DeSoto County, Mississippi
Second 10-Year Maintenance Plan for the 2008 Ozone NAAQS

For the Portion of DeSoto County, Mississippi included in the Memphis, TN-MS-AR Marginal Nonattainment Area for the 2008 8-hour Ozone NAAQS

Prepared By:

Air Emissions Inventory & Attainment Planning Branch
Air Division
Mississippi Department of Environmental Quality

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Executive Summary

On March 27, 2008 (73 FR 16436), the national ambient air quality standard (NAAQS) for ozone was revised downward by the U.S. Environmental Protection Agency (EPA) from 0.08 parts per million (ppm) to 0.075 ppm based on an 8-hour average. As a result, a portion of DeSoto County in Mississippi was designated as marginal nonattainment by the EPA on May 21, 2012, as well as the counties of Shelby, Tennessee and Crittenden, Arkansas, altogether referred to as the Memphis, TN-MS-AR area (Maintenance Area). The EPA subsequently redesignated the DeSoto County portion as attaining the 2008 ozone NAAQS on April 8, 2016.

On behalf of the State of Mississippi, the Mississippi Department of Environmental Quality (MDEQ) prepared a redesignation request and plan to maintain attainment of the 2008 ozone NAAQS in the Mississippi portion of the Memphis Area for the portion of DeSoto County which was part of the Memphis, TN-MS-AR nonattainment area designation in 2012. On April 8, 2016 (81 FR 20543), the EPA redesignated the portion of DeSoto County as attaining the 2008 ozone NAAQS and approved MDEQ's State Implementation Plan (SIP) revision addressing the first 10-year maintenance planning period. The EPA also promulgated attainment redesignations and approved the first 10-year maintenance plans for Crittenden County, AR on April 25, 2016 (81 FR 24030) and for Shelby County, TN on June 23, 2016 (81 FR 40816).

Maintenance of the 2008 ozone NAAQS must be demonstrated over the course of two 10-year planning periods. As noted above, the first 10-year maintenance plan for the portion of DeSoto County in the Memphis, TN-MS-AR nonattainment area was approved in rulemaking published on April 8, 2016, and effective May 9, 2016. The MDEQ has prepared another SIP revision (referred to herein as the "Maintenance Plan") to demonstrate continued maintenance of the 2008 ozone NAAQS through the second 10-year planning period. This Maintenance Plan demonstrates that DeSoto County will not exceed 2017 base year emission levels through the year 2036. .

List of Acronyms and Abbreviations

AEO	Annual Energy Outlook
AERR	Air Emissions Reporting Requirements
CAA	Clean Air Act
CBSA	Core-Based Statistical Area
CFR	Code of Federal Regulations
CSAPR	Cross-State Air Pollution Rule
EGU	Electric Generating Unit
EIA	U.S. Energy Information Administration
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FR	Federal Register
MDEQ	Mississippi Department of Environmental Quality
MOVES	MOtor Vehicle Emission Simulator
MPO	Metropolitan Planning Organization
MVEB	Motor Vehicle Emissions Budget
NAAQS	National Ambient Air Quality Standards
NO_x	Nitrogen oxides
ppm	parts per million
ppb	parts per billion
QAPP	Quality Assurance Project Plans
SCC	Source Classification Code
SIP	State Implementation Plan
TAF	Terminal Area Forecasts
VMT	Vehicle Miles Traveled
VOCs	Volatile organic compounds

1 Introduction

Section 175A(b) of the Clean Air Act requires submittal of a SIP revision eight years following the EPA's approval of the redesignation request to provide for maintenance of the NAAQS for an additional 10 years following the initial 10-year period. This document contains MDEQ's Maintenance Plan for the second 10-year period following the 2008 ozone NAAQS redesignation for the DeSoto County portion of the Memphis, TN-MS-AR nonattainment area, pursuant to Section 107(d)(3)(E) and Section 175A of the Clean Air Act (CAA). This Maintenance Plan was prepared in accordance with the EPA's guidance memo issued on September 4, 1992, from John Calcagni[1] (referred to herein as the "Calcagni memo"). The Shelby County Health Department and Arkansas Department of Environmental Quality (ADEQ) are each preparing maintenance plans for Shelby County and Crittenden County, respectively, under separate cover.

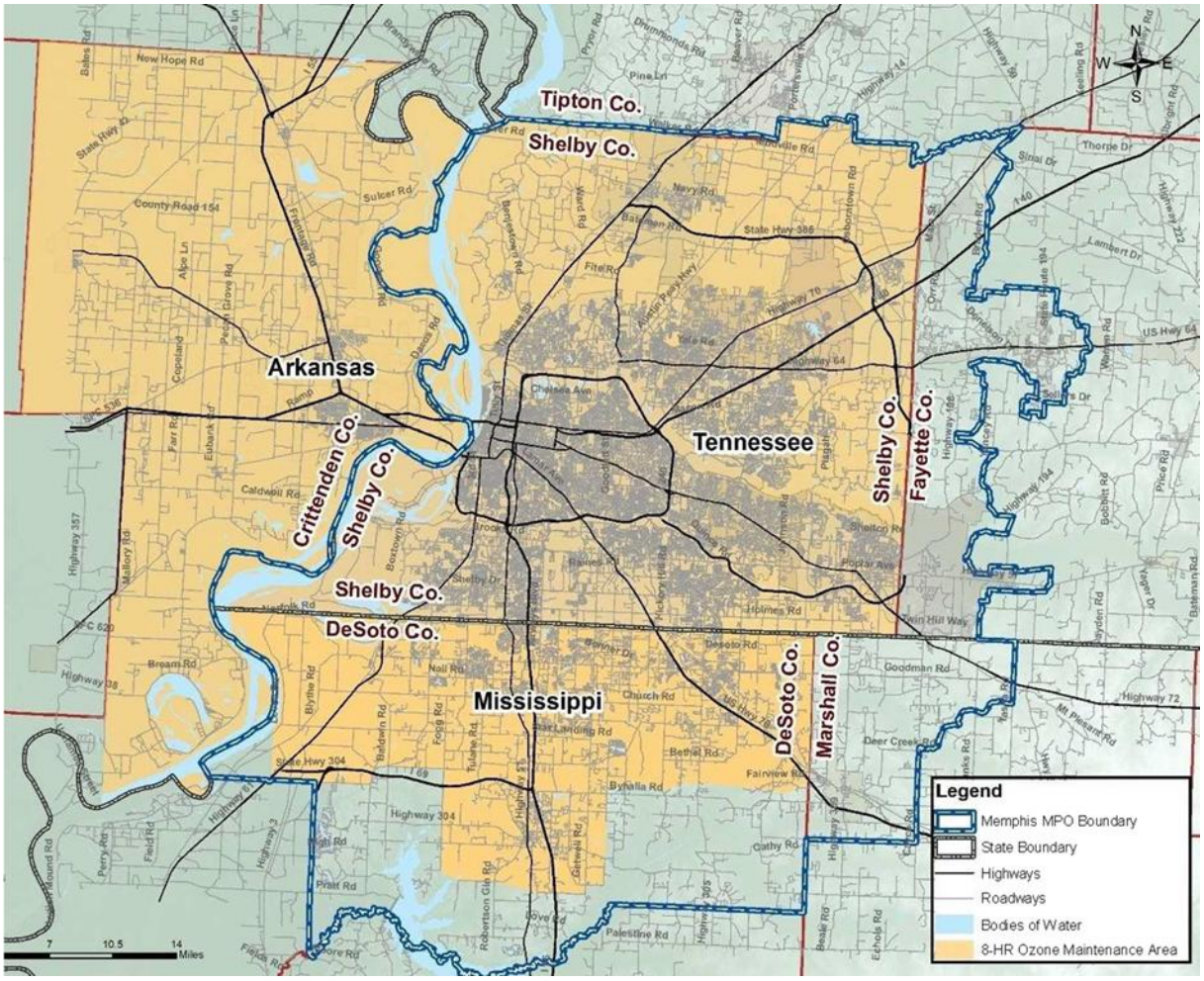
1.1 Memphis, TN-MS-AR Area Nonattainment History

On March 27, 2008, the EPA promulgated the 8-hour ozone standard of 0.075 ppm, or 75 ppb (referred to herein as the "2008 ozone NAAQS"). On May 21, 2012, the EPA published a final rule designating the Memphis, TN-MS-AR Area as marginal nonattainment for the 2008 ozone NAAQS using 2008 through 2010 air monitoring data.[2] This area includes the counties of Shelby, TN; Crittenden, AR; and the portion of DeSoto, MS within the Metropolitan Planning Organization (MPO) boundaries at the time of designation as shown in Figure 1-1.

