE TOTALS			21,717,419	35,397,483	0	5,944,667	13,662,152	31,805,903	12,272,191	23,770,172	7,711,386	9,188,329	748,299	6,617,048	7,546,377	22,264,763	198,646,189
HPMS AREAWIDE DVMT			21,717	35,397	0	5,945	13,662	31,806	12,272	23,770	7,711	9,188	748	6,617	7,546	22,265	198,646

26

Table 6: Class Count 2014 Summary for the Rural and Urban Road System

Functional Class	(1) RURAL INTERSTATE	(2) RURAL PRINCIPAL ARTERIAL	(6) RURAL MINOR ARTERIA	(7) RURAL MAJOR COLLECTO	(8) RURAL MINOR COLLECTOR	(11) URBAN INTERSTATE	(12) URBAN FREEWAY	(14) URBAN PRINCIPAL ARTERIAL	(16) URBAN MINOR ARTERIAL	(17) URBAN COLLECTOR
Motorcycles (1)	**0.68%**	**0.79%**	**0.63%**	**0.62%**	**0.58%**		**0.18%**	**0.53%**	**0.66%**	**0.45%**
Cars (2)	52.78%	65.04%	68.34%	68.66%	70.85%		74.25%	74.29%	74.19%	77.18%
Pick-ups, Panels & Vans (3)	14.51%	24.64%	25.33%	27.01%	25.87%		19.14%	20.42%	20.36%	20.66%
Passenger Vehicles (2+3)	**67.29%**	**89.68%**	**93.68%**	**95.67%**	**96.72%**		**93.39%**	**94.71%**	**94.55%**	**97.84%**
Buses (4)	**0.24%**	**0.05%**	**0.03%**	**0.02%**	**0.01%**		**0.19%**	**0.02%**	**0.02%**	**0.02%**
Dual Rear Trucks (5)	1.22%	1.08%	0.91%	0.84%	0.81%		1.01%	0.70%	0.70%	0.65%
3-Axle Trucks (6)	0.80%	0.99%	0.82%	0.76%	0.64%		0.51%	0.58%	0.67%	0.33%
4-Axle Trucks (7)	0.36%	0.33%	0.20%	0.20%	0.18%		0.06%	0.34%	0.38%	0.07%
Sinle Unit Trucks (5+6+7)	**2.38%**	**2.41%**	**1.93%**	**1.80%**	**1.62%**		**1.58%**	**1.63%**	**1.75%**	**1.05%**
2S-1, 3S-1, 2S-2 (8)	2.06%	1.29%	0.78%	0.62%	0.47%		1.35%	1.00%	1.15%	0.39%
3S-2, 2S-3 (9)	23.70%	4.38%	2.66%	0.98%	0.52%		2.79%	1.01%	0.56%	0.10%
3S-3, 3S-4 (10)	0.48%	0.42%	0.07%	0.05%	0.01%		0.06%	0.11%	0.09%	0.02%
Tractor Trailer Trucks (8+9+10)	**26.24%**	**6.09%**	**3.51%**	**1.65%**	**1.00%**		**4.21%**	**2.12%**	**1.80%**	**0.51%**
2S-1-2 (11)	1.88%	0.44%	0.07%	0.12%	0.03%		0.28%	0.39%	0.48%	0.07%
2S-2-2, 3S-1-2 (12)	0.87%	0.10%	0.04%	0.04%	0.01%		0.11%	0.20%	0.26%	0.01%
Any 7 Axle (13)	0.42%	0.43%	0.11%	0.08%	0.03%		0.06%	0.40%	0.48%	0.05%
Multi-Trailer Trucks (11+12+13)	**3.17%**	**0.97%**	**0.22%**	**0.23%**	**0.07%**		**0.45%**	**0.99%**	**1.22%**	**0.13%**
Combination Trucks	**29.41%**	**7.06%**	**3.73%**	**1.89%**	**1.07%**		**4.65%**	**3.11%**	**3.02%**	**0.64%**
	100.00%	**100.00%**	**100.00%**	**100.00%**	**100.00%**		**100.00%**	**100.00%**	**100.00%**	**100.00%**

Table 7: HPMS and MOVES Mapping Scheme

Item	HPMS	MOVES
Vehicle Class (Source Type)	Motorcycle	Motorcycle
	Light Duty Vehicles - Short and Long Wheelbases *	Passenger Car
		Passenger Truck
		Light Commercial Truck
	Buses	Intercity Bus
		Transit Bus
		School Bus
	Single Unit Trucks	Refuse Truck
		Single Unit Short-haul Truck
		Single Unit Long-haul Truck
		Motor Home
	Combination Trucks	Combination Short-haul Truck
		Combination Long-haul Truck
Functional Road System (Road Type)	Rural Interstate & Freeway	Rural Restricted
	Rural Principal Arterial	Rural Unrestricted
	Rural Minor Arterial	
	Rural Major Collector	
	Rural Minor Collector	
	Rural Local	
	Urban Interstate & Freeway	Urban Restricted
	Urban Principal Arterial	Urban Unrestricted
	Urban Minor Arterial	
	Urban Major Collector	
	Urban Minor Collector	
	Urban Local	

*** HPMS includes Passenger Cars and Other 2 axle-4 Tire Vehicles**

Table 8: Population Data from National Default-Local Data Method

MOVES SourceType	Population	% of Total
Motorcycle *	229,501	3.7
Passenger Car *	3,080,076	50.2
Passenger Truck *	2,098,594	34.2
Light Commercial Truck *	523,749	8.5
Intercity Bus	83	0.001
Transit Bus *	308	0.005
School Bus *	2,761	0.04
Refuse Truck	2,714	0.04
Single Unit Short-haul Truck *	89,535	1.5
Single Unit Long-haul Truck	3,766	0.06
Motor Home	22,420	0.37
Combination Short-haul Truck	41,938	0.68
Combination Long-haul Truck	46,098	0.75
Total	**6,141,544**	**100**

*** Source Types not used in final database using this method**

Table 9: Final Statewide Population Data

MOVES Source Type	Population	% of Total
Motorcycle	157,540	2.9
Passenger Car	2,530,079	46.6
Passenger Truck	2,182,324	40.2
Light Commercial Truck	319,672	5.9
Intercity Bus	83	0.002
Transit Bus	827	0.02
School Bus	8,864	0.16
Refuse Truck	2,714	0.05
Single Unit Short-haul Truck	111,493	2.1
Single Unit Long-haul Truck	3,766	0.07
Motor Home	22,420	0.41
Combination Short-haul Truck	41,938	0.77
Combination Long-haul Truck	46,098	0.85
Total	**5,427,818**	**100**

Table 10: 5-Year Average Monthly Variation Factors, by Day of Week for 2014

2014	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Rural Interstate												
Sunday	1.29	1.22	1.03	1.01	1.06	0.98	0.95	1.03	1.10	0.99	1.01	1.10
Monday	1.16	1.12	1.03	1.06	1.03	0.98	1.00	1.07	1.08	1.05	1.08	1.07
Tuesday	1.16	1.12	1.05	1.04	1.02	0.98	1.00	1.05	1.06	1.05	1.01	1.02
Wednesday	1.11	1.10	1.00	1.01	0.98	0.94	0.96	1.00	1.05	1.01	0.94	1.01
Thursday	1.08	1.04	0.91	0.92	0.91	0.87	0.90	0.93	0.98	0.94	1.02	0.98
Friday	0.99	0.92	0.80	0.84	0.84	0.80	0.82	0.83	0.86	0.82	0.90	0.91
Saturday	1.17	1.20	0.97	1.03	1.08	0.92	0.92	0.99	1.09	1.03	1.02	1.01
Rural Other												
Sunday	1.50	1.44	1.32	1.22	1.21	1.19	1.18	1.21	1.24	1.25	1.35	1.42
Monday	1.10	1.04	1.02	0.97	0.98	0.94	0.97	0.94	1.01	0.96	0.98	1.04
Tuesday	1.07	1.02	0.98	0.94	0.92	0.93	0.94	0.93	0.93	0.95	0.97	1.02
Wednesday	1.07	1.01	0.96	0.94	0.91	0.92	0.93	0.93	0.93	0.93	0.95	1.01
Thursday	1.03	0.99	0.94	0.90	0.88	0.89	0.91	0.90	0.90	0.90	0.99	0.98
Friday	0.98	0.90	0.90	0.84	0.81	0.82	0.84	0.81	0.81	0.82	0.90	0.92
Saturday	1.24	1.15	1.12	1.02	0.99	0.97	0.98	0.98	1.00	0.99	1.09	1.17
Urban												
Sunday	1.46	1.35	1.21	1.20	1.19	1.14	1.14	1.18	1.22	1.19	1.23	1.33
Monday	1.09	1.03	1.00	0.98	0.99	0.94	0.96	0.96	1.02	0.97	0.99	1.01
Tuesday	1.08	1.00	0.97	0.96	0.94	0.93	0.93	0.94	0.96	0.96	0.95	0.99
Wednesday	1.05	1.01	0.94	0.94	0.92	0.91	0.91	0.92	0.94	0.94	0.93	0.97
Thursday	1.01	0.98	0.89	0.90	0.88	0.87	0.89	0.89	0.90	0.90	0.99	0.95
Friday	0.95	0.88	0.87	0.84	0.82	0.81	0.83	0.82	0.83	0.83	0.90	0.89
Saturday	1.24	1.16	1.08	1.05	1.05	0.99	1.00	1.02	1.06	1.05	1.08	1.14
Recreational												
Sunday	1.41	1.19	1.04	1.00	0.94	0.79	0.71	0.90	0.83	0.76	1.00	1.13
Monday	1.70	1.54	1.16	1.11	1.05	0.87	0.83	1.03	1.06	0.91	1.15	1.31
Tuesday	1.78	1.60	1.22	1.14	1.06	0.83	0.81	1.06	1.11	0.95	1.24	1.28
Wednesday	1.82	1.68	1.20	1.14	1.05	0.85	0.78	1.00	1.11	0.94	1.13	1.28
Thursday	1.61	1.52	1.21	0.99	1.03	0.84	0.76	0.95	1.05	0.89	1.04	1.25
Friday	1.26	1.04	0.97	0.88	0.91	0.73	0.71	0.83	0.91	0.74	0.81	0.95
Saturday	1.09	0.87	0.84	0.87	0.83	0.71	0.66	0.71	0.84	0.68	0.75	0.85

