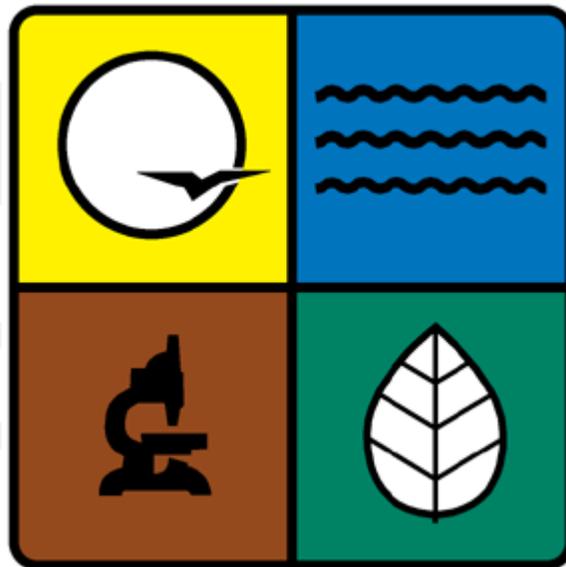


**Supplement/Revision to the  
Redesignation Demonstration and  
Maintenance Plan for the Missouri Portion of the  
St. Louis Nonattainment Area for the  
1997 8-Hour Ground Level Ozone  
National Ambient Air Quality Standard**

**Prepared for the  
Missouri Air Conservation Commission  
Adoption: April 24, 2014**



**Missouri Department of Natural Resources  
Division of Environmental Quality  
Air Pollution Control Program  
Jefferson City, Missouri**

Project Number: 1997-O3-4-STL-Redesignation



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## Executive Summary

The purpose of this SIP revision is to provide the documentation necessary for Missouri's request for redesignation of the Missouri portion of the St. Louis nonattainment area to attainment for the 1997 ozone National Ambient Air Quality Standard (NAAQS). The plan addresses all of the federal Clean Air Act Amendments of 1990 (CAA) Section 107(d)(3)(E) redesignation elements for the area. One of those elements is a maintenance plan which demonstrates how the area will continue to comply with this NAAQS pursuant to CAA Section 175A. The maintenance plan, contained within this revision, includes, among other things, an emissions inventory, future year emissions projections and contingency measures.

A corresponding plan, submitted by the Illinois Environmental Protection Agency, has already been approved by the U.S. Environmental Protection Agency (EPA) for the Illinois or Metro-East portion of the St. Louis nonattainment area. As a result, the Metro-East portion has already been designated attainment for the 1997 ozone standard.

Ozone air quality has dramatically improved in the St. Louis region as a result of implementation of State and Federal control measures since the designation of the St. Louis area as nonattainment in 2004. On June 9, 2011, EPA issued a "Clean Data Determination" that the entire St. Louis nonattainment area achieved at least three consecutive ozone seasons (2008-2010) of complete, quality assured ambient air quality monitoring data demonstrating attainment with the 0.080 parts per million (ppm) 8-hour ozone NAAQS promulgated in 1997 [76 FR 33647]. The air quality monitoring data for the most recent years of 2011-2013 also shows compliance with the 1997 NAAQS. These air quality improvements are due to permanent and enforceable emission control measures.

This maintenance plan provides for continued attainment of the 1997 8-hour ozone air quality standard for the St. Louis nonattainment area for a period of ten years after the EPA has formally redesignated the area to attainment. The plan also provides assurances that, in the event of a subsequent violation of the air quality standard, additional control options listed in this plan, called contingency measures, can quickly be implemented to prevent any future violations. In addition, this plan demonstrates that the area attained the standard based on permanent and enforceable emissions reductions. This plan also includes an emissions inventory analysis of the ozone precursors - Nitrogen Oxides (NO<sub>x</sub>) and Volatile Organic Compounds (VOCs) – for both the redesignation demonstration period (2002- 2008) and the maintenance plan period (2008 – 2025).

The State's efforts to improve ozone air quality in the St. Louis area by no means end with the area's redesignation to attainment under the 1997 8-hour ozone NAAQS. Revisions to the ozone NAAQS are ongoing and continuous. On March 27, 2008, the EPA released a revised 8-hour ozone standard [73 FR 16436]. This revision lowers the ozone standard to 0.075 ppm (or 75 ppb). Similarly, a potentially even more stringent revision to the ozone standard is expected in 2015. For the 2008 ozone NAAQS revision, the St. Louis area was designated nonattainment area and classified as marginal [77 FR 30088]. Marginal nonattainment areas have until December 31, 2015 to attain the 2008 Ozone NAAQS [40 CFR 51.1103]. The Missouri Department of Natural Resources' Air Pollution Control Program (Air Program) is currently

developing a plan to address the area's marginal nonattainment obligations under the 2008 ozone NAAQS.

By redesignating the Missouri portion St. Louis area to attainment under the 1997 standard through this plan, the Air Program is establishing contingency measures and anti-backsliding levels. Since the implementation rule for the 2008 NAAQS proposes to revoke the 1997 NAAQS, the approval of this plan will conclude any obligations under the 1997 standard prior to its proposed revocation. This will allow the state to focus its resources on addressing the newly-revised and more protective standard(s).

## Foreword: Explanation of Revisions to the Original Document

On November 27, 2011, the Missouri Air Conservation Commission (MACC) adopted the Redesignation Demonstration and Maintenance Plan for the Missouri Portion of the St. Louis Nonattainment Area for the 1997 8-Hour Ozone National Ambient Air Quality Standard. The plan was then submitted to the EPA on November 28, 2011 for inclusion in the Missouri State Implementation Plan (SIP). The plan was not approved at that time due to litigation surrounding the federal interstate air pollution transport rules: Clean Air Interstate Rule (CAIR) & its successor, Cross State Air Pollution Rule (CSAPR).

The District of Columbia Circuit Court ruled to vacate CSAPR and directed EPA to continue implementing CAIR while awaiting an acceptable replacement rule. Since CAIR remains in effect until the Supreme Court makes a decision or a satisfactory replacement rule is enacted, the emission reductions from CAIR are permanent and enforceable.

As a result, this document is an update to the maintenance plan submitted in 2011 (2011 plan). The Missouri Department of Natural Resources' Air Pollution Control Program (Air Program) is now proposing a technical supplement/revision to the 2011 plan. This revision will make the following updates and corrections to the 2011 plan:

- The future year in the maintenance plan has been changed from 2022 to 2025. All references to emissions in 2022 throughout the plan and appendices have been revised to refer to emissions in the new future year (2025).
- Emissions inventories and appendices have been updated to account for recent changes:
  - Appendix H was created to supply the Emission Inventories for the Illinois portion of the nonattainment area;
  - The point source emissions inventories for the interim year (2017) have been adjusted so that the Clean Air Interstate Rule (CAIR) is the control strategy used to control electric generating units' emissions as opposed to the Cross State Air Pollution Rule (CSAPR). The new future year in the plan (2025) also relies on CAIR to control these emissions. The plan and appendices have been updated to accurately characterize all of these revisions;
  - The on-road mobile source inventories included for the base year (2008) and interim year (2017) of the plan have been revised to incorporate the actual inspection/maintenance (I/M) program in place in the St. Louis area. For VOC emissions, the Stage II refueling emissions have been removed from the mobile source inventory and added to the area source inventory. For the interim year (2017) emissions inventory, the stage II control program was removed from the mobile model in calculating the Stage II area source emissions to account for a current SIP development to remove these requirements as a result of wide spread use of on-board vapor recovery equipment. The new future year (2025) emissions inventory in the plan also accounts for the removal of Stage II controls and

incorporates the appropriate I/M input in the mobile model. The plan and appendices have been updated to accurately characterize all of these revisions;

- The non-road source emissions inventories for the base year (2008) and interim year (2017) will be revised to account for errors that were discovered in the inputs to the NONROAD model used to develop the inventories. Additionally, it was discovered that aircraft takeoff and landing emissions were not properly accounted for in the original plan for the base year (2008) and interim year (2017), and revisions have been made to correctly add these emissions to these inventories included in the plan. In this plan, non-road source NO<sub>x</sub> emissions are lower than the 2011 plan because the Air Program used the newer version of the 2008 National Emissions Inventory (NEI version 3) in this plan. Commercial marine NO<sub>x</sub> emissions decreased when compared to the 2011 plan because they were found to be overestimated in the 2008 NEI version 2. The new future year (2025) non-road emissions inventory included in this document was calculated using the appropriate modeling inputs and properly accounts for air craft take offs and landings. The plan and appendices have been updated to accurately characterize all of these revisions.
- On May 21, 2012, the EPA revoked the 1997 8-hour ozone standard for the purposes of Transportation Conformity [77 FR 30160]. Chapter 6 has been revised accordingly.
- For the purposes of increased clarity, e.g. the plan was updated to better show which CAA redesignation request & maintenance plan requirements are addressed by which sections of the document.
- Minor changes and corrections have been made throughout the plan and appendices to fix typographical errors, revise references, and to ensure the plan and appendices are reflective of the updates that have been made.

Although this document is an update to the 2011 plan, it is stand-alone and therefore substantially restates the contents of the 2011 plan except for the changes mentioned above. The original 2011 plan submittal may be found at <http://www.dnr.mo.gov/env/apcp/docs/stl-ozone-maintplan-redesig.pdf> .

# 1. Background/Introduction

## *1.1 National Ambient Air Quality Standard for Ozone*

Congress first enacted the Clean Air Act (CAA) in 1970. It was last amended in 1990. The CAA requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. There are two categories of NAAQS that are set by the EPA. The primary standards are health-based standards and are designed to establish limits to protect public health. The secondary standards are commonly referred to as “welfare-based standards” and are meant established to protect public welfare. These limits are intended to protect against decreased visibility, and damage to crops, animals, and buildings. Currently there are six pollutants with established primary level NAAQS. These pollutants are carbon monoxide, lead, total suspended particles, sulfur dioxide, nitrogen oxide, and ozone. These pollutants are referred to as “criteria” pollutants. The EPA establishes a standard for each criteria pollutant. If an area is found to exceed this value, it is classified as a nonattainment area for that specific pollutant. The states and/or tribes responsible for the affected area must then develop and carry out strategies and measures to attain the NAAQS. The goal for any areas designated as “nonattainment” is to be reclassified by the EPA to attainment for the pollutant.

The CAA requires that the EPA carry out a periodic review of the NAAQS. This review must include the scientific basis for (1) changing or reaffirming the NAAQS and (2) implementing the NAAQS. As required by the CAA, the EPA reviewed the one-hour NAAQS for ozone in the 1990’s and determined that a new standard was needed. This new standard was finalized in July of 1997. The replacement of the ozone NAAQS was pursuant to subpart 1 of the CAA, Title I, Part D.