According to the EPA's 2008 Ozone Implementation Guidance, the attainment deadline for marginal areas was July 20, 2015. The Memphis, TN-MS-AR marginal nonattainment area met the attainment deadline prior to July 20, 2015, based on ozone season air monitoring data measured in 2012, 2013, and 2014. On December 11, 2015, MDEQ submitted a final redesignation and maintenance plan to the EPA.[3] The EPA approved the redesignation request on April 8, 2016 (effective May 9, 2016).[4]

[1] "Procedures for Processing Requests to Redesignate Areas to Attainment", John Calcagni, Director, Air Quality Management Division, USEPA.
[2] "Air Quality Designations for the 2008 Ozone National Ambient Air Quality Standards." 77 FR 30088 (May 21, 2012).
[3] "December 2, 2015, 2008 Ozone Redesignation Request and Maintenance Plan for DeSoto County, Mississippi", MDEQ. Available at https://downloads.regulations.gov/EPA-R04-OAR-2015-0743-0002/content.pdf.
[4] "Air Plan Approval and Designation of Areas; MS; Redesignation of the DeSoto County, 2008 8-Hour Ozone Nonattainment Area to Attainment", 81 FR 20543 (April 8, 2016).

Figure 1-1: Memphis, TN-MS-AR 2008 Ozone NAAQS Nonattainment Area



1.2 Maintenance Plan

Any state seeking redesignation of an area to attainment must submit documentation to EPA that the area will continue to attain the standard in the form of a maintenance plan. Title 1 Part D, Section 175A of the CAA defines maintenance plan requirements. Requirements include a quantitative demonstration of maintenance of the standard (ozone, in this case) and contingency provisions for prompt implementation of corrective measures if attainment is not maintained. Pursuant to the Calcagni memo, this maintenance plan also includes a method to verify continued attainment of the 2008 ozone standard to support the maintenance demonstration. This plan also includes a plan to use the ambient monitoring network for verification of continued attainment or for triggering contingency provisions, if required.

The following five components are demonstrated by this maintenance plan per Section 175A of the CAA and the Calcagni memo:

- A demonstration of maintenance of the standard for an additional 10 years following expiration of the initial 10-year maintenance period;
- An attainment year emissions inventory (to support the maintenance demonstration);
- Verification of continued attainment;
- Contingency provisions for prompt correction of any future violations; and
- A commitment to continued operation of ambient monitoring equipment in the area.

1.3 Monitoring Network

Ozone is monitored using the EPA-approved reference or equivalent methods. These analyzers continuously measure the concentration of ozone in the ambient air using the ultraviolet photometric method. MDEQ operates the Hernando, MS site monitor, one of five ozone monitors in the Memphis CBSA shown in Figure 1-1 and listed in Table 1-1. All the ozone monitors in the Memphis CBSA are operated according to the requirements of 40 CFR Part 58 and the EPA-approved Quality Assurance Project Plans (QAPPs).

Table 1-1: Memphis Area Data Collection Sites

State	County	Site Name	Monitor ID	Start Date
Tennessee	Shelby	Frayser	47-157-0021	9/1/1972
Tennessee	Shelby	Edmund Orgill Park	47-157-1004	2/1/1980
Tennessee	Shelby	Shelby Farms (aka Memphis Ncore)	47-157-0075	3/11/2011
Mississippi	DeSoto	Hernando	28-033-0002	10/1/1973
Arkansas	Crittenden	Marion	05-035-0005	2/25/1991

1.4 Ambient Ozone Data

Table 1-2 shows the 4th highest 8-hour ozone concentrations for the years 2008 through 2024 for the five (5) Memphis Area monitors, followed by a graphical representation of this data in Figure 1-2. The 4th

highest 8-hour ozone concentrations decreased significantly from 2012 and have typically been below 70 ppb except for a recent uptick in 2021, 2022, 2023, and 2024.

Table 1-2: 4th Highest Ozone Concentration (ppb) – Memphis Area Monitors 2008-2024

Site	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20	'21	'22	'23	'24
DeSoto - Hernando	74	71	76	72	75	65	67	61	66	60	69	66	62	65	75	71	69
Orgill Park	77	70	73	77	84	63	65	66	67	64	68	60	62	63	69	69	68
Frayser	84	69	76	79	83	69	67	65	71	64	68	70	60	67	69	70	74
Shelby Farms[5]				81	86	69	66	66	68	68	73	66	62	71	74	73	74
Marion	74	71	78	82	79	67	67	66	70	64	70	64	69	72	71	74	72