Appendix B - Equations and sample calculations mentioned in body of document

Equation 1: General formula used to convert default population/VMT data, local DVMT, and local vehicle count summaries into MOVES source type population data

$$Population_{Source\ Type} = A \cdot B \cdot C$$

where:

$$A = \sum (Vehicle\ Fraction_{Road} \cdot DVMT_{Road})_{HPMS}$$

$$B = \left(\frac{Default\ Population_{\ Source\ Type}}{Default\ VMT_{Source\ Type}}\right)_{MOVES}$$

$$C = \frac{(Default\ VMT_{Source\ Type})_{MOVES}}{\sum (Default\ VMT_{Source\ Type})_{HPMS\ to\ MOVES}}$$

Sample Calculations Source Type Population:

Knox County - Passenger Car

$$\begin{aligned} A = [&(0.7090 \cdot 498{,}500) + (0.8149 \cdot 5{,}194{,}493) + (0.0000 \cdot 0) + (0.9232 \cdot 58{,}604) \\ &+ (0.8973 \cdot 0) + (0.9283 \cdot 2{,}662{,}076) + (0.9356 \cdot 81{,}947) \\ &+ (0.9461 \cdot 2{,}278{,}761) + (0.9523 \cdot 87{,}171) + (0.9686 \cdot 810{,}233) \\ &+ (0.9611 \cdot 114{,}023) + (0.9686 \cdot 51{,}429) + (0.9611 \cdot 117{,}858) \\ &+ (0.9686 \cdot 2{,}815{,}096)] \cong 13{,}211{,}704\ miles/day \end{aligned}$$

$$B = \left(\frac{244{,}705\ Passenger\ Cars}{2{,}628{,}956{,}000\ miles/year}\right) \cong 9.3081 \cdot 10^{-5} \frac{Passenger\ Cars}{miles/year}$$

$$C = \frac{2{,}628{,}956{,}000\, miles/year}{(2{,}628{,}956{,}000 + 1{,}897{,}590{,}600 + 482{,}319{,}900)\, miles/year} \cong 0.5249$$

$$Local\ Population_{Passenger\ Car}$$
$$= 13{,}211{,}704\ \frac{miles}{day} \cdot \left(\frac{9.3081 \cdot 10^{-5}\ Pass\ Cars}{miles/year}\right) \cdot 0.5249 \cdot \left(\frac{365\ days}{year}\right)$$
$$\cong\ 235{,}589\ Passenger\ Cars$$

<u>*Knox County - Combination Long-haul Truck*</u>

$$A = [(0.2465 \cdot 498{,}500) + (0.1536 \cdot 5{,}194{,}493\ ) + (0.0000 \cdot 0) + (0.0499\ \cdot 58{,}604)$$
$$+ (0.0658 \cdot 0) + (0.0444 \cdot 2{,}662{,}076) + (0.0352\ \cdot 81{,}947)$$
$$+ (0.0309 \cdot 2{,}278{,}761) + (0.0193 \cdot 87{,}171) + (0.0138\ \cdot 810{,}233)$$
$$+ (0.0157\ \cdot 114{,}023) + (0.0138 \cdot 51{,}429) + (0.0157\ \cdot 117{,}858\ )$$
$$+ (0.0138\ \cdot 2{,}815{,}096\ )]\ \cong 1{,}171{,}045\ miles/day$$

$$B = \left(\frac{2{,}152\ Comb\ Long - haul\ Trucks}{202{,}807{,}600\ \ miles/year}\right) \cong 1.0611 \cdot 10^{-5} \frac{Comb\ Long - haul\ Trucks}{miles/year}$$

$$C = \frac{202{,}807{,}600\, miles/year}{(59{,}763{,}440 + 202{,}807{,}600)\, miles/year} \cong 0.7724$$

$$Local\ Population_{Combination\ Long-haul\ Truck}$$
$$= 1{,}171{,}045\ \frac{miles}{day} \cdot \left(\frac{1.0611 \cdot 10^{-5}\ Comb\ Long - haul\ Trucks}{miles/year}\right) \cdot 0.7724$$
$$\cdot \left(\frac{365\ days}{year}\right) \cong 3{,}503\ Combination\ Long - haul\ Trucks$$

Equation 2: General formula used to convert HPMS local DVMT and vehicle classification summaries into MOVES road type VMT distributions by source types

$$VMT\ Fraction_{MOVES\ Road\ Type\ for\ Source\ Type} = \left({}^{A}/_{B}\right)_{Road\ Type\ for\ Source\ Type}$$

$$A = \left(\sum Fraction_{Vehicle\ Type} \cdot Local\ DVMT\right)_{HPMS\ to\ MOVES}$$

$$B = \left(\sum A_{Road\ Types}\right)_{HPMS\ to\ MOVES}$$

Sample Calculations VMT Distribution:

Knox County - Passenger Car

$$A_{Rural\ Restricted} = \big((0.7090 \cdot 498{,}500) + (0.0000 \cdot 0)\big) = 353{,}433\ miles/day$$

$$A_{Rural\ Unrestricted} = \big((0.8973 \cdot 0) + (0.9356 \cdot 81{,}947) + (0.9523 \cdot 87{,}171) + (0.9611 \cdot 114{,}023) + (0.9611 \cdot 117{,}858)\big) = 382{,}536\ miles/day$$

$$A_{Urban\ Restricted} = \big((0.8149 \cdot 5{,}194{,}493) + (0.9232 \cdot 58{,}604)\big) = 4{,}287{,}133\ miles/day$$

$$A_{Urban\ Unrestricted} = \big((0.9283 \cdot 2{,}662{,}076) + (0.9461 \cdot 2{,}278{,}761) + (0.9686 \cdot 810{,}233) + (0.9686 \cdot 51{,}429) + (0.9686 \cdot 2{,}815{,}096)\big) = 8{,}188{,}602\ miles/day$$

$$B = 353{,}433 + 382{,}536 + 4{,}287{,}133 + 8{,}188{,}602 = 13{,}211{,}704\ miles/day$$

$$VMT\ Fraction_{Rural\ Restricted} = \left({}^{353{,}433\ miles/day}/_{13{,}211{,}704\ miles/day}\right) = 0.0268$$

$$VMT\ Fraction_{Rural\ Restricted} = \left({}^{382{,}536\ miles/day}\Big/_{13{,}211{,}704\ miles/day} \right) = 0.0290$$

$$VMT\ Fraction_{Rural\ Restricted} = \left({}^{4{,}287{,}133\ miles/day}\Big/_{13{,}211{,}704\ miles/day} \right)$$

$$= 0.3245$$

$$VMT\ Fraction_{Rural\ Restricted} = \left({}^{8{,}188{,}602\ miles/day}\Big/_{13{,}211{,}704\ miles/day} \right)$$