The 1997 ozone standard is based on an eight-hour averaging period. This standard defines an area as in attainment of the 8-hour ozone standard when the three-year average of the annual fourth highest daily maximum 8-hour ozone concentration is less than or equal to 0.08 parts per million (ppm) (or 80 parts per billion (ppb)). Due to rounding conventions in the 1997 standard, an 8-hour average ozone concentration above 0.085 ppm is considered an exceedance of standard. When the three-year average value is 0.085 ppm or greater, a violation of the ozone NAAQS has occurred. A violation of the eight-hour standard is determined on a per monitor basis. Monitor readings (and exceedances) at one location do not have any effect on the readings at another.

The EPA was challenged in court on the new 8-hour standard, and the one-hour standard was reinstated. The Supreme Court upheld the constitutionality of 8-hour standard, but ruled that the EPA could not implement the new standard under subpart 1 of the CAA without considering the CAA’s subpart 2 requirements. Subpart 2 specifies area classification for nonattainment areas with additional control strategy requirements for each classification. The rule was remanded to the EPA in order to develop a reasonable approach to implement the new standard while considering the roles of subparts 1 and 2 in the implementation.

Phase I of the Final Rule to Implement the 8-Hour Ozone National Ambient Air Quality Standard was released on April 30, 2004 [[69 FR 23951](#)] and became effective on June 15, 2004.

Phase II of the rule was published on November 29, 2005 [70 FR 71612] and became effective on January 30, 2006. These two rules provided specific obligations for state ozone plan revisions. Under these rules, the St. Louis 8-hour Ozone Nonattainment Area was subject to a number of obligations.

## ***1.2 Geographical Description of the St. Louis Nonattainment Area***

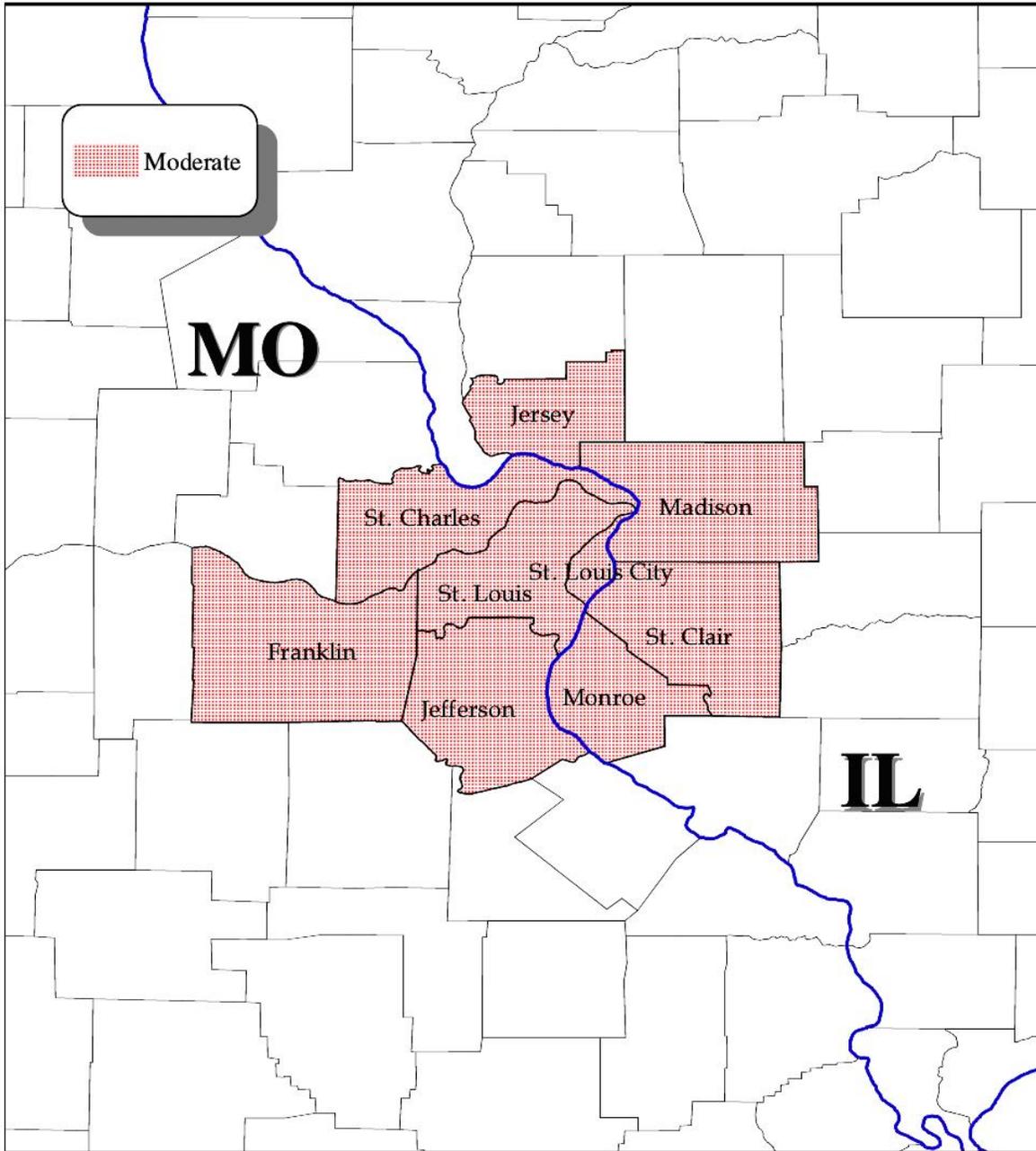
The St. Louis Ozone Area is a bi-state nonattainment area that violated the 1997 8-Hour Ozone Standard (see Figure 1-1). In April 2004, EPA designated the St. Louis area as nonattainment with a classification of moderate [69 FR 23858]. For more information on the NAAQS designation process, see paragraph 1.3.2 of this document. The following is a list of the counties contained in the St. Louis Missouri-Illinois 8-hour ozone nonattainment area:

- St. Louis County, MO
- St. Louis City, MO
- St Charles, MO
- Jefferson County, MO
- Franklin County, MO
- Madison County, IL
- St. Clair County, IL
- Monroe County, IL
- Jersey County, IL

Under the final implementation requirements, the St. Louis area was to demonstrate attainment of the 1997 8-hour ozone standard by June 15, 2010. On April 30, 2012, EPA published a final action that the St. Louis area attained the standard by this deadline date [77 FR 25363].

Figure 1-1 1997 8-Hour Ozone Nonattainment Area for St. Louis (MO-IL) Region

## 8-Hour Ozone Nonattainment Area St. Louis, MO-IL



Source: USEPA, Office of Air Quality Planning and Standards, Green Book, August 03, 2004

## **1.3 St. Louis Ozone History**

### **1.3.1 One Hour Ozone Standard**

The Clean Air Act Amendments of 1990 (CAA) required states with nonattainment areas like St. Louis to develop revisions to the SIP to bring those areas into compliance. St. Louis was classified as a moderate ozone nonattainment area for the 1-hour standard. The CAA included very specific requirements for areas under each classification. The most important requirement for moderate areas was that attainment was to be achieved by 1996. Under the Amendments, failure to attain by the assigned date would result in reclassification to the more demanding classification of “serious.” Serious areas were subject to an additional set of requirements.

St. Louis was required to achieve a minimum of 15 percent reduction in emissions of VOCs, and submit this Rate of Progress (ROP) plan for achieving that reduction. On November 15, 1993 the Air Program submitted an initial ROP plan. Subsequent amendments to the ROP plan were made in 1994, 1995, and 1996. These amendments were the result of refinements to inventory calculations and improvements in the documents.

Although the ROP requirement was one of the key obligations of the CAA, the primary obligation was to develop a plan to achieve the national ozone standard in St. Louis. This plan is referred to as an attainment demonstration. An attainment demonstration was prepared and submitted to the EPA on October 25, 1995, which showed that the area would attain the air quality standard by 1996. The St. Louis area, however, failed to attain the 1-Hour ozone standard by 1996. The States of Missouri and Illinois proceeded with a request to extend the attainment deadline.

To qualify for an attainment deadline extension, Missouri and Illinois had to demonstrate three requirements: that the area was significantly affected by ozone or ozone precursors transported from upwind sources; that all necessary local control measures have been implemented; and that the states had made the necessary administrative submittals. As part of this attainment date extension, additional photochemical grid modeling was conducted. This modeling included a number of regional control measures, in addition to the 15 percent ROP controls such as Reformulated Gasoline (RFG) and the enhanced Vehicle Inspection/Maintenance (I/M) programs. The attainment demonstration submitted as part of the 1-hour extension request focused on the evaluation of emission reductions that were expected from electric generating utilities resulting from EPA’s regional NO<sub>x</sub> SIP call. This SIP call resulted from EPA’s determination that ozone transport from one region to another interfered with some states’ ability to attain their ozone air quality goals. The NO<sub>x</sub> SIP call applied to twenty-two states in the eastern United States, and included emission reductions from sources located in the eastern one-third of Missouri. The study showed that both regional NO<sub>x</sub> controls and local VOC controls were necessary for attainment of the 1-hour standard, and that St. Louis was significantly affected by ozone transport and emissions from other states, and therefore, qualified for the attainment date extension. St. Louis was granted the extension, and subsequently attained the 1-hour ozone standard.

### **1.3.2 1997 8-Hour Ozone Standard**

#### **1.3.2.1 1997 8-Hour Ozone Boundary Designations**

EPA promulgated the 8-hour ozone standard in June 1997. The new standard was set 0.08 parts per million (ppm) averaged over 8 hours and replaced the 1-hour ozone standard. An exceedance of the 8-hour ozone standard occurs when a monitor measures ozone above 0.084 ppm (per the rounding convention). A violation of the standard occurs when the average of the annual fourth highest daily maximum 8-hour ozone values over three consecutive years is greater than or equal to 0.085 ppm. This three-year average is called the design value for the monitor. The three-year period from 1997-1999 were used for the purposes of designation. The design value for the St. Louis Area was based on the monitor in the region with the highest design value. This monitor is located in West Alton, MO and had a three year design value of 0.95 ppm. Areas such as St. Louis which had design values that ranged from 0.92 to 0.107 ppm were classified as moderate ozone nonattainment areas.

Boundary designation recommendations under the 1997 standard were developed using guidance published by EPA on March 28, 2000 and titled “*Boundary Guidance on Air Quality Designations for the 8-Hour Ozone National Ambient Air Quality Standards.*” The boundary recommendation for the 8-hour standard was identical to the old 1-hour boundary. It included the City of St. Louis and the counties of St. Louis, Franklin, Jefferson, and St. Charles. This recommendation was based on an in-depth technical evaluation based on EPA guidance. The Air Program sought stakeholder input. During the workgroup process, many complex issues were raised and discussed.