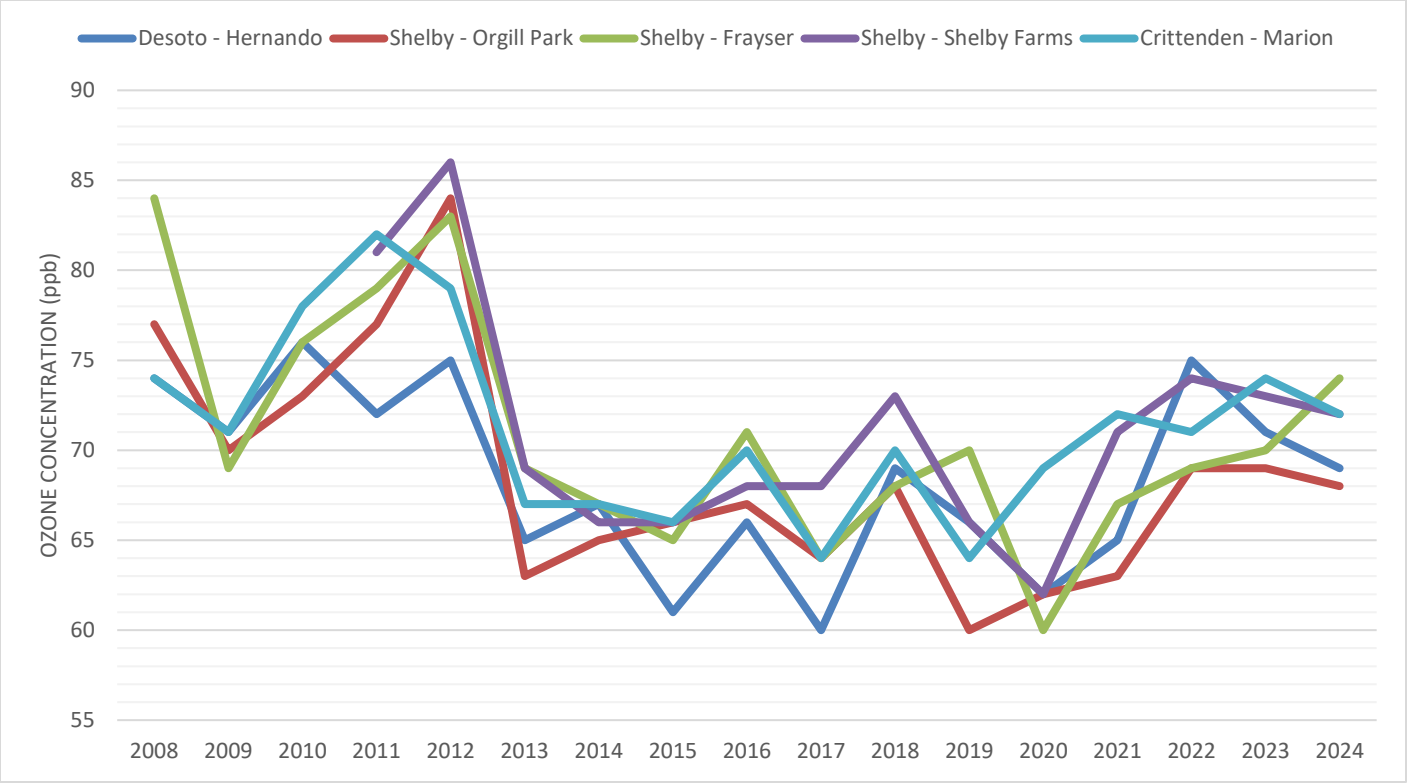


Figure 1-2: Memphis Area Annual 4th Highest 8-Hour Ozone (ppb), 2008-2024

Corresponding with the decrease in the 4th highest 8-hour ozone concentrations, the three-year design values at all five (5) Memphis Area monitors have also decreased and have met the 75 ppb 2008 ozone standard from 2014 through 2024, as shown in Table 1-3 and Figure 1-3 below.

[5] The first full year of operation of the Shelby Farms monitor was 2011.

Table 1-3: Memphis Area Ozone Design Value Concentrations (ppb), 2008-2024

Site	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20	'21	'22	'23	'24
DeSoto - Hernando	81	76	73	73	74	70	69	64	64	62	65	65	65	64	67	70	71
Orgill Park	80	75	73	73	78	74	70	64	66	65	66	64	63	61	64	67	68
Frayser	82	78	76	74	79	77	73	67	67	66	67	67	66	65	65	68	71
Shelby Farms[6]						78	73	67	66	67	69	69	67	66	69	72	73
Marion	82	76	74	77	79	76	71	66	67	66	68	66	67	68	70	72	72

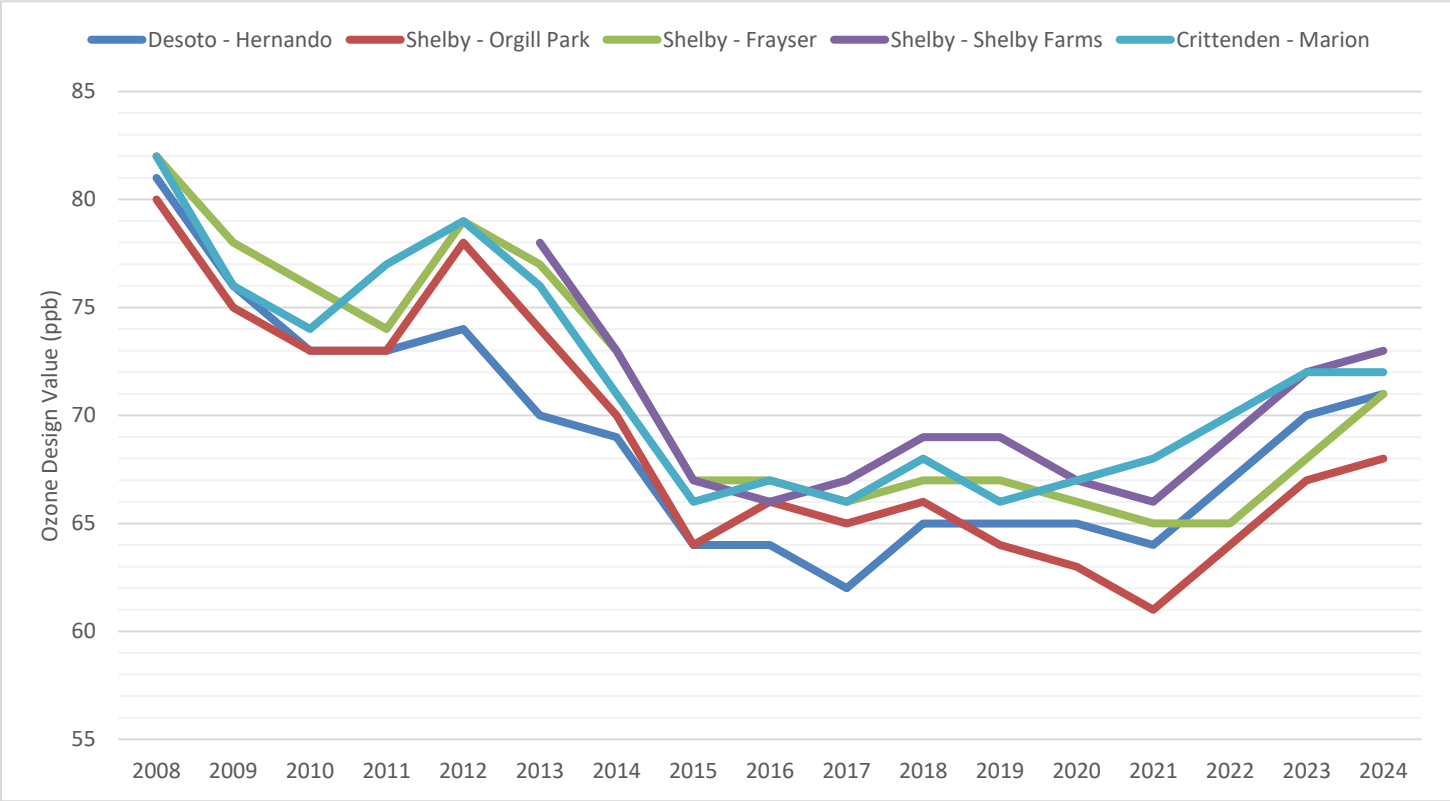


Figure 1-3: Ozone Design Values for Memphis Area ozone monitors (ppb), 2008 to 2024

[6] The first full year of operation of the Shelby Farms monitor was 2011; therefore, a 3-year design value was not available at this monitor until 2013.

2 Permanent and Enforceable Emissions Reductions

Measured reductions in ozone design values in the Memphis area 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. 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.

2.1 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. As such, the EPA has implemented a number of rules enforcing the Good Neighbor provision with respect to the 2008 Ozone 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

The 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 across 22 states, including Mississippi. The U.S. Court of Appeals for the D.C. Circuit remanded, but did not vacate, the CSAPR Update to the 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. The EPA issued new or amended Federal Implementation Plans (FIPs) for 12 of the original 22 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. Mississippi was not one of the 12 states included in this Revised CSAPR Update. 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. The 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.

As previously mentioned, the CSAPR Update Rule reduced Mississippi's state budget for ozone season NO_X emissions from EGUs. This rule has helped in reducing statewide EGU ozone season NO_X emissions from 10,229 tons in 2014 to 5,835 tons in 2024[7]. The only EGU facility in the DeSoto County maintenance area, TVA Southaven Combined Cycle Plant (EIS No. 2803300095), is subject to this rule.

2.2 On-road Mobile Sources

Federal standards for National Low Emission Vehicles (NLEV) began in 1999 and were implemented through 2001 for new light duty cars and trucks. The EPA has since implemented further reductions from on-road 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. 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 thirty (30) parts-per-million (ppm) starting in January of 2006. 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 further lowered the sulfur content of gasoline and lowered the emissions standards for light duty passenger cars and trucks. Benefits from Tier 3 vehicles will help the area to continue to assure maintenance of the national ambient air quality standards.