$$= 0.6198$$

<u>*Knox County - Combination Long-haul truck*</u>

$$A_{Rural\ Restricted} = \big((0.2465 \cdot 498{,}500) + (0.0000 \cdot 0)\big) = 122{,}879\ miles/day$$

$$A_{Rural\ Unrestricted}$$
$$= \big((0.0658 \cdot 0) + (0.0352 \cdot 81{,}947) + (0.0193 \cdot 87{,}171)$$
$$+ (0.0157 \cdot 114{,}023) + (0.0157 \cdot 117{,}858)\big) = 8{,}211\ miles/day$$

$$A_{Urban\ Restricted} = \big((0.1536 \cdot 5{,}194{,}493) + (0.0499 \cdot 58{,}604)\big) = 800{,}762\ miles/day$$

$$A_{Urban\ Unrestricted}$$
$$= \big((0.0444 \cdot 2{,}662{,}076) + (0.0309 \cdot 2{,}278{,}761) + (0.0138 \cdot 810{,}233)$$
$$+ (0.0138 \cdot 51{,}429) + (0.0138 \cdot 2{,}815{,}096)\big) = 239{,}194\ miles/day$$

$$B = 122{,}879 + 8{,}211 + 800{,}762 + 239{,}194 = 1{,}171{,}045\ miles/day$$

$$VMT\ Fraction_{Rural\ Restricted} = \left({}^{122{,}879\ miles/day}\Big/_{1{,}171{,}045\ miles/day} \right) = 0.1049$$

$$VMT\ Fraction_{Rural\ Restricted} = \left({8{,}211\ miles/day} \middle/ {1{,}171{,}045\ miles/day} \right) = 0.0070$$

$$VMT\ Fraction_{Rural\ Restricted} = \left({800{,}762\ miles/day} \middle/ {1{,}171{,}045\ miles/day} \right) = 0.6838$$

$$VMT\ Fraction_{Rural\ Restricted} = \left({239{,}194\ miles/day} \middle/ {1{,}171{,}045\ miles/day} \right) = 0.2043$$

Equation 3: General formula used to calculate local AADVMT for HPMS vehicle types

$$AADVMT = \sum (Vehicle\ Fraction_{Road} \cdot DVMT_{Road})_{HPMS}$$

Sample Calculations AAVMT Distribution:

Knox County – Passenger Car

$$\begin{aligned} AADVMT = [&(0.7090 \cdot 498{,}500) + (0.8149 \cdot 5{,}194{,}493) + (0.0000 \cdot 0) \\ &+ (0.9232 \cdot 58{,}604) + (0.8973 \cdot 0) + (0.9283 \cdot 2{,}662{,}076) \\ &+ (0.9356 \cdot 81{,}947) + (0.9461 \cdot 2{,}278{,}761) + (0.9523 \cdot 87{,}171) \\ &+ (0.9686 \cdot 810{,}233) + (0.9611 \cdot 114{,}023) + (0.9686 \cdot 51{,}429) \\ &+ (0.9611 \cdot 117{,}858) + (0.9686 \cdot 2{,}815{,}096)] \cong 13{,}211{,}704\ miles/day \end{aligned}$$

Knox County – Combination Long-haul Truck

$$\begin{aligned} AADVMT = [&(0.2465 \cdot 498{,}500) + (0.1536 \cdot 5{,}194{,}493) + (0.0000 \cdot 0) \\ &+ (0.0499 \cdot 58{,}604) + (0.0658 \cdot 0) + (0.0444 \cdot 2{,}662{,}076) \\ &+ (0.0352 \cdot 81{,}947) + (0.0309 \cdot 2{,}278{,}761) + (0.0193 \cdot 87{,}171) \\ &+ (0.0138 \cdot 810{,}233) + (0.0157 \cdot 114{,}023) + (0.0138 \cdot 51{,}429) \\ &+ (0.0157 \cdot 117{,}858) + (0.0138 \cdot 2{,}815{,}096)] \cong 1{,}171{,}045\ miles/day \end{aligned}$$

Appendix B

Interagency Consultation (IAC)

This Appendix contains documentation, notes and responses to comments from the Interagency Consultation (IAC) Group.

Planning Assumptions: Knoxville 2008 8-Hour Ozone Maintenance Plan

Introduction

The final Knoxville 2008 8-hour ozone area redesignation to attainment (FR Vol. 80, No. 133) was published on Monday July 13, 2015, effective August 12, 2015. The maintenance area includes: Knox, Blount and the southern portion of Anderson county encompassing the TVA Bull Run Fossil Plant (2000 Census tracts: 202, 213.02) see Figure 1).

The Knoxville Area has been attaining the 2008 8-hour ozone NAAQS (0.075 ppm or 75 ppb) since 2013 with the 2011-2013 3 year ozone design value as indicated in Table 1. Table 2 indicates the preliminary ozone design values for 2020-2022. As per the Clean Air Act (CAA), Tennessee must submit to EPA a second 10-year maintenance plan to EPA eight years after redesignation becomes effective.

Figure 1. Knoxville 2008 8-Hour Ozone Nonattainmnet Area.

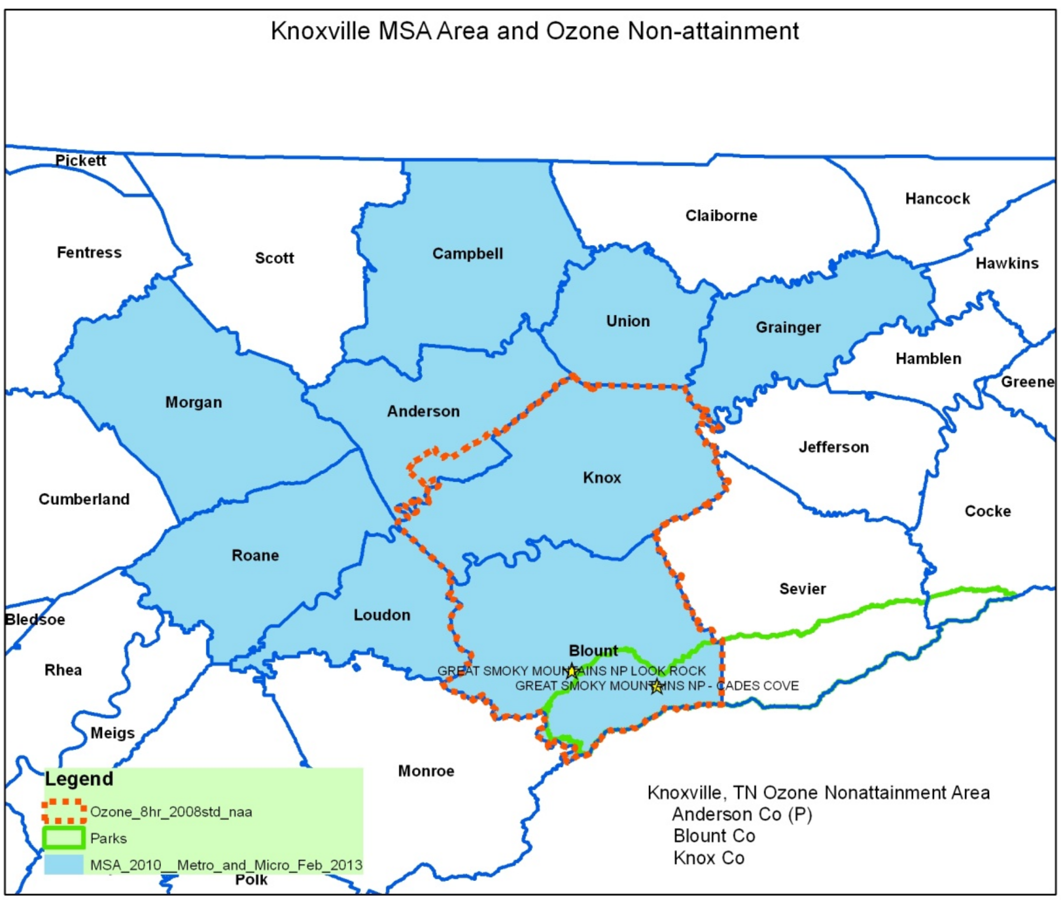


Table 1. Knoxville Area Ozone Design Value Trends.