In July 2000, on behalf of the Governor, the Air Program sent the original recommendation regarding the classification of counties under the revised ozone standard. These recommendations were based on EPA guidance released on June 25, 1999 and March 28, 2000. Based on 1997-1999 air quality data, the Air Program recommended the same boundary for the 8-hour ozone nonattainment area as was used for the previous one-hour ozone nonattainment area. Based on the litigation surrounding the 1997 NAAQS (discussed in section 1.1) no formal action was taken on the initial boundary designation submittal. EPA requested updated, revised, or new designation recommendations and documentation from each state governor be submitted to the Regional Administrator by July 15, 2003. These recommendations were to be based on 2000-2002 quality assured air quality monitoring data.

Based on the input from stakeholders and the technical review, the Air Program presented a proposed boundary recommendation to the Missouri Air Conservation Commission (MACC) on June 26, 2003, and it was adopted on July 24, 2003. The nonattainment area boundary recommended remained unchanged from the 2000 recommendation and the 1-hour ozone designations. The Department submitted the recommendation to EPA on August 2, 2003.

In letters received December 4 and 12, 2003, the EPA stated that they intend to modify the boundary recommendations for eight-hour ozone nonattainment areas. The EPA intended to modify the recommendation to include St. Genevieve County. In response to this EPA comment, the Department offered an alternative, involving addressing upwind NOX emissions rather than including all of Ste. Genevieve County. On March 25, 2004, the MACC signed a resolution committing the Department to promulgate a rule controlling emissions from large

NOx sources upwind and outside of the St. Louis nonattainment area. This rule, 10 CSR 10-6.345 *Control of NOx Emissions From Upwind Sources*, was subsequently promulgated and became effective on December 30, 2006.

On April 30, 2004, EPA classified the St. Louis area as a moderate nonattainment area for the new eight-hour ozone standard [69 FR 23858]. The area's boundaries were designated as recommended and excluded Ste. Genevieve County. The state then had three years to develop the St. Louis nonattainment area 8-Hour Ozone SIP Revision.

#### 1.3.2.2. 1997 8-Hour Ozone Implementation Plan

The EPA's 8-hour ozone implementation rule required a number of elements for an approvable SIP revision. These elements included: an emissions inventory; attainment demonstration; Reasonably Available Control Technology (RACT) requirements; a ROP demonstration; a demonstration that New Source Review (NSR) permitting met all EPA requirements; motor vehicle emissions budgets to meet both the rate of progress and attainment; a discussion of specific individual area controls; and identification of contingency measures in case the area was not able to meet its attainment deadline.

Extensive work, effort and resources were required to develop all elements of the implementation plan within the time frame established by EPA. The final result of the evaluations and the modeling of available data showed that the St. Louis Nonattainment Area would attain the 1997 standard by the 2010 deadline.

Per the implementation rule, the RACT demonstration was required to be completed prior to other elements of the SIP revision. It was submitted to EPA following adoption by the MACC on December 6, 2006. All other required elements of the revision were submitted as part of, or concurrent with, the 2007 revision to the SIP. The I/M portion of the SIP was resubmitted as a separate revision at a later date due to subsequent changes that were made in the program as the result of new state laws.

A public hearing of the 8-Hour ozone nonattainment plan SIP revision was held on April 26, 2007, before the MACC. Comments were received from the EPA and the East-West Gateway Council of Governments. A number of document edits were made in response to these comments, but no substantive changes to control strategies were needed. These revisions were presented on May 31, 2007, and adopted by the Commission.

The eight-hour ozone plan was submitted to the EPA on June 13, 2007, meeting the June 15, 2007 federal deadline. The plan showed that the St. Louis non-attainment area will attain the 1997 NAAQS for ozone by the 2010 deadline.

Attainment of the 1997 NAAQS 8-Hour Ozone Standard was achieved following the 2009 ozone season, allowing for the development of a request for redesignation and maintenance plan.

### **1.3.3 New NAAQS Revision: 2008 8-Hour Ozone Standard**

On March 27, 2008, the U.S. Environmental Protection Agency (EPA) released a revised 8-hour ozone standard [73 FR 16436]. This revision lowers the ozone standard to 0.075 ppm (or 75 ppb).

With a revised NAAQS, the CAA requires states to review air quality monitoring data and submit ozone boundary designation recommendations. In March 2009, Missouri submitted its original boundary recommendation for the 2008 ozone NAAQS to EPA, based on the ozone air quality monitoring data for the three years of 2005–2007. Then in December 2011, Missouri updated the boundary recommendations based on air quality data for the three years of 2008–2010. More information on Missouri’s boundary designation recommendations may be found at: <http://dnr.mo.gov/env/apcp/naaqsboundarydesignations.htm>.

On May 21, 2012, EPA finalized the area designations. The St. Louis area was designated nonattainment area and classified as marginal for the 2008 ozone standard [77 FR 30088]. The boundaries of the Missouri portion of the nonattainment area remained the same as for the 1997 ozone standard but its classification changed from moderate. Marginal nonattainment areas have until December 31, 2015 to attain the 2008 Ozone NAAQS [40 CFR 51.1103].

Since the St. Louis Ozone Area is a bi-state nonattainment area, Illinois went through a similar designation process for its portion – the Metro-East side of the St. Louis area. For the Illinois portion under the 2008 ozone NAAQS, Jersey County is no longer designated as nonattainment as it was for the 1997 ozone standard. For more information on EPA’s final state designations, see - <http://www.epa.gov/glo/designations/2008standards/state.htm>.

Lastly, because, air quality standards are periodically revisited pursuant to the CAA, another revision to the Ozone NAAQS is anticipated for 2015.

### **1.4 Current Status / Background Summary: 1997 Ozone NAAQS**

On June 9, 2011, EPA published a final clean data determination in the Federal Register stating that the St. Louis ozone nonattainment area covering both Missouri and Illinois had attained the 1997 8-hour ozone standard based on three consecutive ozone seasons (2008-2010) of quality-assured ambient air monitoring data [76 FR 33647, June 9, 2011]. On December 16, 2013, the Air Program submitted a letter to EPA certifying that the most recent three years (2011-2013) of quality-assured ambient air quality data is in compliance with the 1997 ozone NAAQS. Information regarding the air monitoring network and air quality monitoring data are included in chapter 3 of this document.

CAA Section 107 establishes specific requirements to be met in order for a nonattainment area to be considered for redesignation. Clean air quality data is one of those requirements. The state must demonstrate that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the SIP and other federal requirements. The development of a maintenance plan is another. This document addresses the maintenance plan requirements, and includes additional information on the permanent and enforceable

measures used to demonstrate attainment and continued compliance with the 1997 8-hour ozone NAAQS.

In 2011, the Air Program submitted the first version of this redesignation/maintenance plan but the plan was not approved at that time due to litigation surrounding the federal interstate air pollution transport rules: CAIR & its successor, CSAPR.

The District of Columbia Circuit Court ruled to vacate CSAPR and directed EPA to continue implementing CAIR while awaiting an acceptable replacement rule. Since CAIR remains in effect until the Supreme Court makes a decision or a satisfactory replacement rule is enacted, the emission reductions from CAIR are permanent and enforceable.

As a result, in 2013, the Air Program decided to proceed once again with the redesignation request. This document serves that purpose as an updated revision to the original 2011 plan. More information on this may be found in the *Foreword* at the beginning of this document and elsewhere in this plan.

Despite a newer more protective standard, the redesignation to attainment for the St. Louis area under the 1997 Ozone standard, is important to —

- Demonstrate that St. Louis metro ozone air quality concentrations are improving and are on a continued downward trend;
- Show that air quality goals are being met in the St. Louis area as a result of permanent and enforceable emission reductions;
- Establish a contingency plan that will act as a safeguard and backstop against potential future elevated ozone concentrations in the St. Louis area; and
- Terminate uncertainty about future planning obligations under the 1997 Ozone NAAQS prior to it being revoked so that resources can be focused on the new more protective standard(s).

## 2. Redesignation and Maintenance Plan Requirements

An area designated as nonattainment for a pollutant can be redesignated to attainment if specific conditions are met. Missouri has followed the EPA published Memorandum entitled, “Procedures for Requests to Redesignate Areas to Attainment”, from John Calcagni, Director, Air Quality Management Division, dated September 4, 1992, in preparing the redesignation demonstration and the maintenance plan. The memorandum provides guidance regarding the processing of requests for redesignation of nonattainment areas to attainment for ozone, carbon monoxide, particulate matter, sulfur dioxide, nitrogen dioxide, and lead.

Furthermore, the CAA, lists five (5) obligations that the EPA must meet during the redesignation process. Section 107(d)(3)(E) states:

The Administrator may not promulgate a redesignation of a nonattainment area (or portion thereof) to attainment unless –

- (i) the Administrator determines that the area has attained the national ambient air quality standard;
- (ii) the Administrator has fully approved the applicable implementation plan for the area under section 110(k);
- (iii) the Administrator determines that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the applicable implementation plan and applicable Federal air pollutant control regulations and other permanent and enforceable reductions;
- (iv) the Administrator has fully approved a maintenance plan for the area as meeting the requirements of section 175A; and
- (v) the State containing such area has met all requirements applicable to the area under section 110 and part D.

These five (5) obligations must be met before EPA can redesignate an area to attainment; however, a state may submit both the redesignation request and the maintenance plan at the same time so that rulemaking on both may proceed on a parallel track. This document outlines Missouri’s redesignation request and demonstrates how the state supports EPA’s promulgation obligations towards the redesignation of the St. Louis nonattainment area to attainment under the 1997 ozone NAAQS.

### 2.1 *Attainment of the Standard*

CAA Section 107(d)(3)(E)(i) states that EPA must determine that the area is attaining the applicable NAAQS. For the 1997 NAAQS, this determination must be demonstrated using the design value based on the average of the last three (3) years’ 4<sup>th</sup> highest maximum daily 8-hour average concentrations. This design value must be lower than the level of the NAAQS, 0.08 ppm. The state submitted a Clean Data Request to the EPA on December 4, 2009. On June 9, 2011, EPA published a final clean data determination that the St. Louis ozone nonattainment area has attained the 1997 ozone standard [76 FR 33647]. Subsequently, on April 30, 2012, EPA stated that the St. Louis area had attained this standard by the three-years allowed after the moderate nonattainment classification pursuant to CAA Section 182(b) [77 FR 25363]. More information may be found in chapter 3 of this document which demonstrates how the St. Louis area has satisfied the redesignation requirement of CAA Section 107(d)(3)(E)(i) for NAAQS attainment.

## **2.2 Implementation Plan Approval**

The CAA requirement in Section 107(d)(3)(E)(ii) for redesignation states that the EPA administrator must have fully approved the applicable implementation plan for the area under Section 110(k). *The 2007 Revision of the State Implementation Plan for the St. Louis 8-Hour Ozone Nonattainment Area* was proposed for public hearing on April 26, 2007; was adopted by the MACC on May 31, 2007 and was submitted to the EPA on June 13, 2007. This ozone SIP was deemed to be complete on December 21, 2007.