On March 20, 2024, the EPA finalized the Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles that sets new, more protective standards to further reduce harmful air pollutant emissions from light-duty and medium-duty vehicles starting with model year 2027. The final standards will significantly reduce emissions of NO_X and hydrocarbons, as well as greenhouse gases and particulate matter. These standards will phase in over model years 2027 through 2032. The potential emissions reductions from this rulemaking are not included in this analysis, as these emissions reductions are not yet included in the latest EPA's Motor Vehicle Emission Simulator model (MOVES4). However, these expected emissions reductions will help to ensure continued maintenance of the ozone NAAQS.

[7] Data from EPA's Clean Air Markets Program Data (campd.epa.gov)

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 reduced highway diesel fuel sulfur content to fifteen (15) ppm, allowing for additional emission control devices. When fully implemented, the total program 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. The multiple phases of these rules were expected to be fully implemented by 2010.

On January 24, 2023, the EPA finalized 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 be met for a longer period. These new standards will apply to model years 2027 and later.

2.3 Non-road Mobile Sources

The EPA has promulgated a series of control programs in 40 CFR Part 89, Part 90, Part 91, Part 92, Part 94, and Part 1039 that implement limitations on compression ignition engines, spark-ignition non-road 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.

3 Maintenance Demonstration

Part D Section 175A of the CAA requires any state requesting a redesignation to submit a revision to its SIP demonstrating maintenance of the applicable standard for a minimum of ten (10) years after the redesignation date and submit a second maintenance plan for the following ten (10) years. On April 16, 2016, the EPA approved MDEQ's first 10-year maintenance plan for the 2008 ozone NAAQS, effective from May 9, 2016 to May 9, 2026. Provision 175A(b) of the Clean Air Act requires that "*8 years after redesignation of any area as an attainment area under section 107(d), the State shall submit to the Administrator an additional revision of the applicable State implementation plan for maintaining the national primary ambient air quality standard for 10 years after the expiration of the 10-year period referred to in subsection (a).*" Therefore, MDEQ is providing a demonstration of maintenance through May 9, 2036.

There are two (2) generally accepted methodologies for demonstrating maintenance. Under the first method, an emissions inventory is compiled for one of the three years, called the attainment year inventory, which is used to show clean (i.e., attaining) ambient data. Emissions are projected for the final year of the maintenance period (called the maintenance inventory) and for intermediate years. If the projected emission levels in each of the intermediate and maintenance years are less than the emission level for the attainment year, then maintenance of the standard is demonstrated. Under the second maintenance demonstration method, air quality modeling is used to project ambient pollutant concentrations and annual design values

for the final year and intermediate years. If all the modeled rolling 3-year averages of the annual design values are below the standard, maintenance is demonstrated.

MDEQ selected the method of comparing attainment year emissions to projected emissions for this maintenance plan. This approach was used in the previous maintenance plan submitted by MDEQ and approved by the EPA for the first 10-year maintenance period for DeSoto County. The following sections discuss the attainment year inventory, the projected inventories for the maintenance year and intermediate years, and a demonstration that emissions from DeSoto County will continue to support attainment of the standard.

3.1 Attainment and Maintenance Year Emissions Inventories

MDEQ prepared 2017 and 2036 summer day emissions inventories of nitrogen oxides (NO_X) and volatile organic compounds (VOCs) for DeSoto County. The baseline year of 2017 was selected due to being the most recent available inventoried year for all point and nonpoint sources that was not impacted by the Covid-19 Pandemic. Multiple sources were utilized in developing the maintenance inventories, including the 2017 emissions developed by MDEQ to meet the Air Emissions Reporting Requirements (AERR), the EPA 2017 National Emission Inventory (NEI), the EPA Clean Air Markets Program Data (CAMPD), and the EPA's 2016 Emissions Modeling Platform version 3 (i.e., "2016v3")[8]. These emissions inventories are estimated using different approaches that vary by source category as documented below. The base year 2017 emissions are then projected to 2036 using different methods for each source category, including:

- EGU point sources
- Non-EGU point sources
- Nonpoint sources
- Non-road mobile sources – NONROAD model category
- Non-road mobile sources – Marine, aircraft and railroad
- On-road mobile sources

All the detailed calculations by source categories can be found in the Appendices A-1 through A-7. Emissions in Tables 3-2, 3-4, 3-5, 3-6, 3-7, 3-8, 3-9, 3-10, 3-11, 5-1 and 5-2 are generally reported to two decimal places (rounded) and that the summation of the values in the tables may not appear to exactly match the value in the "Total" row due to rounding to the number of significant digits reported in the table. The actual values in the intermediate calculations have more digits than displayed. The exact emission numbers used to generate the total emissions can be found in Excel files located in the appropriate Appendix.

[8] https://www.epa.gov/air-emissions-modeling/2016v3-platform

3.1.1 Point Sources

Point sources in the 2017 emission inventory include stationary sources whose potential emissions equal or exceed 100 tons per year of VOCs or 100 tons per year of NO_X in DeSoto County. Emissions from point sources have been calculated for EGU and non-EGU sources.

EGU Point Sources:

There is only one (1) EGU located in DeSoto County, TVA Southaven Combined Cycle Plant ("TVA Southaven"; EIS No. 2803300095), consisting of three (3) natural gas-fired combined cycle combustion turbines (CCCT) equipped with SCR for control of NO_X emissions. 2017 NO_X and VOC emissions from TVA Southaven Combined Cycle Plant were submitted by TVA during the 2017 MDEQ emission data collection process required by 40 CFR Part 51, Subpart A – Air Emissions Reporting Requirements. TVA Southaven must also submit hourly NO_X CEMS data and heat input data to the EPA's CAMPD.

The 2036 emissions from TVA Southaven are grown from their 2017 emissions using projected natural gas usage in the electric power sector for the East South-Central region in the Annual Energy Outlook (AEO) 2019 published by the U.S. Energy Information Administration (EIA) as shown in Table 3-1. No control factors are applied since no additional controls are expected for TVA Southaven during the period from 2017 to 2036.

Table 3-1: Electric Power Natural Gas (East South-Central Region)[9]

Year	Natural Gas Use (quads)
2017	0.910900
2036	0.938352
Growth Factor	**1.030**

The summer day NO_X emissions from TVA Southaven are calculated by summing the daily CEMS NO_X emission measurements during the twenty-one (21) weekdays in July 2017 and then dividing by twenty (21) days. For the purpose of this calculation, TVA Southaven's daily CEMS NO_X emission measurement data from the weekend days in July 2017 [ten (10) in total] were excluded as not to cause a downward skew in the calculated "tons / day" average given the noticeable decrease in the daily total load generation (and the resulting lower daily emissions) during the weekend days.

The summer day VOC emissions are calculated by multiplying the annual VOC emissions with fractions of average heat input during July weekdays to annual total heat input, as shown in the following equation:

[9] Energy Use Electric Power Natural Gas (Case Reference case Region East South Central). U.S. Energy Information Administration. U.S. Energy Information Administration - EIA - Independent Statistics and Analysis

$$emis_{summer-day} = emis_{annual} \times \frac{\sum_j HeatInput_j/21}{\sum_i HeatInput_i}$$

Where "*i*" refers to every day during 2017 and j refers to every day during July weekdays. Specifically, the above data are downloaded from the EPA CAMPD website[10]. Baseline and projected summer day emissions for TVA Southaven Combined Cycle are shown below in

Table 3-2. Detailed calculations can be found in Appendix A-1.