County Name	CBSA Name	Local Site Name	2010-2012 Design Value (ppm) [1,2]	2011-2013 Design Value (ppm) [1,2]	2012-2014 Design Value (ppm) [1,2]	2013-2015 Design Value (ppm) [1,2]	2014-2016 Design Value (ppm) [1,2]	2015-2017 Design Value (ppm) [1,2]	2016-2018 Design Value (ppm) [1,2]	2017-2019 Design Value (ppm) [1,2]	2018-2020 Design Value (ppm) [1,2]	2019-2021 Design Value (ppm) [1,2]
Anderson	Knoxville, TN	Freel'S Bend O3 And So2 Monitoring	0.073	0.069		0.061	0.063	0.064	0.064	0.064	0.061	0.060
Blount	Knoxville, TN	Great Smoky Mountains Np - Look Rock	0.079	0.073	0.067	0.065	0.067	0.067	0.067	0.065	0.063	0.062
Blount	Knoxville, TN	Great Smoky Mountains Np - Cade'S Cove	0.068	0.063	0.060	0.059	0.060	0.061	0.062	0.060	0.058	0.056
Jefferson	Morristown, TN	New Market Ozone Monitor	0.078	0.073	0.071	0.067	0.068	0.067	0.066	0.065	0.063	0.063
Knox	Knoxville, TN	East Knox Elementary School	0.071		0.063	0.061	0.064	0.064	0.065	0.063	0.061	0.059
Knox	Knoxville, TN	Spring Hill Elementary School	0.074		0.067	0.063	0.066	0.067	0.067	0.063	0.058	0.057
Loudon	Knoxville, TN	Loudon Middle School Ozone Monitor	0.075	0.070	0.067	0.065	0.069	0.068	0.067	0.063	0.062	0.062
Sevier	Sevierville, TN	Great Smoky Mountains Np - Cove Mountain	0.075	0.070	0.067	0.066	0.068	0.067	0.067	0.064	0.062	0.060
Sevier	Sevierville, TN	Great Smoky Mountains Np - Clingman'S Dom	0.073							0.062	0.062	0.060

Table 2. Preliminary 2022 Ozone Design Values.

Preliminary Tennessee Ozone Data for 2020 - 2022*

County	Site Name	MONITOR ID	2020 4th Max.	2021 4th Max.	Preliminary 2022 4th Max.	Preliminary 2020 2022 DV> 0.070 PPM *	2022 4th Max Needed for 8 Hr DV Violation (>0.070 PPM)
Anderson Co	Freels Bend_Study Area Melton Lake	470010101 - 1	0.056	0.060	0.059	0.058	0.097
Blount Co	Great Smoky Mountains Np Look Rock	470090101 - 1	0.058	0.064	0.068	0.063	0.091
Blount Co	Great Smoky Mountains Np - Cades Cove	470090102 - 1	0.055	0.057	0.063	0.058	0.101
Davidson Co	1015 Trinity Lane	470370011 - 1	0.060	0.065	0.067	0.064	0.088
Davidson Co	Percy Priest	470370026 - 1	0.061	0.063	0.067	0.063	0.089
Hamilton Co	3018 Hickory Valley Rd- Eastside Utility Filter Plant	470654003 - 1	0.058	0.062	0.069	0.063	0.093
Hamilton Co	Soddy Daisy H.S. 00618 Sequoyah Rd	470651011 - 1	0.056	0.061	0.066	0.061	0.096
Jefferson Co	1188 Lost Creek Rd	470890002 - 1	0.058	0.066	0.061	0.061	0.089
Knox Co	9315 Rutledge Pike Mascot Tn 37806	470930021 - 1	0.053	0.061	0.060	0.058	0.099
Knox Co	4625 Mildred Drive	470931020 - 1	0.052	0.061	0.058	0.057	0.100
Loudon Co	1703 Roberts Rd Loudon	471050109 - 1	0.059	0.065	0.058	0.060	0.089
Sevier Co	Great Smoky Mountain Np Cove Mountain	471550101 - 1	0.058	0.063	0.064	0.061	0.092
Sevier Co	Clingsmans Dome, Great Smoky Mtns. Np	471550102 - 1	0.062	0.059	0.063	0.061	0.092
Shelby Co	1330 Frayser Blvd	471570021 - 1	0.060	0.067	0.069	0.065	0.086
Shelby Co	6855 Mudville Rd, Edmond Orgill Park	471571004 - 1	0.062	0.063	0.069	0.064	0.088
Shelby Co	Shelby Farms	471570075 - 1	0.062	0.071	0.074	0.069	0.080
Sullivan Co	Hill Road	471632002 - 1	0.055	0.064	0.063	0.060	0.094
Sullivan Co	Ketron Middle School On Bloomingdale Rd.	471632003 - 1	0.056	0.062	0.061	0.059	0.095
Sumner Co	Rockland Recreation Area-Old Hickory Dam	471650007 - 1	0.063	0.066	0.063	0.064	0.084
Williamson Co	Fairview Middle School Crow Cut Road	471870106 - 1	0.057	0.059	0.067	0.061	0.097
Wilson Co	Cedars Of Lebanon State Park	471890103 - 1	0.058	0.060	0.064	0.060	0.095
Claiborne	SPD 718 Russell Hill Rd, Speedwell, TN 37870	470259991 - 1	0.055	0.059	0.057	0.057	0.099
DeKalb	ESP Edgar Evans State Park, Smithville, TN 37166	470419991 - 1	0.055	0.058	0.059	0.057	0.100
Christian (KY)	Hopkinsville	210470006 - 1	0.059	0.059	0.061	0.059	0.095
Trigg (KY)	Cadiz (EPA)	212219991 - 1	0.060	0.060	0.059	0.059	0.093
DeSoto (MS)	5 East South	280330002 - 1	0.062	0.065	0.075	0.067	0.086
Crittenden (AR)	Marion	050350005 - 1	0.069	0.072	0.071	0.070	0.072

* The current year data has not undergone QA/QC validation procedures. It is considered preliminary and subject to change.

** Truncation to the 3rd digit applied 0.0706 = 0.070 ppm.

0.055	0.064	Less than .064
0.065	0.070	Between .065 and .070
0.071	0.077	Greater than .070

Data updated through: 10/24/2022

Inventory Development

This maintenance plan will be developed pursuant to EPA's *Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements*[1]*.* This maintenance plan will also be developed in consultation with the Knox County Air Quality Division and EPA Region 4 staff.

Planning Assumptions for 2008 8-Hour Ozone Maintenance Plan

Development of the onroad sector of the emissions inventory will be developed per EPA's MOVES3 Technical Guidance: *Using MOVES to Prepare Emissions Inventories for State Implementation Plans and Transportation Conformity*[2].

Pollutants: NOx, and VOC

Geographic area: Blount and Knox Counties in their entirety, and the partial area of Anderson County encompassing the TVA Bull Run Fossil Plant (2000 Census tracts: 202, 213.02). Methodology of proportioning the emissions from the partial Anderson County area will be reviewed and adjusted if needed.

Inventory Sectors: Point, Nonpoint, Nonroad and Onroad

Base Year:

In consideration of the base year, the Knoxville Area has attained and maintained the 2008 8-hour ozone NAAQS since 2013 (with the 2011-2013 design value). TDEC believes it may be able to choose a representative year subsequent to 2013. The 2020 National Emissions Inventory (NEI) is not yet complete (expected around March 31, 2023), and does not represent 'typical' emissions due the Covid pandemic. For these reasons TDEC would like to consider 2017 as the base year and the use of the 2017 NEI as the starting point of the emissions inventory.

Final year: 2035

Interim inventory years: 2020, 2023, 2026, 2029, 2032

[1] *Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements*. 80 FR 44 12264.
[2] *Using MOVES to Prepare Emissions Inventories for State Implementation Plans and Transportation Conformity,* US EPA, EPA-420-B-20-052, November 2020.

Onroad (MOVES3) Planning Assumptions

MVEB Years:

Last year of plan: 2035

Other years: TDEC proposes establishing a MVEB in the base year for use in transportation conformity determinations for years between the base year and 2035.

MOVES Runspec Development:

- Scale: County level scale – Inventory mode
- Time Span: year (base year as selected, (2017, 2018, 2020, other) and 2035, weekday for July, all hours.
- Geographic bounds:, Blount, Knox, Anderson (partial) Counties
- Vehicles/Equipment: Gasoline and diesel fuels, all vehicle combinations (the AVFT file will be edited to remove CNG from the transit bus fleet). Specific KAT data will be used to develop transit bus AVFT fractions
- Road type: All
- Pollutants and Processes: NOx and VOC and all other required supporting pollutants. DO NOT unchecked the "Refueling Displacement Vapor Loss" and "Refueling Spillage Loss" to exclude refueling emissions as was done before; these emissions are no longer included in the nonpoint source emission inventory and must be accounted for in the onroad emissions in MOVES3.
- Output:
  - General:
    - Units: grams, joules, miles;
    - Activity: Distance Traveled, Population
  - Output Emissions Detail:
    - On road: Road Type, Source Use Type

The table below lists the inputs developed to populate the County Data manager in MOVES.