As stated earlier, EPA has published a final rule in the Federal Register stating that the St. Louis ozone nonattainment area covering both Missouri and Illinois has attained the 1997 8-hour ozone standard based on three years of quality assured ambient air quality data [76 FR 33647, June 9, 2011]. Once an area attains the standard for a criteria pollutant, certain SIP element requirements that are developed to demonstrate and achieve attainment become unnecessary because the area has already attained the standard. These SIP elements that are tied to demonstration of attainment become suspended as long as the Clean Data Determination has not been rescinded. These particular SIP elements would never be required if the area is redesignated to a maintenance area for that pollutant. Guidance on this subject is found on page 6 of the EPA's Memorandum, *Procedures for Requests to Redesignate Areas to Attainment*, from John Calcagni, Director, Air Quality Management Division, dated September 4, 1992 which states "requirements for reasonable further progress ... will not apply for redesignations because they only have meaning for areas not attaining the standard."

This guidance is reaffirmed in EPA's April 6, 2011 Memorandum from Janet McCabe, Deputy Assistant Administrator, Office of Air Quality Planning and Standards, titled *Reasonable Consistency for the Administrative Requirements of State Implementation Plan Submittals and the Use of "Letter Notices"*. Attachment C of the 2011 McCabe memo details that suspensions are only valid while the area is in compliance with the standard and how the suspended requirements are relieved:

*Upon EPA's promulgation of a final Clean Data Determination for a nonattainment area, the obligation for the State to submit for such an area the attainment demonstration, associated reasonably available control measures, reasonable further progress plan, contingency measures, and other attainment-related planning requirements is suspended until such time as the area is redesignated to attainment, at which time the requirements no longer apply; or until EPA determines that the area has violated the NAAQS, at which time the obligations would again apply.*

As such, on June 21, 2011, the state withdrew the above mentioned 8-hour Ozone Attainment Demonstration and Reasonable Further Progress Demonstration, because the area has already attained the NAAQS. All emission reductions and control measures from the plan remain in place as permanent and enforceable because they are based on federal or SIP-approved state regulations or consent agreements. By withdrawing the attainment demonstration, the EPA administrator was no longer required to approve or disapprove this plan. The attainment demonstration is no longer applicable because the area has attained the standard. Missouri has submitted to EPA all applicable SIP provisions to ensure the protection of the standard. See section 2.5 of this document for a discussion regarding the applicable SIP elements required

under Section 110 and Part D of the CAA for the Missouri portion of the St. Louis nonattainment area for the for the 1997 8-ozone NAAQS, and see chapter 4 of this document for a discussion regarding the control measures in Missouri’s SIP that were used to attain the 1997 ozone NAAQS.

### ***2.3 Permanent and Enforceable Improvement***

Redesignation requirement (iii) of CAA Section 107(d)(3)(E) states that EPA must determine that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the applicable plan, applicable federal air pollutant control regulations and other permanent and enforceable reductions. Therefore, EPA must show that the improvement in air quality between the year that violations occurred, and the attainment year, is attributed to permanent and enforceable emission reductions. Chapter 4 of this document presents the emission reductions that were achieved from federal and state measures in the St. Louis area. The emission reductions are not based on temporary shutdowns or adverse economic conditions, but due to permanent and enforceable control measures. This plan includes a state commitment to continue to enforce all applicable requirements of past revisions to the SIP after the St. Louis ozone nonattainment area is redesignated to attainment thus satisfying CAA 107(d)(3)(E)(iii).

### ***2.4 Maintenance Plan Requirements***

The CAA redesignation requirement of Section 107(d)(3)(E)(iv) states that EPA must have a fully-approved maintenance plan for the area as meeting the requirements of CAA Section 175A. Under Section 175A, this 8-Hour Ozone Maintenance Plan is the State’s SIP revision to provide for continued attainment of the 1997 8-hour ozone NAAQS for the St. Louis nonattainment area for a period of at least ten years after EPA has formally redesignated the area to attainment. This maintenance plan and redesignation request has been prepared in accordance with the requirements specified in EPA’s guidance documents and in coordination with EPA Region 7 staff. Section 2.4 addresses how the following required maintenance plan elements of CAA Section 175A have been met in the subsequent correspondingly-numbered paragraphs:

1. A public hearing on the maintenance plan prior to adoption;
2. A comprehensive emissions inventory of the precursors of ozone completed for the “attainment year”;
3. A projection of the emissions inventory forward to a year at least ten years after redesignation and a demonstration that the projected level of emissions is sufficient to maintain attainment of the ozone NAAQS;
4. A commitment that, once redesignated, the state will continue to operate an appropriate monitoring network to verify maintenance of the attainment status;
5. A demonstration of legal authority to implement and enforce all control measures contained in the SIP;
6. Provisions for future updates of the inventory to enable tracking of emissions

levels, including an annual emissions statement from major sources;

7. Motor vehicle emissions budgets (MVEBs) for transportation conformity for the ten-year maintenance period;
8. A commitment to submit a revised maintenance plan eight years after redesignation;
9. A list of potential contingency measures and a commitment to enact and implement these measures expeditiously in the event that future violations of the NAAQS occur.

#### **2.4.1 Public Participation**

In accordance with Section 110(a)(2) of the CAA, the State of Missouri held a public hearing prior to adoption of this maintenance plan and the subsequent submittal to the EPA. The Air Program notified the public and other interested parties of an upcoming public hearing and comment period thirty (30) days prior to holding such hearing for this maintenance plan as follows:

- Notice of availability of the redesignation request and maintenance plan was posted on the Department of Natural Resources' Air Pollution Control Program website on February 24, 2014: <http://www.dnr.mo.gov/env/apcp/stateplanrevisions.htm>
- A public hearing date to receive comments on the redesignation request and maintenance plan was held on March 27, 2014 beginning at 9:00 am at the Lamplighter Inn, Missouri Two Meeting Room, 2820 N Glenstone Avenue, Springfield, MO 65803.
- A public comment period was opened after the redesignation request and maintenance plan was posted on the Department of Natural Resources' Air Pollution Control Program website on February 27, 2014 and closed on April 3, 2014, seven (7) days after the public hearing.

#### **Comprehensive “Attainment Year” Emissions Inventory of Ozone Precursors**

The state has developed a comprehensive emission inventory for the St. Louis ozone nonattainment area which includes the emissions from the following four source categories: point sources, area sources, on-road mobile sources and off-road mobile sources. The attainment year emission inventory, as required in the maintenance plan, is detailed in chapter 5 of this document.

#### **Projected Emission Inventory for 2025**

The state has compiled a list of growth and control factors and developed a county-level emission inventory for the future year of 2025 for the Missouri portion of the St. Louis nonattainment area. These projected emissions show substantial decreases between 2008 and 2025 in cumulative emissions that contribute to ground-level ozone concentrations in the ambient air. This future year emission inventory is detailed in chapter 5 of this document and the

state asserts that these projected future emission levels are sufficient to maintain attainment of the 1997 8-hour ozone NAAQS.

#### **2.4.4 Continued Monitoring Commitment**

The State of Missouri is committed to continue monitoring ambient ground-level ozone concentrations in the St. Louis area and throughout the state in accordance with 40 CFR Part 58 and EPA approved Annual Monitoring Plans. Missouri will continue to quality assure the ambient air monitoring data in accordance with 40 CFR 58 and submit the data into the AQS in a timely fashion. Detailed information about the ground-level ozone monitoring network in the St. Louis nonattainment area, along with further discussion about the state's continued monitoring commitment, can be found in chapter 3 of this document.

#### **2.4.5 Legal Authority to Implement and Enforce**

The Missouri Air Conservation Commission has the legal authority to develop, implement, and enforce regulations regarding air pollution including the requirements of this SIP submittal under Section 643.050 of the Revised Statutes of Missouri, also known as the Missouri Air Conservation Law.

#### **2.4.6 Provisions for Future Updates to the Emission Inventory**

The State of Missouri is committed to provide future inventory updates to enable tracking of emissions levels during the 10-year maintenance period. State Regulation *10 CSR 10-6.110, Reporting Emissions Data, Emission Fees, and Process Information*, requires that all installations located in the state that are required to obtain air quality construction or operating permits must report their annual emissions to the Air Program. The methods for calculating and reporting their emissions are detailed in each installation's applicable permit. The data collected on emissions inventory questionnaires from permitted sources form the basis of the point source emissions inventory that is compiled on an annual basis. In addition, in compliance with the Federal Air Emission Reporting Rule [73 FR 76539], the Air program develops a comprehensive emissions inventory of point, area, and mobile sources every three years.

#### **2.4.7 Motor Vehicle Emission Budgets**

The establishment of motor vehicle emission budgets (MVEBs) for the 1997 ozone NAAQS is no longer necessary with the revocation of the 1997 ozone NAAQS for Transportation Conformity purposes [77 FR 30160].

However, the State of Missouri has developed MVEBs for the (newer) 2008 ozone NAAQS in its Early Progress Plan [<http://www.dnr.mo.gov/env/apcp/docs/complete-epp-submittal-8-16-13.pdf>]. EPA has deemed these budgets to be adequate in a letter dated November 28, 2013. East-West Gateway Council of Governments, the metropolitan planning organization for the greater St. Louis area, has already started using these MVEBs for the revised ozone standard in their most recent Transportation Conformity determination cycle. It should be noted that the 2008 ozone NAAQS is exactly the same form, but more stringent in concentration, than the 1997 ozone NAAQS. More information on Transportation Conformity may be found in chapter 6 of this document.

#### **2.4.8 Commitment to Revise Plan**

Under CAA Section 175A, an area designated as maintenance for a NAAQS is required to submit a second maintenance plan eight (8) years after redesignation of any area as an attainment area under Section 107(d). This second maintenance plan is intended to maintain the NAAQS for ten (10) years after the expiration of the initial ten year period. The Air Program recognizes the importance of an up-to-date, current maintenance plan, and commits to updating it as necessary.

#### **2.4.9 Contingency Measures**

The State of Missouri is committed to maintaining compliance with the 1997 8-hour ozone standard. If future violations of the standard take place, the state will enact contingency measures as expeditiously as possible, that will allow for the area to come back in compliance with the standard as quickly as feasible. Further information about this commitment to enact contingency measures, and a potential list of contingency measures that would be evaluated if the area falls out of compliance with this standard in the future are located in chapter 7 of this document.

### **2.5 Section 110 and Part D Requirements**

The CAA requirement in Section 107(d)(3)(E)(v) for redesignation states that, all the requirements of Section 110 *Implementation Plans* and Part D of the CAA that were applicable prior to submittal of a complete redesignation request must be met.

#### **2.5.1 Section 110 Requirements**

On May 8, 2007, EPA approved the Missouri SIP to address the requirements of Section 110(a)(2)(D)(i) of the CAA for the 1997 8-hour ozone NAAQS [72 FR 25975]. In addition EPA approved Missouri's SIP submission addressing the remaining ozone NAAQS infrastructure SIP elements of CAA 110(a)(2) for the entire state on July 11, 2011 [76 FR 40619]. All other CAA Section 110 provisions are administrative, procedural or options that do not require a submission on behalf of the State.