Table 3-2: EGU Point Source Summer Day Emissions for DeSoto County (tons/day)

EGU Point Source	2017		2036	
	NO_X	VOCs	NO_X	VOCs
TVA Southaven Combined Cycle Plant	0.63	0.07	0.65	0.07

Non-EGU Point Sources:

As of 2017, the following non-EGU point sources located in DeSoto County were Title V sources with potential emissions of NO_X and/or VOCs exceeding 100 tons per year:

- Ardagh Metal Packaging USA Corp.
- JT Shannon Lumber Company[11]
- Rite Hite Products
- Texas Gas Transmission LLC, Lake Cormorant Compressor Station

The 2017 actual emissions were collected from each of these facilities during the MDEQ emission data collection process required by 40 CFR Part 51, Subpart A – Air Emissions Reporting Requirements. The 2036 emissions from non-EGU point sources were grown from the 2017 emissions based on the projection and control data in the 2016 Emissions Modeling Platform version 3 ("2016v3"), where available. However, of the four non-EGU point source facilities, projection data was only available for the Texas Gas Transmission Lake Cormorant Compressor Station. Since projection data was not available in the "2016v3" modeling platform pertaining to the other non-EGU point sources in DeSoto County (Ardagh, J T Shannon, and Rite Hite), the NO_X and VOC emissions for these facilities were not grown from the 2017 emissions based on the following guidance from the EPA:

[10] https://campd.epa.gov/

[11] J T Shannon changed from a Title V Major source to Synthetic Minor source on May 3rd, 2021. Current facility annual potential emissions are 17.00 tons of VOC and 15.49 tons of NO_x (as of 4/8/2024).

> "Since 2006 (EPA, 2006a), the EPA has been assuming that emissions growth does not track with economic growth for many stationary sources (both point and nonpoint). This "no-growth" assumption is based on an examination of historical emissions and economic data. Emissions (as of 2005) had declined for several years and those reductions could not be directly attributed to specific control programs despite increasing economic-based growth factors for many metrics over the same time period. While the EPA continues to work toward improving the projection approach in its own work, we are still using this no-growth assumption for many emissions sectors."

MDEQ is not aware of significant controls that will be applied to these non-EGU point sources during the period from 2017 to 2036. The projected emissions for 2036 are estimated using the growth rates found in the "2016v3" modeling platform without factoring in any potential future emission controls.

For the Lake Cormorant Compressor Station, state specific oil and gas sector projection data from "2016v3" were applied to process-level emissions based on primary SCC codes and facility NAICS code. These projection factors were applied to their 2017 emissions and extrapolated out to 2036. The calculated growth factors are shown below in Table 3-3.

Table 3-3: Growth Factors for Lake Cormorant Compressor Station

NAICS	SCC	2017 / 2036
486210	20200201	1.665
486210	20200202	1.665
486210	20200252	1.665
486210	20200253	1.665
486210	30600105	1.475
486210	31088811	1.665
486210	40400301	1.475

Summer day emissions for non-EGU point sources were calculated by using the average July NO_X and VOC emission percentage estimates for county and sector from the "2016v3" modeling platform. Appendix A-2 contains the projected sector-specific July VOC and NO_X emissions for the years 2016, 2023, and 2026. An average of the July annual percentages from these three years was then calculated to use as a basis for 2036 July emissions estimates. This percentage was divided by the number of days in July to convert to a per/day seasonal factor. Detailed calculations for all non-EGU point sources can be found in Appendix A-2.

2017 and 2036 summer day emissions of NO_X and VOC from EGU and non-EGU facilities are shown in Table 3-4.

Table 3-4: Point Source Summer Day Emissions (tons/day)

Facility Name	EIS No. (MDEQ Agency Interest No.)	Summer Day Emissions			
		2017		2036	
		NO_X	VOCs	NO_X	VOCs
TVA Southaven Combined Cycle Plant	2803300095 (12199)	0.63	0.07	0.65	0.07
Texas Gas Transmission LLC, Lake Cormorant	280330009 (1079)	0.61	0.02	1.01	0.03
Ardagh Metal Packaging	2803300016 (1063)	0.02	0.27	0.02	0.27
Rite Hite Products	2803300109 (50219)	0.00	0.10	0.00	0.10
J T Shannon Lumber Company	2803300041 (1525)	0.04	0.01	0.04	0.01
Totals		**1.29**	**0.47**	**1.71**	**0.49**

3.1.2 Nonpoint Sources

MDEQ does not maintain state-specific or county-specific information on nonpoint sources. MDEQ relies on information obtained by the EPA to estimate emissions from these sources. Therefore, MDEQ is using the 2017 NEI to estimate the attainment year emissions and growth factors from the 2016 Emissions Modeling Platform version 3 to project 2036 maintenance emissions. Emissions estimates are calculated for the following nonpoint sources:

- Agricultural livestock
- Nonpoint
- Nonpoint solvent
- Residential wood combustion
- Fires – Agricultural
- Fires – Wild and Prescribed

The 2036 emissions from area sources were estimated by multiplying 2023 projected emissions by growth factors calculated using 2023 and 2026 emissions in the "2016v3". The 2023 and 2026 emissions were developed by the EPA using growth factors based on surrogate data varying by source sectors (e.g., AEO growth rates for energy sectors) and control factors due to new regulations or amendments to regulations (NESHAP-RICE, NSPS-RICE, Boiler MACT, etc.). After MDEQ reviewed the methodology and data in "2016v3", MDEQ concluded that the 2023 and 2026 emissions could reasonably reflect the area source emission trends in Mississippi with the exclusion of the nonpoint solvent sector. The "2016v3" emission projections for the nonpoint solvent sector showed significant increases in VOC emissions for DeSoto

County, which is contradictory to the estimated emissions available in more recent data estimates, including the 2020 NEI and EPA's 2022v1 Modeling Platform[12], whose estimates showed decreases in VOC emissions for this sector. Therefore, the nonpoint solvent sector emissions will be held constant using the "no-growth assumption" guidance provided by EPA as described earlier in Section 3.1.1. All other nonpoint sources' 2036 emissions are projected using the growth factors developed using the "2016v3" emissions.

The 2036 emissions were calculated as follows, where "E" is the emissions in tons estimated for the month of July in "2016v3":

$$E_{2036} = E_{2023} + (E_{2026} - E_{2023}) \times \frac{(2036 - 2023)}{(2026 - 2023)}$$

Detailed calculations can be found in Appendix A-3. 2017 and 2036 summer day emissions of NO_X and VOCs from nonpoint sources are shown in Table 3-5. As additional context to the detailed calculations in Appendix A-3 and the values shown in Table 3-5, the "tons /day" average emissions were determined using the complete month of July 2017 (i.e., thirty-one (31) days).

Table 3-5: Nonpoint Summer Day Emissions (tons/day)

Nonpoint Sector	Summer Day Emissions			
	2017		2036	
	NO_X	VOCs	NO_X	VOCs
Agricultural Livestock	0.00	0.03	0.00	0.03
Nonpoint	1.12	2.28	1.12	1.80
Nonpoint Solvent	0.00	5.08	0.00	5.08
Residential Wood Combustion	0.02	0.14	0.02	0.16
Fires - Agricultural	0.01	0.02	0.01	0.02
Fires – Wild and Prescribed	0.09	0.89	0.03	0.25
Totals	**1.23**	**8.44**	**1.17**	**7.34**

[12] More details on the emissions data for the nonpoint sector from the 2020 NEI and EPA's 2022v1 Modeling Platform can be found in Appendix A-3.