	Input Data Requirement:	Source:	Comments:
1.	Road type distribution: VMT fractions by road type.	2017 data developed by TDOT, or does the MPO have more representative data? 2035 data from the MPO's TDM is proposed.	
2.	Source type population: number of vehicles in the area to be modeled.	Proposed 2017 TDOT data and CRC data along with national default data proportioned to VMT. 2035 data proposed as grown by growth rates developed by the MPO's TDM.	
3.	Vehicle type VMT (several different types): 1. VMT by 6 HPMS vehicle types (HPMSvTypeYear) 2. VMT fraction by month by sourcetype 3. VMT fraction by day (weekday vs. weekend) by sourcetype 4. VMT fraction by hour by road type and sourcetype.	For 2017 HPMS and TDOT developed data are proposed as appropriate. Nearest-year hourly fractions developed from the TDM are proposed. 2035 data as output by the MPO's TDM are proposed.	
4.	I/M Programs	NA	
5.	Age distribution: MOVES (1 to 30 years) for MOVES source types (13 types).	TDOT and CRC developed data as well as default data is proposed.	
6.	Average speed distribution: fraction of driving time in each speed bin for each sourcetype by roadtype for each hour of the day.	2017: nearest-year data from TDM, 2035 data from TDM for 2035.	
7.	Fuel supply and formulation information if different from default information. Needed modifications to AVFT.	Default fuel data is proposed for 2017. 2035 data adjusted for regulatory maximum RVP as needed. Use adjusted AVFT data previously developed based on KAT transit fleet.	Note: changed the year on the FuelSupplyYear tab to applicable year if necessary.
8.	Meteorological data: temperature and humidity for each hour of the day for a typical day in the month.	Use the same meteorological data as developed for the first 10-year maintenance plan.	
9.	Starts and Hotelling	Default information in MOVES is proposed as local data at the scale needed is not available.	

Additional Questions and Issues:

1. Question to EPA: If at some later point in time the area qualifies for a Limited Maintenance Plan (LMP), can the area transition to an LMP, and if so, what would be required?

Agenda
Knoxville Interagency Consultation (IAC)
January 6, 2023 11:00 am Eastern, 10:00 am Central

1. Welcome: Marc Corrigan
2. Introduction: Marc Corrigan
3. Purpose: Mark Reynolds
4. General Planning Assumptions Discussion: Mark Reynolds
5. Onroad/MOVES Planning Assumptions Discussion: Marc Corrigan
6. Critical dates/timeframes
7. Comments/Questions: All
8. MPO Update (as needed): Mike Conger
9. Other Business: All

Knoxville IAC Call Notes

January 6, 2023, 9:00 AM Eastern, 10:00 AM Central

Attendees:

Marc Corrigan, TDEC-APC
Mark Reynolds, TDEC-APC
Rich DesGroseilliers, TPO
Chasity Stinson, TDOT
Jennifer Marshall, TDEOT
Michelle Christian, TDOT
Sarah LaRocca, EPA
Mike Conger, TPO
Mohammad Molla, TDOT
Craig Luebke, TPO
Sean Santalla, FHWA
Dianna Myers, EPA
Jim Renfro, NPS
Jane Spann, EPA
Zachery Coleman, FHWA
Melanie Murphy, FHWA
Coby Webster, Knox County Local Program

Discussion:

Marc Corrigan welcomed the attendees to the call and called roll. The call was started with a brief discussion of the proposed PM NAAQS that had just been announced.

Mark Reynolds gave a brief history of the Knoxville nonattainment area. In 2008, EPA promulgated a revised ozone NAAQS of 75 ppb. EPA subsequently designated the Knoxville area as nonattainment for the ozone NAAQS in 2012. Knoxville ozone nonattainment area includes all of Blount and Knox Counties and part of Anderson County. Air quality monitoring data for 2011 through 2013 indicated ozone concentrations below the NAAQS in the Knoxville area. On November 14, 2014, the TDEC requested that EPA redesignation the Knoxville Area to attainment. This request also included the first ozone maintenance plan. EPA approved the redesignation request and maintenance plan with an effective date of August 12, 2015. TDEC must submit to EPA a second 10-year maintenance plan to EPA eight years after redesignation became effective. Thus, the due date for the second maintenance plan is August 12, 2023.

Mr. Reynolds made a few comments about Table 1 (Knoxville Area Ozone Design Value Trends) in the Planning Assumptions Overview document. All design value in 2011-2013 and later have values at or below 75 ppb, which is the level of the 2008 ozone NAAQS. All design values in 2013-2015 and later have values at or below 70 ppb, which is the level of the 2015 ozone NAAQS. Mr. Reynolds made a few comments about Table 2 (Preliminary 2022 Ozone Design Values). All values in the column titled “Preliminary 2020-2022 DV” are 70 ppb or below.

Mr. Reynolds discussed why TDEC is proposing to develop a full maintenance plan instead of a Limited Maintenance Plan (LMP). In order to qualify for a LMP, the design value needs to be less than 63.75 ppb (which is 85% of 75 ppm). Currently, all of the Knoxville area monitors are below 63.75 ppb. However, 2020 (the pandemic year) had some very low values. The Blount County Look Rock monitor has a 4th maximum value in 2021 of 64 ppb and a preliminarily 4th

maximum in 2022 of 68 ppb. To end the 2023 ozone season with a design value of 63 or less at this monitor, the 4th maximum in 2023 would need to be 57 ppb or less. The likelihood of that happening is fairly low. Due to this, TDEC will develop a Clean Air Act section 175A maintenance plan instead of an LMP.

Mike Conger asked a question about the differences in developing a full maintenance plan versus a limited maintenance plan with respect to transportation conformity. Marc responded that with respect to transportation conformity, the key difference is that the LMP would not require the establishment of a Motor Vehicle Emissions Budget (MVEB), and hence, no regional emissions analysis as part of conformity determinations once the LMP is approved.

Marc asked EPA if it would be possible to submit a full maintenance plan and then later replace it with a limited maintenance plan. Dianna Myers responded that TDEC should ask this question later if the area does qualify for a limited maintenance plan and work with EPA Region 4 to develop the best path forward.

Jane Spann noted that EPA has 6 months to make a completeness determination and 18 months to make a final determination on SIPs. TDEC could possibly submit a limited maintenance plan in the 18 month period and withdraw the full maintenance plan.

Jim Renfro noted that the Blount County Look Rock monitor is operated by the NPS. He said that certifying the data does take some time and could possibly be done by early 2024 for the 2023 ozone season.

Mark Reynolds gave a brief overview of the emission inventories required for the maintenance plan. The maintenance plan requires an attainment inventory and a maintenance demonstration. The attainment inventories will include volatile organic compounds (VOC) and nitrogen oxides (NOx) for a typical July summer day emissions. The inventory sectors include point, nonpoint, nonroad and onroad emissions. TDEC must choose a base year and final year inventory. The maintenance demonstration should show that future year emissions do not exceed emissions in the base year inventory. Knoxville has attained the 2008 ozone NAAQS since 2013. TDEC believes it may be able to choose a representative year subsequent to 2013. The 2020 National Emissions Inventory (NEI) is not yet complete (expected around March 31, 2023) and does not represent ‘typical’ emissions due the Covid pandemic. For these reasons TDEC would like to choose 2017 as the base year and the use of the 2017 NEI as the starting point of the emissions inventory. Final year would be 2035 with interim years of 2020, 2023, 2026, 2029 and 2032.

Mike Conger, Sean Santella, Dianna Myers, and Jane Spann all agreed that 2017 is an acceptable year to use for the base year.

Marc gave a brief overview of the onroad emission inventory. Marc briefly touched on some of the key parts of the MOVES run development and MOVES data needed for the respective MOVES runs. Marc indicated that TDEC is proposing to largely use data recently developed by the Knoxville TPO for the most recent TIP update. One difference would be the need to develop MOVES inputs for 2017 instead of 2018 as was done for the TIP. Marc noted that the inputs for 2035 would be basically the same for 2035, as proposed, as those used in the most recent TIP conformity analysis.

One key difference Marc noted was the portion of the emissions inventory that refueling emissions would be captured in. In the previous maintenance plan, Marc indicated these emissions were captured in the nonpoint, or area, emissions sectors. These emissions are now included in the onroad emissions developed with MOVES. This would be a key change in the methodology used in developing the emissions inventory. Marc noted that many of the MOVES inputs for 2017 were available, like HPMS VMT and source type populations and age distributions. Marc also noted that the sources of these data would generally remain consistent with those used in the lates TIP update. For some inputs, for example, Marc noted that 2018 data directly from the TPO's TDM might be the best data available; for example speed distributions and road type distributions, as well as hour fractions. Marc also noted that certain other inputs, like meteorological inputs, would remain consistent with the first 10 year maintenance plan.