#### **2.5.2 Part D Requirements**

Certain requirements under Part D of the Clean Air Act (Nonattainment Plan Provisions) are suspended when a nonattainment area achieves the NAAQS because these requirements are related to the attainment of the air quality goal as discussed above in section 2.2 of this document. Thus the intention of these requirements has been fulfilled with attainment of the NAAQS without the necessity of further submittals as long as the area's Clean Data Determination has not been rescinded.

Other requirements under Part D of the Clean Air Act remain applicable despite the clean data determination because they are not directly related to attainment of the NAAQS. The Part D elements that are relevant and applicable to this redesignation process are found in CAA Sections 172(c) and 182(b). Section 172(c) pertains to nonattainment plan provisions for all NAAQS, while 182(b) elements are specific to moderate ozone nonattainment areas such as the St. Louis area under the 1997 NAAQS. The list below outlines the pertinent elements of these two CAA sections that remain applicable to the St. Louis moderate ozone nonattainment area under the

1997 NAAQS despite the Clean Data Determination along with a statement of how each element is addressed:

- Section 172(c)(3) *Emissions Inventory* (& Section 182(a)(1) *Inventory*): The 2002 Base Year Inventory for the Missouri Portion of the St. Louis Ozone Nonattainment area was approved on May 31, 2007 [72 FR 30272]. See section 4.1.
- Section 172(c)(5) *Permitting Requirements* (& Section 182(a)(2)(C) *Permitting Programs*): Missouri has a long-standing and fully-implemented New Source Review (NSR) permitting program for new major sources and significant modifications of existing sources under State rule 10 CSR 10-6.060, *Construction Permits Required*. See section 5.4.
- Section 182(b)(2) *Reasonably Available Control Technology*: The St. Louis ozone moderate nonattainment area has an approved VOC RACT Demonstration [79 FR 580] and a NO<sub>x</sub> RACT waiver [76 FR 43598] for the 1997 ozone NAAQS. See section 4.3.
- Section 182(b)(3) *Gasoline Vapor Recovery*: The St. Louis moderate ozone nonattainment area has a refueling vapor recovery program implemented through State rule 10 CSR 10-5.220 *Control of Petroleum Liquid Storage, Loading and Transfer*. The Air Program is currently developing a revision to this rule to account for the federal declaration of widespread use of onboard refueling vapor recovery (ORVR) technology and Stage II waiver [77 FR 28772, May 16, 2012]. See paragraph 5.1.2.
- Section 182(b)(4) *Motor Vehicle Inspection and Maintenance*: The Inspection/Maintenance (I/M) program for the St. Louis moderate ozone nonattainment area, known as the Gateway Vehicle Inspection Program (GVIP), is established by State rule 10 CSR 10-5.381 *On-board Diagnostics Motor Vehicle Emissions Inspection*.
- Section 182(a)(3)(B) *Emissions Statements*: The State complies with this requirement that stationary sources report their actual annual emissions of NO<sub>x</sub> and VOCs through State rule 10 CSR 10-6.110 *Reporting Emission Data, emission Fees, and Process Information*. This obligation was deemed satisfied and approved into the SIP along with the 2002 Emissions Inventory mentioned above on May 31, 2007 [72 FR 30274].

### 3. Ozone Monitoring

**Note:** This chapter refers to ozone air quality monitoring data specifically for the years 2008-2010 as this is the three-consecutive year period upon which the original 2011 maintenance plan and redesignation request was based and the Clean Data Determination was made. An update for the most recent three-year period is found in section 3.7 of this document and a summary of recent years' ozone data may be found at <http://dnr.mo.gov/env/apcp/docs/ozonemonitordata.pdf>.

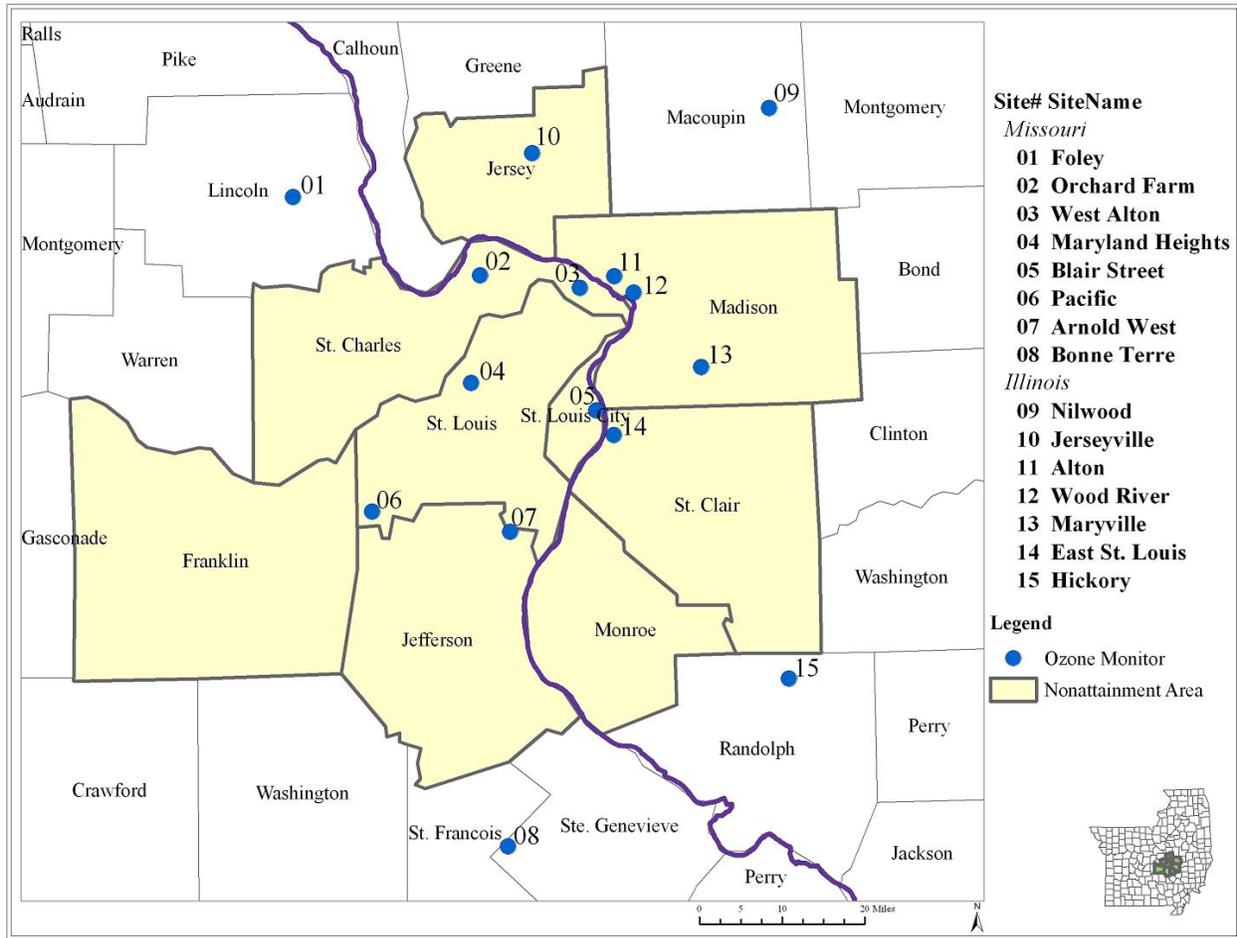
This chapter presents monitoring information that demonstrates St. Louis has attained the 1997 8-hour ozone standard of 0.08 ppm. As mentioned in chapter 2 of this document, attaining the NAAQS is one of the requirements for an area to be redesignated to attainment [CAA Section 107(d)(3)(E)(i)]. This demonstration is based on three consecutive ozone seasons of quality assured data monitored at the St. Louis ozone monitoring network as specified in 40 CFR 58. The ambient air quality monitoring data demonstrates that the area has attained the applicable NAAQS consistent with methods cited in the EPA guidance document: "*Procedures for Processing Request to Redesignate Areas to Attainment*". The following are requirements for the use of ambient air monitoring data in demonstrating that the area is attaining the applicable NAAQS:

- Monitoring data must show that the non-attainment area is attaining the NAAQS.
- The data should be collected and quality assured in accordance with 40 CFR 58 and recorded in the U.S. EPA Air Quality System (AQS) database in order for it to be available to the public for review.

#### 3.1 St. Louis Ozone Monitoring Network

In 2010, there were 15 sites that monitored ozone in the St. Louis Region. 11 of these sites are located within the St. Louis nonattainment area; 6 in Missouri and 5 in Illinois. In addition, Missouri and Illinois operate at least a monitor upwind and downwind of the nonattainment area. The upwind monitors are located in Bonne Terre, Ste. Genevieve County, Missouri and in Hickory, Randolph County, Illinois. Downwind monitors outside of the nonattainment area are located in Foley, Lincoln County, Missouri and Nilwood, Macoupin County, Illinois. Figure 3-1 shows all monitors in the St. Louis Ozone Monitoring Network.