3.1.3 Non-road Mobile Sources

NONROAD Model Category:

The NONROAD model within the latest version of EPA's Motor Vehicle Emissions Simulator (MOVES4) was used to develop non-road mobile inventories. The NONROAD model calculates emissions from a diverse collection of non-road equipment such as logging, agricultural, construction, industrial, residential and commercial lawn and garden equipment, as well as non-road vehicles. This model does not calculate emissions from marine, aircraft, and locomotives, which are separately estimated as documented below.

2017 and 2036 non-road mobile emissions were calculated using the NONROAD portion of the MOVES4 model released in August 2023, which reflects all the EPA's final non-road standards to date. Defaults in MOVES4 were used with calculated average meteorological data based on observations at Memphis International Airport from 2021 to 2023. Summer day emissions were calculated by running MOVES4 for a typical July weekday. Detailed MOVES4 run specification files, output database, input database, and SCC-specific VOC and NO_X emissions can be found in Appendix A-4. **Table 3-6** shows a summary of the VOC and NO_X emission from non-road sources (excluding marine, aircraft, and locomotives) for 2017 and 2036 summer day emissions.

Table 3-6: Non-road Mobile Summer Day Emissions (tons/day)

Source	2017		2036	
	NO_X	VOCs	NO_X	VOCs
Non-road Mobile Sources (excluding marine, aircraft, and locomotives)	1.56	1.06	0.56	0.83

Marine and Locomotives:

MDEQ does not maintain state-specific or county-specific information on marine or locomotive sources. MDEQ relies on information obtained by the EPA to estimate emissions from these sources. Therefore, MDEQ is using the 2017 NEI to estimate attainment year emissions and the "2016v3" modeling platform to project 2036 maintenance year emissions. The 2017 emissions estimates for the following nonpoint sources are obtained from the 2017 NEI:

- Category 1, Category 2 Commercial Marine Vessels (*cmv_c1c2*)
- Railway locomotives (*rail*)

The 2036 emissions from area sources were estimated by multiplying 2023 projected emissions by growth factors calculated using 2023 and 2026 emissions in "2016v3". The 2023 and 2026 emissions were developed by the EPA using growth factors based on surrogate data varying by source sectors (e.g., AEO growth rates for energy sectors) and control factors due to new regulations or amendments to regulations (NESHAP-RICE, NSPS-RICE, Boiler MACT, etc.). After MDEQ reviewed the methodology and data in

"2016v3", MDEQ concluded that the 2023 and 2026 emissions could reasonably reflect the area source emission trends in Mississippi. Therefore, these emissions are used to develop the growth factors used to project 2036 emissions.

The 2036 emissions were calculated as follows, where "*E*" is the emissions in tons estimated for the month of July in "2016v3":

$$E_{2036} = E_{2023} + (E_{2026} - E_{2023}) \times \frac{(2036 - 2023)}{(2026 - 2023)}$$

Detailed calculations can be found in Appendix A-5. The 2017 and 2036 summer day emissions of NO_X and VOCs from non-road mobile sources are shown in **Table 3-7**.

Aircraft:

MDEQ does not maintain state-specific or county-specific information on aircraft sources. MDEQ is using the 2017 NEI to estimate attainment year emissions. 2036 maintenance emissions projections are calculated using a combination of "2016v3" projections and landing and take-off operations (LTO) projections available from the Federal Aviation Administration's Terminal Area Forecasts (TAF)[13]. TAF projections were only available for Olive Branch Airport and were used to grow 2017 emissions from this facility. The remaining aircraft sources in DeSoto County were grown from their 2017 NEI emissions based on the projections found in the "2016v3" platform, similarly to the projection method described above for the locomotive and marine sources. Detailed calculations and TAF data can be found in Appendix A-5. 2017 and 2036 summer day VOC and NO_X emissions for marine, locomotive, and aircraft sources are shown below in **Table 3-7**.

Table 3-7: Marine, Locomotive, and Aircraft Summer Day Emissions (tons/day)

Non-road Mobile Source	2017		2036	
	NO_X	**VOCs**	**NO_X**	**VOCs**
Marine	0.25	0.02	0.07	0.00
Locomotive	0.44	0.02	0.28	0.01
Aircraft	0.02	0.02	0.03	0.03

3.1.4 On-road Mobile Sources

2017 and 2036 emissions from on-road mobile sources for the maintenance area portion of DeSoto County were developed using the latest version of EPA's Motor Vehicle Emissions Simulator (MOVES4) and travel estimates from the current Memphis Metropolitan Planning Organization (MPO) Travel Demand Model (TDM). The Memphis MPO, Tennessee Department of Transportation (TDOT), Mississippi Department of Transportation (MDOT), and Shelby County Health Department provided the most current

[13] Federal Aviation Administration (faa.gov)

data available for emissions calculations. The Federal Highway Administration (FHWA) and EPA's Region 4 Air Planning Branch provided assistance and guidance as well.

Best available local data were used for MOVES4 inputs such as vehicle population, vehicle miles traveled (VMT) by source type, road type distribution, average speed distributions, starts per day, hourly VMT fractions, age distributions, as well as 2021-2023 average daily meteorological inputs based on observations at Memphis International Airport. These input data were developed in accordance with the specifics provided in EPA's "MOVES4 Technical Guidance: Using MOVES to Prepare Emission Inventories for State Implementation Plans and Transportation Conformity".

A thorough description of the development process for these inventories, including input development, run specification details, resulting emissions estimates, and MOVES databases can be found in Appendix A-6. The estimated 2017 and 2036 summer day emissions of NO_x and VOC from on-road mobile sources are shown below in Table 3-8.

Table 3-8: On-road Mobile Summer Day Emissions (tons/day)

Source	2017		2036	
	NO_X	VOCs	NO_X	VOCs
On-road Mobile Sources	5.93	3.16	1.25	1.63

3.1.5 Summary of 2017 and 2036 Emissions Inventories

The total 2017 and 2036 NO_x and VOC emissions for DeSoto County are presented for each source sector in Table 3-9.

Table 3-9: Summary of 2017 and 2036 Summer Day Emissions Inventories (tons/day)

Source	2017		2036	
	NO_X	VOCs	NO_X	VOCs
Point	1.29	0.47	1.71	0.49
Non-point	1.23	8.44	1.17	7.34
Marine	0.25	0.02	0.07	0.00
Locomotive	0.44	0.02	0.28	0.01
Aircraft	0.02	0.02	0.03	0.03
Non-road	1.56	1.06	0.56	0.83
On-road	5.93	3.16	1.25	1.63
Totals	**10.72**	**13.18**	**5.07**	**10.33**

3.2 Intermediate Year Emissions Projections

As discussed previously, MDEQ is providing a demonstration of maintenance through the year 2036. Emissions projections to support maintenance have been prepared for 2020, 2023, 2026, 2029, and 2032, which correspond to NEI years. Emissions levels for these intermediate years were calculated by linear interpolation between 2017 and 2036. Emissions for these additional years provide additional reference points for periodic assessment of maintenance of the standard. The intermediate year emission inventories are presented in **Table 3-10**.