Marc proposed 2017 and 2035 are the budget years and asked if these would supersede the previous budget years established in the first 10 year maintenance plan. Dianna indicated EPA would work with TDEC to make sure the new budgets would supersede the existing MVEBs.

Dianna said that since this is a new SIP you can ask for adequacy for the MVEBs if desired.

Mark provided the timeframes for a couple key milestones in the SIP development. TDEC hopes to send to the IAC a pre-draft version for review in mid-April. We have hopes to begin the public process in mid-June with a public hearing sometime in July. Ultimately the goal is to take the final maintenance plan to the Air Board in August.

Mike Conger outlined the TPO 4-year MTP update cycle. He said that April 2021 was when the last one was approved and April 2025 would be the due date for the next one. He said that scoping/RFP would occur in mid-2023 and modeling would occur next year. He asked if the Knox County Air Board has to approve the maintenance plan. Marc said he didn't think the Knox County Air Board has to approve the maintenance plan as it would be approved through the State Air Board.

Mike provided further information on the upcoming MTP development. He said they will want input on the required analysis years sometime soon to aid in deciding which networks years would need to be developed. 2050 would be the horizon year. He asked about the ozone NAAQS reconsideration and how this might affect the development of the maintenance plan. Jane Spann said it would be the end of 2023 for the new ozone NAAQS and there is no indication if it will change any particulars for this maintenance plan development.

Dianna Myers reminded TDEC to check back with EPA on transitioning to an LMP should the air quality date support it. Marc stated that TDEC would look at the ozone values at the end of 2023 to see if LMP was a suitable possibility at that time.

With no further business, Marc closed out the call.

Knoxville Air Quality Interagency Consultation Conference Call
Meeting Minutes for 3/10/2023

Roll Call

Call Participants:

Knoxville TPO:
Mike Conger
Craig Luebke

EPA:
Will Carnright
Jane Spann
Josue Ortiz
Richard Wong

FHWA:
Zachary Coleman
Melanie Murphy

FTA:
None

Tennessee Department of Transportation:
Bob Hayzlett

Tennessee Department of Environment & Conservation:
Marc Corrigan

Knox County Air Quality Management:
None

Lakeway Area MTPO:
None

National Park Service:
None

<u>Discussion Items:</u>

April 2023 TIP Amendments & Short Conformity Report

- Mike noted that the proposed amendment is to the pending FY 2023-2026 TIP and not the FY 2020-2023 TIP.
- Bob Hayzlett confirmed the FY 23-26 TIP has been submitted for federal review/approval.
- Melanie Murphy confirmed that FHWA has indicated an April 6th deadline for their action.
- Mike Conger reviewed the short conformity report for the three proposed project amendments.
    - TIP Project #23-2020-012, Mobility Plan 2045 Project #09-257 - Relocated Alcoa Hwy (SR-115/US-129) from Proposed Interchange at Tyson Blvd to Existing SR-115 at South Singleton Station Road Stage 1 in Blount County.
    - TIP Project #23-2014-025, Mobility Plan 2045 Project #09-232 – Pellissippi Pkwy (SR-162) Extension from near SR-33 to SR-73 (US-321) in Blount County. Amend project to revise the project descriptive elements, increase programmed Right of Way funding and total project cost.
    - TIP ID# 23-2020-005 / KRMP ID# 10-260 – Foothills Mall Dr. Extension Ph. 2 from Foch St. to McCammon Ave in Blount County.
- Mike Conger asked for any initial comments or questions regarding the TPO's assertion that conformity for the project amendments can be determined using a short conformity report through reliance on a previous regional emissions analysis. No comments or questions were raised and Mike reminded everyone that the deadline for IAC comments was still 2 weeks out on March 24th.
- Mike Conger asked for feedback on shortening the IAC review period to 29 days. Melanie Murphy and Marc Corrigan indicated they have no objections to the shortened review period. Melanie will also verify further that FHWA has no concerns.

Preliminary Discussion of Conformity Process for 2050 Mobility Plan

- General Timeline – Mike provided a brief summary of the tentative timeline with a deadline for adoption in May 2025.

- Potential Conformity Analysis Years – Mike asked for feedback on potential horizon years 2050, 2040 and 2030

    - Marc Corrigan asked if the base year would remain 2018 or change.
        - Mike Conger suggested that 2018 may still be acceptable, but it yet undetermined based on upcoming decisions related to a travel demand model update.
        - Marc followed up that the first horizon year can be no later than 10 years beyond the base year so if a 2022 year were developed

as a new base year then that could push out the first analysis year, otherwise the TPO would likely need to use either the 2026 or 2028 MVEB years for Ozone and PM2.5 respectively.
    - There was discussion regarding the development of new budget years with the upcoming 2nd 10-year Maintenance Plan update for the 2008 Ozone standard, the timing of which may impact what years need to be included in the next conformity determination. This will be further considered as things move forward.

- IAC Feedback on Travel Demand Model Update Scope
  - Mike indicated that a more holistic approach may be taken this time with the model update as compared to recent updates. This may involve additional data needs to support. There will be upcoming opportunities for the IAC group to review and provide feedback on the scope of the model update.

Update on the 2008 8-Hour Ozone 2nd 10-Year Maintenance Plan for the Knoxville Area (TDEC)

- Marc Corrigan asked EPA for feedback regarding safety margins to use for the new maintenance plan budgets, specifically as it pertains to the new 2017 base year relative to the previous ones developed for the 2011 motor vehicle emission budget.
  - Jane Spann indicated that EPA would have to confer and get back with him
- Marc Corrigan asked Mike Conger what the TPO thoughts are on the KAT fleet inventory is and whether an AVFT file update is in order.
  - Mike indicated that getting an update on the fleet should not be too difficult. He requested that Marc follow up with an email to pursue this.
  - It was noted that while KAT has obtained electric buses and plans to eventually convert their entire fleet over to electric from diesel that the current MOVES3 model does not provide capability to model that fuel type for the bus categories as yet. This is something that Marc has mentioned as being a need to EPA as they consider future model updates.
- Marc Corrigan mentioned that he was developing the emissions inventory for the base year of 2017 and preferred to use any available inputs that might be available from the TPO's travel demand model for 2018 which should be similar to 2017. He asked Mike Conger if activity inputs for 2018 would be available such as VMT by Hour and Average Speed.
  - Mike replied that he was reasonably certain that he could obtain that information even though it was not a conformity analysis year, but the model post-processor should still be able provide it.
  - Marc will follow up with an email request for the data he is seeking.

Other Business/Next Steps

- Mike asked for feedback on the SCR by March 24th.
- Mike asked if there are any updates on the proposed NAAQS revisions
  - Marc cited a possible decision on the PM2.5 NAAQS by the end of the year and noted that the proposal is currently a range of amounts, rather than a specific # as is typical.
  - Richard Wong followed up that the comment period is open until March 28th.
- Marc Corrigan asked for an update from EPA on the pending Ozone NAAQS revisions
  - Jane Spann indicated that there was a recent CASAC meeting to discuss the standard and that additional information is available at https://casac.epa.gov/ords/sab/f?p=113:1
- Mike Conger noted that another topic to mention is the recent announcement by the US Census Bureau of the new urban area delineations which affects the TPO planning area. He related to the group that due to major changes in the delineation criteria used by the Census Bureau that the Knoxville Urban Area has shrunk and subsequently the TPO planning area may be losing some area. Specifically, Seymour in Sevier County is now an independent urban area that has become disconnected from the Knoxville Urban Area and may be removed from the planning area.
  - Marc Corrigan asked if there is a timeline for this potential change.
  - Mike Conger indicated that the planning area update will be resolved in advance of the pending 2050 Mobility Plan.
  - Per Melanie Murphy: *For the MPA - Before the next regularly scheduled metropolitan transportation plan update after October 1, 2023, or within 4 years of the designation of the new urban area boundary (i.e., December 29, 2026), whichever occurs first.*

Agenda
Knoxville Interagency Consultation (IAC)
Knoxville 2nd 10-year 2008 8-hour Ozone Maintenance Plan
Thursday September 7, 2023 10:00 am Eastern, 9:00 am Central

Microsoft Teams Link to Join the Meeting: Click here to join the meeting

1. Welcome: Marc Corrigan
2. Introduction: Marc Corrigan
3. Purpose: Mark Reynolds
4. General Overview of Maintenance Plan: Mark Reynolds
5. Onroad/MOVES/MVEB Discussion: Marc Corrigan
6. Schedule: Mark Reynolds
7. Comments/Questions: All
8. MPO Update (as needed): Mike Conger
9. Other Business: All

Knoxville IAC Call Notes

September 7, 2023, 10:00 AM Eastern, 9:00 AM Central

Attendees:

Zachery Coleman, FHWA
Mike Conger, TPO
Marc Corrigan, TDEC-APC
Rich DesGroseilliers, Lakeway MPO
Simone Jarvis, EPA
Sarah LaRocca, EPA
Rebecca LaRocque, Knox County AQM
Melanie Murphy, FHWA
Dianna Myers, EPA
Michelle Oakes, TDEC-APC
Josue Ortiz Borrero, EPA
Jim Renfro, NPS
Mark Reynolds, TDEC-APC
Sean Santalla, FHWA
Jane Spann, EPA
Chasity Stinson, TDOT
Richard Wong, EPA

Discussion:

Marc Corrigan welcomed everyone and thanked them for joining the call today. On today's call we want to discuss with you the draft second 10-year maintenance plan for the 2008 8-hour ozone NAAQS for the Knoxville Area.