**Figure 3-1 St. Louis Ozone Monitoring Network**



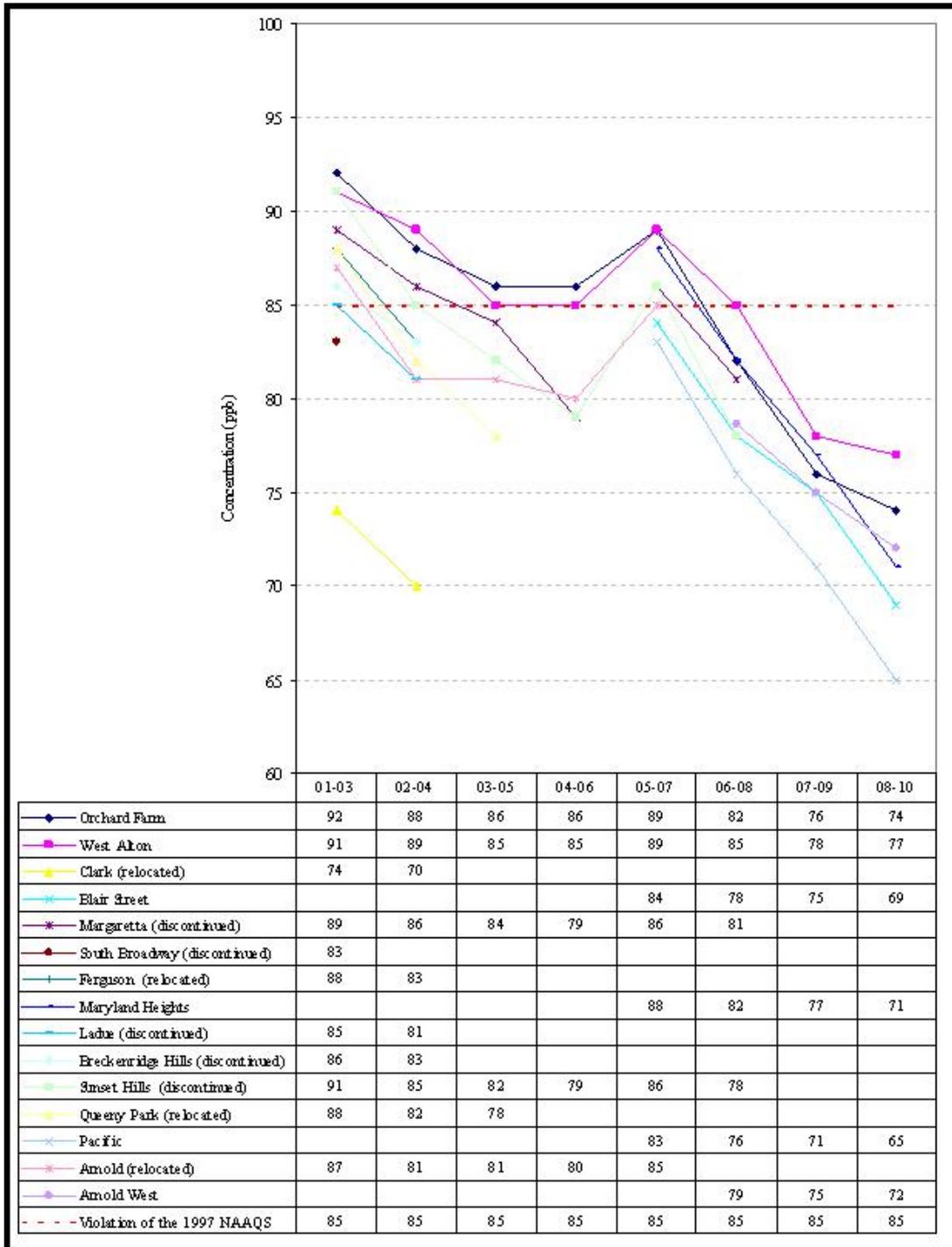
### 3.2 Ambient Air Monitoring Data

As previously mentioned, exceedances of the standard are determined on a per monitor basis. An exceedance of the standard occurs any time that an 8-hour average value is greater than 0.084 ppm. A monitor can exceed the 8-hour standard and not violate the standard. A violation of the standard at a specific monitor is determined by taking the fourth-highest, eight-hour average reading at a monitor for each of three consecutive years and averaging them together. The eight-hour ozone standard is 0.08 ppm and, due to rounding, a monitor must have a fourth highest eight-hour, three-year average reading of 0.085 ppm (85 parts per billion, or ppb) or higher for it to be considered a violation of the standard.

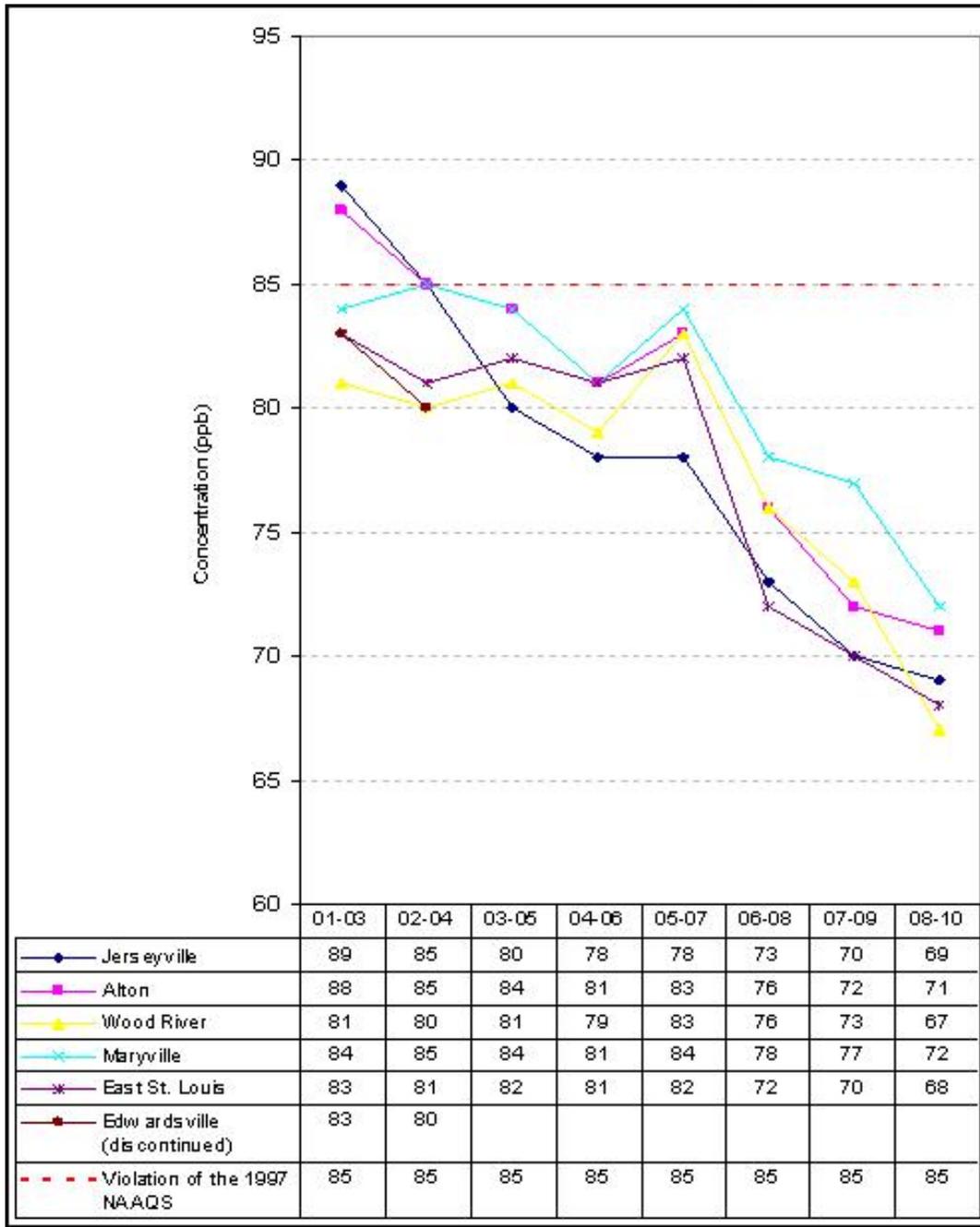
Design values are calculated by averaging the annual fourth-highest daily maximum 8-hour ozone concentrations over the three consecutive years (40 CFR Part 50). The standard at a site is met when the site's design value is less than or equal to 0.084 ppm (84 ppb). Design values are used as indicators of a region's air quality. The higher a design value for a monitor, the poorer the air quality is in that area. Along the same lines, if an area shows an increasing design value over a number of years, monitoring data is indicating that the air quality is worsening.

Figures 3-2 and 3-3 show the design value trends for the monitors in the Missouri portion of the St. Louis nonattainment area and the Illinois portion of the St. Louis nonattainment area, respectively. As indicated by the trends in the figures, ozone concentrations have decreased at all monitors, indicating improved air quality throughout the St. Louis region. Within the Missouri portion of the St. Louis nonattainment area, there were a total of 11 sites that violated the 1997 standard according to 2001-2003 air monitoring data (Figure 3-2). During the same time period of 2001-2003, two sites in the Illinois portion of the St. Louis nonattainment area also violated the 1997 standard (Figure 3-3). As of the three-consecutive year period ending in 2010, all sites in the area, , were in compliance of the standard, as shown by the design value data in Figures 3-2 and 3-3, as well as the comparison maps in Figure 3-4. Sites that have been discontinued or relocated show design values below the standard at the time of discontinuance or relocation (Figures 3-2 and 3-3).

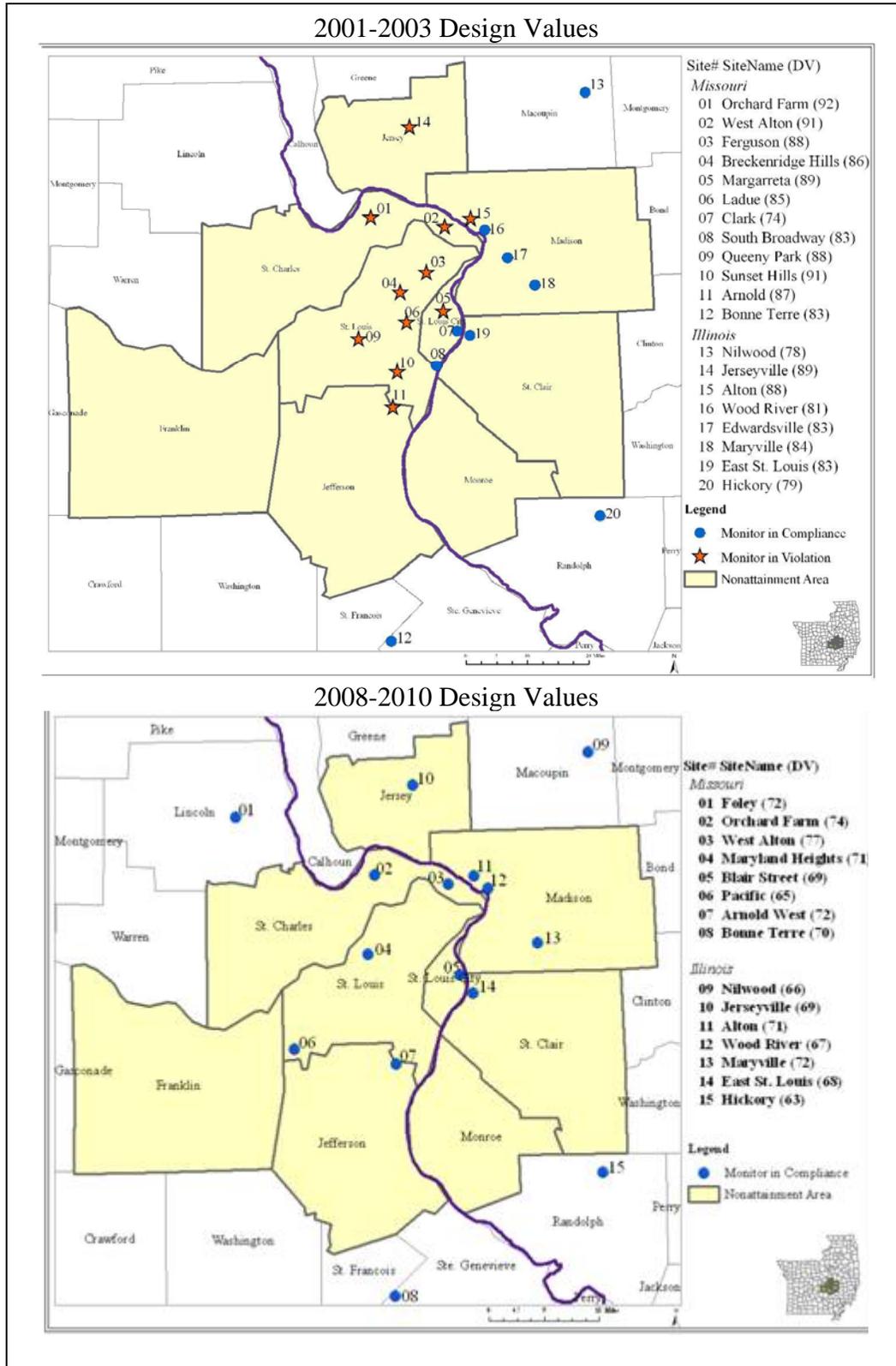
**Figure 3-2 2001-2010 8-hour Ozone Design Value Trends - MO**  
 St. Louis Nonattainment Area, MO (1997 NAAQS = 84 ppb)



**Figure 3-3 2001-2010 8-hour Ozone Design Value Trends - IL**  
 St. Louis Nonattainment Area, IL (1997 NAAQS = 84 ppb)



**Figure 3-4 2001-2003 & 2008-2010 Design Values Comparison**  
 St. Louis Nonattainment Area 8-hour Ozone Design Values (1997 NAAQS = 84 ppb)



### 3.3 St. Louis Ozone Monitoring Data Analysis

The St. Louis area’s compliance with the 1997 ozone NAAQS is determined by comparing the area’s calculated design values to the ozone standard. As described previously, design values are calculated at each monitor by averaging the annual fourth-highest daily maximum 8-hour ozone concentrations over the three consecutive years (40 CFR Part 50). The standard at a site is met when the site’s design value is less than or equal to 84 ppb.