Table 3-10: Projected Summer Day Emissions (tons/day)

Source	2017		2020		2023		2026		2029		2032		2036	
	NO_X	VOCs	NO_X	VOCs	NO_X	VOCs	NO_X	VOCs	NO_X	VOCs	NO_X	VOCs	NO_X	VOCs
Point	1.29	0.47	1.35	0.47	1.42	0.48	1.49	0.48	1.55	0.48	1.62	0.48	1.71	0.49
Nonpoint	1.23	8.44	1.22	8.27	1.21	8.09	1.20	7.92	1.19	7.75	1.19	7.57	1.17	7.34
Marine	0.25	0.02	0.22	0.01	0.20	0.01	0.17	0.01	0.14	0.01	0.11	0.01	0.07	0.00
Locomotives	0.44	0.02	0.42	0.02	0.39	0.02	0.36	0.02	0.34	0.01	0.31	0.01	0.28	0.01
Aircraft	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03
Nonroad	1.56	1.06	1.40	1.02	1.24	0.99	1.09	0.95	0.93	0.91	0.77	0.87	0.56	0.83
Onroad	5.93	3.16	5.19	2.91	4.45	2.67	3.71	2.43	2.98	2.19	2.24	1.95	1.25	1.63
Totals	**10.72**	**13.18**	**9.82**	**12.73**	**8.93**	**12.28**	**8.04**	**11.83**	**7.15**	**11.38**	**6.26**	**10.93**	**5.07**	**10.33**

The degree of improvement (reduction) in 2036 emissions compared to the attainment year (2017) emissions can be used to determine the quantity of emissions that can be allocated as safety margin for the area's motor vehicle emissions budget. The decrease in the emission of NO_X and VOCs from 2017 to 2036 is shown in Table 3-11. Only a portion of the NO_X margin will be allotted to the Motor Vehicle Emissions Budget (see Section 4).

Table 3-11: Summer Day Emissions Decreases

Pollutant	2017 to 2036 Projected Emissions Decrease (tons)
NO_X	5.64
VOCs	2.85

3.3 Verification of Continued Attainment

Verification of continued attainment is accomplished through operation of the ambient ozone monitoring network and the periodic updates of the area's emissions inventory. MDEQ will continue operation of an

appropriate air quality monitoring network in accordance with 40 CFR Part 58, Ambient Air Quality Surveillance, and associated appendices.

The Consolidated Emissions Reporting Rule (CERR) was promulgated by the EPA on June 10, 2002. The CERR was replaced by the Air Emissions Reporting Requirements (AERR) rule on December 17, 2008. The most recent triennial inventory for Mississippi was compiled for 2020. The larger point sources of air pollution will continue to submit emissions data on an annual basis as required by the AERR. Emissions from the rest of the point sources, the nonpoint source portion, and the onroad and non-road mobile sources continue to be quantified on a three-year cycle.

The inventory will be updated and maintained on a three-year cycle. As required by the AERR, future comprehensive emissions inventories will be compiled for 2023, 2026, 2029, 2032, and 2035.

4 Contingency Plan for Maintenance

Section 175A(d) of the CAA requires that the maintenance plan includes provisions for contingency measures that would be implemented to promptly correct a violation of the NAAQS following redesignation of an area to attainment. The measures may include rules or other measures that are not yet effective that MDEQ agrees to adopt and implement, as expeditiously as practicable, when required by this plan. Pursuant to Section 175A(d) of the CAA, the contingency measures must, at a minimum, include a requirement to implement all measures that were contained in the SIP for the area before the redesignation (i.e., the nonattainment plan). In addition, the Calcagni memo specifies that the contingency plan is an enforceable part of the SIP that should clearly identify the following:

- Clearly identified contingency measures;
- An established threshold that triggers the contingency measures;
- A schedule and procedure for adoption and implementation; and
- A specific time limit for action by the State.

4.1 Contingency Measures

Section 175A(d) of the CAA requires that the maintenance plan include provisions for contingency measures that would be implemented by the state to correct any violation of the 8-hour ozone NAAQS after redesignation of an area as an attainment area. A list of potential contingency measures that could be considered for future implementation in such an event should also be included in the maintenance plan.

MDEQ has developed a contingency plan for the 2nd 10-year maintenance period for the portion of DeSoto County previously designated non-attainment for the 2008 8-hour ozone standard. Consistent with this plan, MDEQ agrees to adopt and implement (as expeditiously as practicable) the necessary corrective actions for attainment of the standard. The contingency measures as described below would be adopted and implemented within 24 months of a contingency trigger.

MDEQ will use actual ambient monitoring and emissions inventory data as the indicators to determine whether contingency measures would be implemented. In accordance with 40 CFR Part 58, ambient ozone monitoring data that indicates an exceedance of the 2008 8-hour ozone NAAQS (i.e., 75 ppb) will begin the process to implement these contingency measures according to the protocols identified below. The contingency plan provides for corrective responses should the 2008 8-hour ozone NAAQS be violated, or if emissions in the DeSoto County maintenance area increase significantly above current levels.

4.1.1 Tier I

A Tier I trigger will apply where no actual violation of the 2008 8-hour ozone standard has occurred, but where the state finds monitored ozone levels indicating that an actual ozone NAAQS violation may be imminent. A pattern will be deemed to exist when there are two consecutive ozone seasons in which the 4th highest values are 76 ppb or greater at a single monitor within the Memphis Area. The trigger date will be sixty (60) days from the date that the state observes a 4th highest value of 76 ppb or greater at a monitor for which the previous season had a 4th highest value of 76 ppb or greater or by March 1 of the following ozone season should the observation occur on or after September 1.

If a Tier I trigger is activated, MDEQ will develop a plan identifying additional voluntary measures that can be implemented. Possible voluntary measures could include the following types of measures or any other measure deemed appropriate and effective at the time the selection is made:

- Additional Ozone Action Day campaign strategies
- Programs or incentives to decrease motor vehicle use;
- Programs to require additional emissions reductions on stationary sources;

- Implementation of diesel retrofit programs, including incentives for performing retrofits for fleet vehicle operations (provided funding is available);
- Gas can and lawnmower replacement programs (provided funding is available); and
- Voluntary engine idling reduction programs.

By March 1 of the year following the ozone season in which the Tier I trigger has been activated, MDEQ will complete sufficient analyses to begin adoption of any necessary rules for ensuring attainment and maintenance of the 2008 8-hour ozone NAAQS. The rules would become state effective by the following year.

4.1.2 Tier II

A Tier II trigger is activated when any quality assured ozone design value is equal to or greater than 76 ppb at a monitor in the Memphis Area. The trigger date will be 60 days from the date that the state observes a 4th highest value that, when averaged with the two previous ozone seasons' fourth highest values, would result in a three-year average equal to or greater than 76 ppb.

In the case that a Tier II trigger is activated, MDEQ will conduct a comprehensive analysis, based on quality-assured ambient data that will examine:

- the severity of the trigger condition,
- the meteorological conditions (in the case of an ambient concentration trigger) associated with the trigger condition,
- potential contributing local emissions sources,
- potential contributing emissions from exceptional events or regional or long-range transport,
- the geographic applicability of possible contingency measures,
- emission trends, including implementation timelines of potential control measures,
- timelines of "on-the-books" (adopted) measures that are not yet fully implemented, and
- current and recently identified control technologies.

All monitored ozone data will be verified through MDEQ's Ambient Monitoring Program quality assurance and certification process, or the approved programs of the Shelby County Health Department (SCHD) and Arkansas Department of Environmental Quality (ADEQ) who oversee ozone monitors in Shelby County and Crittenden County, respectively. This process will include an analysis of available data regarding the air quality, meteorology, transport, and related activities in the area to determine the possible cause of the violation. Prior to certification of the data, the Department will solicit the involvement of all State agencies having jurisdiction in the surrounding area.

MDEQ commits to implement at least one of the control measures listed in the paragraph below, or other contingency measures that may be determined to be more appropriate based on the analyses performed, within 24 months of a Tier II trigger or as expeditiously as practicable, whichever is earlier.