Marc Corrigan conducted a roll call for the various agencies: EPA, FHWA, FTA, NPS, TDEC, TDOT, Knox County AQMD, Knoxville TPO, and the Lakeway MPO.

Marc Corrigan indicated that participants should have received from him by email on August 17th a copy of the maintenance plan and MOVES inputs and outputs. Marc Corrigan asked if anyone have any problems accessing the MOVES files? Richard Wong indicated that EPA's network was not allowing him to access the cloud site to download the MOVES files. Marc Corrigan indicated that they could try to work together for an alternate solution so Richard could obtain the needed modeling files.

Marc Corrigan introduced Mark Reynolds to begin an overview of the maintenance plan.

On March 12, 2008, EPA promulgated a revised 8-hour ozone National Ambient Air Quality Standard (NAAQS) of 75 ppb. EPA subsequently designated the Knoxville area as nonattainment for the 8-hour ozone NAAQS on May 21, 2012. Knoxville ozone nonattainment area includes part of Anderson County and all of Blount and Knox Counties. Air quality monitoring data for 2011 through 2013 indicated declining ozone concentrations in the Knoxville area. Design value at the controlling monitor was 74 ppb. On November 14, 2014, TDEC requested that EPA redesignate the Knoxville area to attainment. This request also included the first ozone maintenance plan. On July 13, 2015, the EPA approved the redesignation request and maintenance plan with an effective date of August 12, 2015. A second maintenance plan is due eight years after effective date of redesignation (August 12, 2023). Current ambient monitoring data is below 75 ppb and also below 70 ppb. The maintenance plan includes a maintenance demonstration and emission inventory. The inventory includes both NOx and VOC emissions for the three counties. 2017 is the base year from which we grew emission out to the following projection years: 2020, 2023, 2026, 2029, 2032 and 2035. The maintenance demonstration shows that 2035 NOx and VOC emissions are less than 2011 emissions. 2011 was the base year in the first maintenance plan. The maintenance plan also includes contingency measures. These include a host of potential control measures that could be put in place if air quality violated the 2008 8-hour ozone NAAQS.

Jim Renfro noted that ozone values in 2023 have increased. He asked if the ozone design value for 2023 was above 70 ppb, would that effect this maintenance plan in any way? Mark Reynolds stated that if the 2023 design value was above 70 ppb it would not affect this plan since this plan is for the 75 ppb (2008 ozone) NAAQS. Jane Spann concurred that a design value above 70 ppb would not affect this plan. She said that a design value above 70 ppb (but below 75 ppb) would trigger one of three EPA actions: (1) voluntary reductions, (2) SIP call, or (3) a nonattainment designation.

Richard Wong asked why 2017 was chosen as the base year. Mark Reynolds said that the IAC discussed the base year in a call in January 2023. 2020 was not chosen as the base year since the 2020 NEI was not available yet. Also, 2020 was not chosen due to the effects on emissions from the pandemic.

Marc Corrigan provided a brief overview of the modeling conducted with MOVES to generate the onroad emission. He indicated that TDEC APC developed onroad mobile source inventories for three years: 2011, 2017 and 2035, and interpolated remaining years – 2020, 2023, 2026, 2029 and 2032. MOVES inputs for year 2011 taken from the first maintenance plan and adapted for use with MOVES3. Year 2017 onroad emission were developed from a combination of some 2017 NEI inputs and those developed by the TPO for the latest CDR for calendar year 2018. Calendar year 2035 MOVES inputs were taken directly from those used in the most recent TPO conformity determination.

Marc Corrigan discussed VMT trends as indicated in Table 4-13, which includes a summary of the total VMT by year and county. Table 4-14 includes the vehicle population by source type.

Marc Corrigan also briefly discussed the source of the population and age distribution data for calendar year 2017. The data for 2011 was kept the same as the first maintenance plan, and the data for 2035, again, was taken from the TPO's most recent conformity determination.

Table 4-15 indicates total onroad emissions of VOC are projected to decrease approximately 70 percent from 2011 to 2035. Similarly, Table 4-16 indicates that total onroad NOx emissions are projected to decrease nearly 80 percent in 2035 from 2011 levels.

When looking at Table 4-19, which includes emissions from all the sectors, we see decreasing VOC emissions, with the 'safety margin' included in the far right-hand column. The safety margin is the difference between the base year emissions, in this case 2011, and those of any other year. Similarly, Table 4-20 includes NOx emissions from all sectors. Here too, we see decreasing total emissions over time, with a considerable safety margin.

One of the other requirements of a maintenance plan is the establishment of a motor vehicle emissions budget. The MVEB we are proposing is contained in Table 4-21. This MVEB applies to the entire maintenance area. It was developed by taking the emissions for the respective year from onroad mobile sources and adding some of the available safety margin.
For VOCs: the 2017 onroad emissions were 11.72 tons/day with an allocation of 3.65 tons/day for a MVEB of 15.37 tons/day. For 2035 onroad emissions were 4.22 tons/day with an allocation of 2.78 tons/day for an MVEB of 7.00 tons/day. Also, for NOx: 2017 onroad emissions were 23.10 tons/day with an allocation of 6.61 tons/day for an MVEB of 29.71 tons/day. For 2035 onroad emissions were 6.68 tons/day with an allocation of 9.96 tons/day for an MVEB of 16.64 tons/day. We add an allocation from the safety margin to help address unforeseen changes in travel demand models, EPA's MOVES model, and any of the data or projections used in these models.

Dianna Myers asked whether 2011 or 2017 was used as the base year. Marc Corrigan said that 2011 was used as the base year for the first maintenance plan and 2017 was used as a year from which to grow the emission inventory in the second maintenance plan. Dianna Myers asked if the 2011 base year was the attainment year. Marc Corrigan responded that it was one of the years available within the timeframe of the attaining design value from which we were able to choose to establish this baseline emission inventory.

Jane Spann said that 2017 VOC emissions were less than 2035 VOC emissions. She said area is NOx limited.

Jim Renfro asked about a drop in point emissions after 2023 and then emission increase out to 2035. Mark Reynolds said that TVA Bull Run Fossil Plant will close after 2023 and emissions will be zero after 2023 for this facility.

Dianna Myers asked if the 2017 safety margins was calculated from 2011. Marc Corrigan stated that, yes, they were. Dianna Myers said she was not sure if you can establish a 2017 safety margin and recommended further discussion.

Richard Wong said that MOVES4 is out and will likely include a two year grace period for MPOs to start using it. Marc Corrigan said that he had not yet done any testing with MOVES4, and did not have an idea of the impacts of MOVES4 on the proposed MVEBs.

Mike Conger asked when the MVEBs would be effective. Marc Corrigan said EPA can make an adequacy determination on MVEBs once the SIP is submitted, or they can approve them at the time the entire maintenance plan is approved. Dianna Myers said it can take EPA about six months for an adequacy determination after a plan is submitted.

Marc Corrigan said that, based on what EPA is indicating, there is an option to request an adequacy determination for MVEBs and asked if the group might want to pursue this option. There was no certainty among participants.

Dianna Myers said budgets don't automatically go away from previous plan. She said that a request needs to be put in SIP. Marc Corrigan said there was some language in the draft that indicates the new budgets supersede the existing budgets. Dianna Myers said EPA would review this.

Mike Conger asked whether new budgets can be used after adequacy determination. Dianna Myers said new budgets must be used in conformity, and possibly could have two sets of budgets if this maintenance plan does not supersede the existing budgets. Dianna Myers said that in either case, either budgets being found adequate or approved, a 24-month clock would begin for a required conformity determination.