The design value for the entire St. Louis nonattainment area is determined by comparing all of the design values for the monitors in the nonattainment area. The area’s design value is determined by the single highest individual monitor’s design value for each three consecutive ozone season averaging period. The area’s status of attainment or nonattainment is determined by this design value. For the eight-hour ozone standard, the design value at all monitors for the three-year time periods from 2008 through 2010 did not exceed 0.084 ppm, and thus achieved attainment for the St. Louis nonattainment area. The calculated 2008-2010 8-hour design values for sites in the St. Louis nonattainment area are presented in Table 3-1. As shown in the table, all sites three-year design values are less than the 1997 standard, demonstrating that the St. Louis area has attained the 8-hour air quality standard. The St. Louis nonattainment area’s design value monitor would be the West Alton monitor, due to its design value being the highest. The West Alton monitor is bold in Table 3-1.

**Table 3-1 2008-2010 St. Louis 8-Hour Design Values**

(1997 NAAQS = 84 ppb)

County	Monitoring Sites	2008 4 <sup>th</sup> High	2009 4 <sup>th</sup> High	2010 4 <sup>th</sup> High	2008-2010 Design Value
Missouri					
St. Charles	Orchard Farm	72	73	77	74
<b>St. Charles</b>	<b>West Alton</b>	<b>76</b>	<b>71</b>	<b>84</b>	<b>77</b>
St. Louis City	Blair Street	73	65	71	69
St. Louis	Maryland Heights	69	70	76	71
St. Louis	Pacific	64	64	69	65
Jefferson	Arnold West	70	70	77	72

### 3.4 Missing Data Under the 1997 8-Hour Ozone Standard

Eight-hour ozone attainment is determined by a three-year average of the annual fourth highest daily maximum. Missing days are of importance only in determining whether sufficient data was sampled to determine compliance. A monitoring day must include 18 valid eight-hour averages for a daily maximum to be determined. To calculate a design value, an average of 90% of the possible daily maximums over a three year period must be complete, with no single year having less than 75% completeness. The final result is that no more than 53 missed days in one year, or 64 missed days total for the three-year period are allowed. If these criteria are not met, then compliance with the 8-hour ozone standard cannot be established. To date, acceptable monitoring has been maintained and exceeded in the Missouri portion of the St. Louis nonattainment area for the 8-hour ozone standard.

### **3.5 Quality Assurance Program**

Ambient air monitoring data from the Missouri ozone network is quality assured in accordance with 40 CFR Part 58 and the Missouri Quality Assurance Project Plan (QAPP). The QAPP outlines standard operating procedures for operating the network and validating the data. In addition the network is reviewed annually through the Annual Monitoring Plans, according to 40 CFR Part 58.10. A site can either be discontinued or relocated based on the annual review and with an approval from the EPA. The quality assured data collected at the sites is submitted in the Air Quality System (AQS) and is available for public review as outlined in 40 CFR Part 58. Illinois EPA follows a similar quality assurance system.

### **3.6 Continued Monitoring Commitment**

The Air Program is committed to continue operating the appropriate ozone network in the St. Louis area, in accordance with 40 CFR 58 and approved Annual Monitoring Plans, to verify the attainment status of the area. Missouri will continue to quality assure the ambient air monitoring data in accordance with 40 CFR 58 and submit the data to AQS in timely fashion. The St. Louis Metropolitan Statistical Area (MSA) satisfies and exceeds the minimum monitoring requirement for ozone [40 CFR 58 Appendix D, Table 2], revisions to the Ambient Air Monitoring Regulations [71 Federal Register 61240, October 17, 2006] note that –

*While the final rule of regulations requires fewer monitors than are now operating for ozone and PM<sub>2.5</sub>, as did the pre-existing monitoring rule, EPA does not intend to encourage net reductions in the number of ozone and PM<sub>2.5</sub> monitoring sites in the U.S. as a whole. The surplus in the existing networks relative to minimum requirements gives States more flexibility to choose where to apply monitoring resources for ozone and PM<sub>2.5</sub>.*

The Air Program is committed to continue monitoring ozone ambient air concentrations in the St. Louis area and throughout the state in accordance with 40 CFR Part 58 and EPA-approved Annual Monitoring Network Plans. Missouri will continue to quality assure the ambient air monitoring data in accordance with 40 CFR 58 and submit the data into the AQS in a timely fashion. Missouri's most recent proposed air quality monitoring network plan is available at: <http://dnr.mo.gov/env/apcp/monitoring/monitoringnetworkplan.pdf>. Also, visit EPA Region 7's Air Quality Monitoring Network plan site for more information or to review Missouri's previous approved network plans: [http://www.epa.gov/region07/air/quality/quality.htm#mo\\_air](http://www.epa.gov/region07/air/quality/quality.htm#mo_air).

### **3.7 Clean Data Determination**

On June 9, 2011, EPA published a final clean data determination in the Federal Register stating that the St. Louis ozone nonattainment area covering both Missouri and Illinois has attained the 1997 ozone standard based on three years of quality assured ambient air monitoring data [76 FR 33647]. Subsequently, EPA also determined that the St. Louis area had attained this standard by the regulatory deadline of June 15, 2010 [77 FR 25363, April 30, 2012]. On December 16, 2013, the Air Program submitted a letter to EPA certifying that the most recent three years (2011-2013) of quality-assured ambient air quality data is in compliance with the 1997 ozone standard.

## **4. Redesignation Request: Emission Inventory and Controls from 2002 - 2008**

A redesignation request must contain a demonstration that the improvement in air quality, between the year that violations occurred and the year that attainment was achieved, is based on permanent and enforceable emissions reductions. As described previously in chapter 3, three-consecutive ozone season monitoring periods are used to evaluate whether actual air quality attainment has been achieved. In this chapter, the “attainment year” refers to the first year (2008) of the three-year period (2008-2010) used to demonstrate attainment, and the base year refers to the mid-point year (2002) of the three-year period used to determine the nonattainment designation. The inventories detailed in this chapter for 2002 and 2008 include data categories for point, area, on-road mobile, and non-road emissions for NO<sub>x</sub> and VOC. Additional details for the base and attainment year inventories for 2002 and 2008 are found in Appendices A and B, respectively.

### ***4.1 Base Year and Attainment Year Inventories***

Table 4.1 is a comprehensive emissions inventory for the Missouri side of the St. Louis nonattainment area, including point, area, on-road mobile, and non-road sources for precursors of ground-level ozone (NO<sub>x</sub> and VOC) for the base year, 2002. Table 4.2 summarizes the emissions inventory for the Missouri side of the St. Louis nonattainment area for NO<sub>x</sub>, and VOC for the attainment year, 2008. Both the 2002 and 2008 inventories are based on actual activity levels. Illinois has an approved maintenance plan for their portion of the nonattainment area under the 1997 ozone NAAQS, which was approved by EPA on June 12, 2012 [77 FR 34819]. Therefore, this section only includes emissions inventories for the Missouri portion of the nonattainment area. The emissions inventories for the years 2002 and 2008 for the Illinois portion of the nonattainment area, which were included in Illinois’ maintenance plan, are provided for reference in Appendix H.

The 2002 base year inventory includes emissions from point, area, on-road mobile and non-road emissions. Table 4.1 states the 2002 emissions in tons/ozone season day, and summarizes the emissions by major source category and by pollutant for the St. Louis nonattainment area. On May 31, 2007, EPA approved Missouri’s 2002 Base Year Inventory for the Missouri Portion of the St. Louis Ozone Nonattainment area [72 FR 30272]. Summary tables of the 2002 anthropogenic emissions inventory for the St. Louis ozone nonattainment area may be found in Appendix A.

The 2008 emissions inventory listed in this chapter is listed in tons/ozone season day. In order to calculate the emissions in tons/ozone season day for the Missouri portion of the ozone nonattainment area, the Air Program followed the methods listed in Appendix B of this document. Briefly, for point sources, ozone season day emissions are calculated on the EIQ form 2.0Z, Ozone Season Information. The facility-reported maximum daily throughput during the ozone season is multiplied by the pollutant emission factor and reduced by control device to reach the ozone season daily emissions. For area sources, ozone season day emissions were calculated from Emissions Modeling Clearinghouse (EMCH) temporal allocation profiles that are Standard Classification Codes (SCC)-specific. Ozone season day emissions are typical of a Tuesday in July. See Appendix B-7 for the temporal allocation method tables. Appendix B-7

outlines this procedure for area sources, and gives an example. Non-road ozone season day emissions may be found in Appendix B-6.

Finally, for on-road mobile sources, emissions were created using Mobile6.2 via the National Mobile Inventory Model (NMIM) with 2008 vehicle miles traveled (VMT) data provided by the East West Gateway Council of Governments in coordination with the Interagency Council of Governments. The 2008 VMT data was generated from East-West Gateway's Traffic Demand Model and then compared to Highway Performance Monitoring System (HPMS) data. Through this comparison, calibration factors were developed and then applied to the VMT data from the Traffic Demand Model in order to estimate the actual 2008 VMT for the St. Louis nonattainment area. The NMIM National County Database (NCD) was updated with Missouri specific data. Please see Appendix B-4 for additional details regarding the 2008 on-road mobile emissions calculated using Mobile 6.2 via NMIM.