If the analysis required above determines emissions from the local area are contributing to the trigger condition, MDEQ will evaluate those measures as specified in Section 172 of the CAA for control options as well as other available measures. If a new measure/control is already promulgated and scheduled to be implemented at the federal or state level, and that measure/control is determined to be adequate, additional local controls may be unnecessary. Under Section 175A(d), the minimum requirement for contingency measures is the implementation of all measures that were contained in the SIP before the redesignation. In addition to those identified above, contingency measure(s) will be selected from the following types of measures or from any other measure deemed appropriate and effective at the time the selection is made:

- A Reasonably Available Control Technology (RACT) regulation for major sources of NO_x emissions in DeSoto County.
- Adoption of industrial and commercial VOC controls as provided in final EPA-approved Control Technology Guidelines (CTGs) through the date of the recorded violation.
- Other measures deemed appropriate at the time as a result of advances in control technologies.

Any resulting contingency measure(s) will be based upon cost effectiveness, emission reduction potential, whether ozone is NO_X- or VOC-limited, economic and social considerations, ease and timing of implementation, and other appropriate factors.

Adoption of additional control measures is subject to necessary administrative and legal processes. MDEQ will solicit input from interested and affected persons (stakeholders) in the area prior to selecting appropriate contingency measures. No contingency measure will be implemented without providing the opportunity for full public participation. This process will include publication of notices, an opportunity for public hearing, and other measures required by MDEQ.

4.2 Tracking Program for Ongoing Maintenance

In coordination with SCHD and ADEQ, MDEQ will continue operation of an appropriate air quality monitoring network in accordance with 40 CFR Part 58, Ambient Air Quality Surveillance and associated appendices. MDEQ will continue to update its emissions inventory at least once every three years or more frequent, as required by the AERR rule. In addition to the emissions inventory for 2017, the emissions inventory base year, and the last year of the maintenance plan, 2036, the interim years of 2020, 2023, 2026, 2029, and 2032 were selected to show a trend analysis for maintenance of the 2008 8-hour ozone NAAQS. Tracking the progress of the maintenance plan also includes performing reviews of the updated emissions inventories for the area using the latest emissions factors, models, and methodologies. For these periodic inventories, MDEQ will review the assumptions made for projected growth of activity levels.

5 Motor Vehicle Emissions Budget

The transportation conformity rule (40 CFR Part 93, Subpart A) ensures that projects and plans funded by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) conform to

air quality SIPs and maintenance plans. In the case of a maintenance plan, the rule requires a motor vehicle emissions budget (MVEB) to be established for the last year of the plan's maintenance period. These budgets are to be used by transportation authorities to assure that transportation plans, programs, and projects are consistent with, and conform to, the maintenance of acceptable air quality in DeSoto County throughout the term of the maintenance plan. 40 CFR 93.118(b)(2) states:

> *(2) When a maintenance plan has been submitted:*
>
> *(i) Emissions must be less than or equal to the motor vehicle emissions budget(s) established for the last year of the maintenance plan, and for any other years for which the maintenance plan establishes motor vehicle emissions budgets. If the maintenance plan does not establish motor vehicle emissions budgets for any years other than the last year of the maintenance plan, the demonstration of consistency with the motor vehicle emissions budget(s) must be accompanied by a qualitative finding that there are no factors which would cause or contribute to a new violation or exacerbate an existing violation in the years before the last year of the maintenance plan. The interagency consultation process required by 40 CFR 93.105 shall determine what must be considered in order to make such a finding;*
>
> *(ii) For years after the last year of the maintenance plan, emissions must be less than or equal to the maintenance plan's motor vehicle emissions budget(s) for the last year of the maintenance plan;*
>
> *(iii) If an approved and/or submitted control strategy implementation plan has established motor vehicle emissions budgets for years in the time frame of the transportation plan, emissions in these years must be less than or equal to the control strategy implementation plan's motor vehicle emissions budget(s) for these years; and*
>
> *(iv) For any analysis years before the last year of the maintenance plan, emissions must be less than or equal to the motor vehicle emissions budget(s) established for the most recent prior year.*

Transportation conformity determinations are required for federally funded highway and transit projects that are classified as nonexempt before they are funded and approved for transportation plans and transportation improvement programs. For this maintenance plan, MVEBs will be set for NO_X and VOC emissions, which are the ozone precursor subject to transportation conformity.

5.1 Methodology

Mobile source inventories for 2017 and 2036 were developed according to procedures prescribed by the following federal, state and local regulations: United States Federal Register, Volume 69, p. 40004 (69 FR 40004); United States Code of Federal Regulations, Title 40, Parts 51 and 93 (40 CFR 51 and 93, i.e. Transportation Conformity Rule Requirements); the Mississippi Transportation Conformity Rules; and Metropolitan Planning Organization (MPO) Planning Regulations (23 CFR 450) implementing the Bipartisan Infrastructure Law (BIL) Requirements. The EPA's MOVES4 model was used to derive

emissions as required by the EPA[14]. The modeled emissions are based on several inputs including temperature, relative humidity, presence of inspection and maintenance programs, vehicle source type mix, vehicle age distribution, temporal distributions, average daily vehicle miles traveled (VMT), source type populations, hourly distribution, road type distribution, and average speed distribution. The Memphis Metropolitan Planning Organization's (MPO) Travel Demand Model was used to obtain VMT estimates for the portion of DeSoto County in the maintenance area. A report detailing the methodology, inputs, and run specifications used in developing these inventories can be found in Appendix A-6.

5.2 Motor Vehicle Emissions Budgets and Safety Margins

The projected 2036 on-road motor vehicle emissions for NO_X and VOCs are 1.25 and 1.63 tons per day, respectively. As presented in Section 3.2, the overall surplus or overall emissions reduction from 2017 for all sectors is 5.64 tons per day for NO_X and 2.85 tons per day for VOCs. Approximately 75% of the NO_X and VOC emission reductions will be used as the allotted safety margin for the 2036 MVEBs. For context, the "safety margin" is the difference between the attainment level of emissions and the projected level of emissions from all sources.

Specifically, 4.25 tons per day of the available NO_X safety margin has been allocated resulting in a 2036 MVEB of 5.50 tons per day of NO_X emissions, and 2.12 tons per day of the available VOC safety margin has been allocated resulting in a 2036 MVEB of 3.75 tons per day of VOC emissions. This allocation from the safety margin accounts for uncertainty in the projections and is available due to the estimated reductions from NO_X and VOC emissions from the on-road and non-road mobile sources.

The 2017 and projected 2036 on-road emissions, safety margins, and 2036 MVEBs for the portion of DeSoto County, MS included in the Memphis, TN-MS-AR Marginal Nonattainment Area for the 2008 8-hour Ozone NAAQS are presented in Table 5-1 and Table 5-2.

Table 5-1: Motor Vehicle Emissions and Safety Margins

Year	Motor Vehicle Emissions (tons per day)		Safety Margin (tons per day)	
	NO_X	VOCs	NO_X	VOCs
2017	5.93	3.16	N/A	N/A
2020	5.19	2.91	0.89	0.45
2023	4.46	2.67	1.78	0.90
2026	3.71	2.43	2.67	1.35
2029	2.98	2.19	3.56	1.80
2032	2.24	1.95	4.46	2.25
2036	1.25	1.63	5.64	2.85

[14] Using MOVES to Prepare Emission Inventories in State Implementation Plans and Transportation Conformity: MOVES4 Technical Guidance, EPA, August 2023. https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P101862T.pdf

Table 5-2: 2036 Motor Vehicle Emissions Budgets for the Portion of DeSoto County, Mississippi included in the Memphis, TN-MS-AR Marginal Nonattainment Area for the 2008 8-hour Ozone NAAQS

Pollutant	2036 Projected Motor Vehicle Emissions (tons per day)	Safety Margins (tons per day)	Portion of Safety Margin Allocated to MVEB (tons per day)	MVEB (tons per day)
NO_x	1.25	5.64	4.25	5.50
VOC	1.63	2.85	2.12	3.75