Dianna Myers asked Mike Conger about analysis years for the next MTP. Mike Conger said the long range plan would have 2040, and 2050 analysis years and another earlier year, perhaps 2030, depending on the base year developed for the next plan.

Mike Conger asked for a copy of presentation slides. He would like to be advised of any additional discussions on safety margins. He said he hasn't used MOVES4 yet, either.

Mike Conger update the IAC on the status of the next MTP development. He said they have a consultant on board for the development of the next plan and another consultant for travel demand model. He also stated that there may be a need, and the TPO is looking into, the development of a statewide household travel survey to inform the next MTP. He said there would be an IAC discussion probably by end of year.

Mike Conger asked EPA for a NAAQS update. Jane Spann said in 2020 EPA retained the ozone NAAQS. In 2022, EPA began a reconsideration process for the ozone NAAQS. Just recently, EPA decided to undertake a new statutory review of the ozone NAAQS and consider newer studies. The PM NAAQS was proposed in early 2023 and the final level of the NAAQS, if it changes, has not been announced. Jane shared the following link: https://casac.epa.gov/ords/sab/r/sab_apex/casac/home.

Dianna Myers said that previously EPA was working towards releasing the final PM NAAQS before the end of 2023. She also stated there is a MOVES4 webinar next week. Simone Jarvis shared the following link: https://events.gcc.teams.microsoft.com/event/8ecc2019-d8b6-4823-8061-395d45722048@88b378b3-6748-4867-acf9-76aacbeca6a7.

With no further business, Marc Corrigan closed out the call.

Appendix H

Response to Comments

TN Department of Environment & Conservation

November 28, 2023

Response to Comments

Knoxville Area Second Ozone Maintenance Plan

Pre-draft sent to EPA: August 16, 2023
Pre-draft sent to IAC: August 17, 2023
End of Comment Period: September 18, 2023
2nd Pre-draft sent to EPA: October 27, 2023
End of 2nd Comment Period: November 27, 2023

In this document, the TDEC-APC responds to the comments made during the comment period.

Commenter: U.S. Environmental Protection Agency

Comment:
It appears that Tennessee Department of Environmental Conservation (TDEC) is using 2011 not 2017 as the base year for calculating the safety margin. The EPA would like to have further discussions regarding this issue.

Response:
Based on discussions, TDEC-APC has revised the base year to 2017 and made a number of changes throughout the document to reflect this change. Similarly, a number of tables have been revised as well as the appendices.

Commenter: U.S. Environmental Protection Agency

Comment:
On page 20 of 326 of the PDF nonpoint emissions for 2011 differs between the first maintenance plan and what is listed in Table 4-3, for both Nitrogen Oxides (NOx) and Volatile Organic Compounds (VOC). Please explain.

Response:
The 2011 emissions data was removed from the second maintenance plan.

Commenter: U.S. Environmental Protection Agency

Comment:
There is a question on page 319 of 326 regarding limited maintenance plan. Please clarify if this is for the EPA to address.

Response:
This was a question raised during the January 6, 2023 Interagency Consultation discussion. This question was not fully addressed. If the response would influence the development of the current second 10-year maintenance plan, TDEC would appreciate any guidance on this question EPA can provide.

Commenter: U.S. Environmental Protection Agency

Comment:
On page 23, Tables 4-19 and 4-20, say "Total Nonattainment Area VOC and NOx emissions," respectively. Please clarify if this is accurate or should it be "Total VOC and NOx Emissions with Safety Margins" instead.

Response:
TDEC-APC removed the words "Nonattainment Area" from Tables 4-19 and 4-20.

Commenter: U.S. Environmental Protection Agency

Comment:
On page 24 Table 4-2, the EPA suggests renaming the table to "Knoxville Area Motor Vehicle Emission Budget (MVEB)." The footnote is not needed because the area has already been defined. Also, the EPA suggests rephrasing the second sentence so that TDEC is requesting the EPA to replace the existing 2008 8-hour ozone budgets with the new 2017 and 2035 MVEBs for transportation conformity purposes. The EPA can then evaluate the request. Please note that the previous MVEBs are not automatically superseded by the EPA approval or an adequacy finding of a new budget.

Response:

Changes made as recommended.

Commenter: U.S. Environmental Protection Agency

Comment:
On page 11, paragraph 3 – Onroad Mobile Sources – Please provide the date when the Heavy-Duty Gasoline and Diesel standards will be fully implemented.

Response:
The text was revised with the addition of "The multiple phases of these rules were expected to be fully implemented by 2010."

Commenter: U.S. Environmental Protection Agency

Comment:
Under Section 3.1 – Permanent and Enforceable Reductions from Federal Electric Generating Units (EGUs) and Industrial Unit Trading Programs, the EPA recommends Knox County remove the background discussion regarding the Good Neighbor Plan (GNP) for the 2015 ozone National Ambient Air Quality Standards (NAAQS). More specifically, the EPA recommends Knox County only retain the 2nd paragraph on page 15 that states "On March 15, 2023, the EPA issued its final Good Neighbor Plan to address the 2015 ozone NAAQS…"

Response:
TDEC-APC removed the background discussion as recommended by EPA.

Commenter: U.S. Environmental Protection Agency

Comment:
On pages 25–26 (last partial paragraph on page 25, first partial paragraph on page 26) – Regarding contingency measures, TDEC says, "If it is determined that a longer schedule is required to implement specific contingency measures, then, upon selection of the appropriate measures, the TDEC-APC will notify EPA of the proposed schedule and will provide sufficient information to EPA to demonstrate that the proposed measures are a prompt correction of the triggering event." The possibility of a longer schedule appears to be inconsistent with the requirement, which TDEC itself notes on page 24, that the maintenance plan "must identify . . . a time limit for action by the State" and with TDEC's statement that such time limit will be "within eighteen to twenty-four months of the monitored violation."

Response:
TDEC-APC removed the following sentence:
"If it is determined that a longer schedule is required to implement specific contingency measures, then, upon selection of the appropriate measures, the TDEC-APC will notify EPA of the proposed schedule and will provide sufficient information to EPA to demonstrate that the proposed measures are a prompt correction of the triggering event."

Commenter: U.S. Environmental Protection Agency

Comment:
On the Executive Summary, 1st paragraph, 2nd to last sentence – the word "redesignation" should be "redesignate". The same comment applies to 1 Introduction, 3rd to last sentence – the word "redesignation" should be "redesignate"

Response:
TDEC-APC changed the word "redesignation" to "redesignate".

Commenter: Knox County Health Department

Comment:
In Section 4.1 Point Sources, CEMEX added an SNCR rather than an SCR

Response:
TDEC-APC changed the control from SCR to SNCR.

Commenter: U.S. Environmental Protection Agency

Comment:
To be consistent with the rest of the document, on PDF page 8/329, please remove the language regarding the 2011 base year and specific reported emissions for the previous reporting year within the Executive Summary.

Response:
TDEC removed the language regarding the 2011 base year from the Executive Summary.

Commenter: U.S. Environmental Protection Agency

Comment:
The EPA would like to discuss with you the following Contingency Measures Section language found on PDF page 38/329: "Since transport from outside the region often impacts the local monitors, an evaluation to determine the amount of local emission contribution to the high ozone days may be conducted."

Response:
TDEC removed the sentence.

Commenter: U.S. Environmental Protection Agency

Comment:
In response to the EPA's 9/15/2023 Pre-draft comment #2 regarding a limited maintenance plan (LMP), TDEC responded: "This was a question raised during the January 6, 2023, Interagency Consultation discussion. This question was not fully addressed. If the response would influence the development of the current second 10-year maintenance plan, TDEC would appreciate any guidance on this question EPA can provide." Based on the most recent final and preliminary ambient air monitoring design values a full second 10-year maintenance plan is currently required. The November 20, 2018, Resource Document For 1997 Ozone NAAQS Areas: Supporting Information For States Developing Maintenance Plans states the following regarding LMP criteria: "Specifically, the key criteria outlined in these documents are that the current air quality levels for ambient monitoring sites in the area should be substantially below the level of the standard (e.g., below 85% of the level of the standard), and that air quality levels had not been highly variable during preceding years." If TDEC would like to revisit the possibility of revising their Final 2nd Maintenance Plan to an LMP in the future, EPA is available to discuss this further at that time.

Response:
If the ambient monitoring data falls below 85% of the level of the ozone standard, TDEC will discuss with EPA whether an LMP is appropriate.

Commenter: U.S. Environmental Protection Agency

Comment:
Please provide an explanation on why MOVES4 was not used

Response:
TDEC completed the MOVES modeling before MOVES4 was released.