The EPA's Mobile6.2 emissions model was used to generate the mobile source emissions in this chapter in order to allow for a useful comparison between 2002 and 2008 mobile emissions. The mobile emissions generated for the 2002 emissions inventory used Mobile6.2, and it was necessary to use the same mobile emission model to compare the base and attainment year mobile source emissions. However, in chapter 5 of this document, the 2008 and 2025 mobile source emissions were generated using EPA's Motor Vehicle Emissions Simulator (MOVES). More information about the use of these two different emission models can be found in chapter 5 and Appendix B-5 of this document.

Tables 4-1 and 4-2 summarize the 2002 and 2008 average daily ozone season NO<sub>x</sub> and VOC emissions from the Missouri side of the St. Louis ozone nonattainment area, respectively. Table 4.3 shows the differences in inventories between these two years for each source category and pollutant of concern. As seen in Table 4-3, NO<sub>x</sub> emissions decreased by 121 tons per ozone season day, which is a reduction by nearly 1/3 (33%) from the 2002 levels. Meanwhile, total VOC emissions remained relatively stable, increasing by only 1.4 tons/day, which is less than 1%. As can be seen, VOC emissions decreased for every category except for area sources. The area source VOC increase is due to a change in the reporting of small, non-Title-V-permitted sources from the point category in 2002 to the nonpoint category in 2008, as well as numerous changes in the area source estimation methodologies and emission factors. The substantial reduction in NO<sub>x</sub> emissions between 2002 and 2008, along with other regional controls have resulted in the improved monitored ground-level ozone concentrations in the St. Louis nonattainment area attributable to the 1997 ozone NAAQS compliance.

**Table 4-1. 2002 VOC and NO<sub>x</sub> Emissions for the Missouri Side of the 1997 St. Louis 8-Hour Ozone Nonattainment Area (tons per ozone season day)**

<b>Source Category</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
Point Sources	127.2	32.7
Area Sources	19.4	71.3
On-Road Mobile Sources	159.0	68.1
Non-Road Sources	60.7	47.0
<b>Total</b>	<b>366.3</b>	<b>219.1</b>

**Table 4-2. 2008 VOC and NO<sub>x</sub> Emissions for the Missouri Side of the 1997 St. Louis 8-Hour Ozone Nonattainment Area (tons per ozone season day)**

<b>Source Category</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
Point Sources	88.8	18.0
Area Sources	6.5	99.5
On-Road Mobile Sources	96.2	57.9
Non-Road Sources	53.6	45.2
<b>Total*</b>	<b>245.2</b>	<b>220.5</b>

\*Note: Values may not total exactly due to rounding.

**Table 4-3. Comparing 2002 and 2008 VOC and NO<sub>x</sub> Emissions for the Missouri Side of the 1997 St. Louis 8-Hour Ozone Nonattainment Area (tons per ozone season day)**

<b>Source Category</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
Point Sources*	-38.4	-14.7
Area Sources*	-12.9	+28.2
On-Road Mobile Sources*	-62.8	-10.2
Off-Road Mobile Sources*	-7.1	-1.8
<b>Total**</b>	<b>-121.1</b>	<b>+1.4</b>

\*Note: A negative value indicates a decrease in emissions from 2002 to 2008.  
A positive value indicates an increase in emissions from 2002 to 2008.

\*\*Note: Values may not total exactly due to rounding.

#### ***4.2 Permanent and Enforceable Controls Used to Attain the Standard***

The St. Louis area was designated as nonattainment of the 1997 8-hour ozone NAAQS in 2004. Since that time, the implementation of permanent and enforceable reductions of NO<sub>x</sub> and VOC emissions have contributed to improvements in ground level ozone concentrations and to the attainment of the 1997 8-hour ozone NAAQS. The primary control measures used to attain the 1997 8-hour ozone standard include:

- New Source Performance Standards (NSPS)
- National Emissions Standards for Hazardous Air Pollutants (NESHAPS)/Maximum Achievable Control Technology (MACT) Standards
- Federal gasoline detergent additive rule
- NO<sub>x</sub> SIP Call
- Clean Air Interstate Rule (CAIR)
- Heavy-Duty Diesel Engine Standards
- Tier 2 Rule-Vehicle Standards
- Tier 4 Rule-Off Road Mobile Engine Standards
- Reformulated Gasoline (RFG)
- Gateway Vehicle Inspection Program

- National VOC Emission Standards for Consumer and Commercial Products (Part 59)
  - Automobile Refinishing Rule
  - Architectural and Industrial maintenance coating rule
  - Consumer Products solvent control rule
- Missouri State Rules

#### **4.2.1 Federal Emission Trading Programs and the NO<sub>x</sub> SIP Call**

The NO<sub>x</sub> SIP Call and CAIR required states to reduce emissions that are prohibited by the interstate transport provisions of the Clean Air Act Section 110(a)(2)(D)(i)(I). Both rules also established emission trading programs that states could use to reduce the transport of emissions that have significant impacts on downwind nonattainment and maintenance areas.

One outcome of the NO<sub>x</sub> SIP Call was the establishment of the NO<sub>x</sub> Budget Trading Program (NBP). The first year in which covered sources were required to comply with the NBP was 2003. Missouri complied with the requirements of the NBP through state rule *10 CSR 10-6.360 Controlling NO<sub>x</sub> Emissions From Electric Generating Units and Non-Electric Generating Boilers*, which required applicable sources in the eastern third of the state to participate in the NBP. Implementation of the NBP greatly reduced ozone season NO<sub>x</sub> emissions from large sources such as electric generating units (EGUs). According to data from CAMD's Website, the total ozone season NO<sub>x</sub> emissions from EGUs located in the St. Louis nonattainment area have been reduced by 4,942 tons (approx. 32.3 tons/ozone season day) from 2002 to 2008. These reductions are almost exclusively attributed to implementation of the NBP. In Missouri, three non-EGU boilers also participated in the NBP, specifically Trigen Units 5 and 6 and Anheuser Busch Unit 6.

Also in response to the NO<sub>x</sub> SIP Call, three other State rules were developed to control ozone season NO<sub>x</sub> emissions from covered sources in the eastern third of the state. The rules written to comply with the NO<sub>x</sub> SIP Call requirements include the statewide NO<sub>x</sub> rule *10 CSR 10-6.350 Emissions limitations and Emissions Trading of Oxides of Nitrogen*, which established a statewide NO<sub>x</sub> trading program for EGUs, *10 CSR 10-6.380 Control of NO<sub>x</sub> Emissions From Portland Cement Kilns*, which controls ozone season NO<sub>x</sub> emissions from cement kilns, and *10 CSR 10-6.390 Control of NO<sub>x</sub> Emissions From Large Stationary Internal Combustion Engines*. From 2002 to 2008, the NO<sub>x</sub> emission reductions from all point sources in the nonattainment area totaled 38.4 tons /ozone season day. This accounts for a more than 30% reduction.

CAIR, which was promulgated several years after the NO<sub>x</sub> SIP Call, established three emission trading programs that states could use to address transported emissions – the CAIR NO<sub>x</sub> ozone season trading program, the CAIR annual NO<sub>x</sub> trading program and the CAIR SO<sub>2</sub> trading program. The CAIR ozone-season NO<sub>x</sub> trading program replaced the NBP and the statewide NO<sub>x</sub> rule (10 CSR 10-6.350). In the St. Louis area, the CAIR ozone season NO<sub>x</sub> trading program required the same EGUs and the same three non-EGU boilers mentioned above to participate as were required under the NBP. However these three units have all been retired and received retired unit exemptions that prohibit these units from operating. The signed EPA retired unit exemption forms for these three units are included in this document as Appendix F.

The CAIR ozone-season NO<sub>x</sub> trading program, along with the CAIR annual NO<sub>x</sub> trading program began in 2009. In regards to the EGUs located in the St. Louis nonattainment area, the ozone season NO<sub>x</sub> requirements in CAIR were comparable to the requirements under the NO<sub>x</sub> SIP Call. However, CAIR had a significant impact on the EGUs located in the western two-thirds of the state, and these sources significantly reduced their ozone season NO<sub>x</sub> emissions. Some of the facilities in the western two-thirds of the state installed controls earlier than 2009 in anticipation of CAIR. While the NO<sub>x</sub> controls added in the western two-thirds of the state do not affect the NO<sub>x</sub> emissions inventory for the St. Louis nonattainment area, they did have a positive impact in reducing the transported or regional contribution of NO<sub>x</sub> emissions to the ozone monitors located in the nonattainment area.

It was anticipated that EPA's Cross-State Air Pollution Rule (CSAPR) would replace the CAIR trading programs beginning January 1, 2012. EPA promulgated CAIR on May 12, 2005 and the CAIR federal implementation plans on April 26, 2006. In 2008, the US Court of Appeals for the DC Circuit remanded CAIR to the agency, and EPA finalized CSAPR to replace CAIR on July 6, 2011. However, prior to CSAPR implementation, the District of Columbia Circuit Court of Appeals stayed the implementation of CSAPR in December 2011. The court directed EPA to continue implementing CAIR until the legal decision regarding CSAPR is resolved. In August 2012, the U.S. District of Columbia Circuit Court of Appeals issued a decision vacating CSAPR and directed EPA to continue to implement CAIR until they can implement a replacement rule that addresses the Court's concerns.

Furthermore, on November 19, 2012, EPA's Assistant Administrator Gina McCarthy issued a memorandum regarding *Next Steps for Pending Redesignation Requests and State Implementation Plan Actions Affected by the Recent Court Decision Vacating the 2011 Cross-State Air Pollution Rule*:

[http://www.epa.gov/airquality/transport/pdfs/CSAPR\\_Memo\\_to\\_Regions.pdf](http://www.epa.gov/airquality/transport/pdfs/CSAPR_Memo_to_Regions.pdf). In this memo, EPA referred to a number of various pending redesignation requests, maintenance plans, and SIP submittals from states and noted that because the court directed EPA to continue administering CAIR pending the promulgation of a valid replacement:

*...we believe that it will be appropriate to rely on CAIR emission reductions as permanent and enforceable for certain actions in certain circumstances. Specifically, we believe it will be appropriate to rely on those reductions until the petition and any further proceedings in the CSAPR case are resolved or, if the decision vacating CSAPR is not changed, until a valid replacement rule is developed and implementation plans complying with any new rule are submitted by the states and acted upon by the EPA. Thus, action on the pending requests and SIPs may go forward.*

It is noted, that EPA has appealed the DC Circuit Court's decision to vacate CSAPR to the Supreme Court, and the Supreme Court has agreed to hear the case. As a result of this continued litigation, there is still uncertainty regarding CSAPR.

However, the CAIR requirements for ozone season NO<sub>x</sub> emission reductions remain in effect and this CAIR emission trading program is operating. Moreover, the D.C. Circuit has ordered EPA to continue implementing CAIR pending development of a replacement rule. Therefore, CAIR may be relied upon as the permanent and enforceable control measures to control ozone season

NO<sub>x</sub> emissions from EGUs that are included in this program until an equivalent or better rule / program is in place.

#### **4.2.2 Federal Mobile Source Emission Controls**

Federal and state regulations for mobile sources that have been phased in since 2002 have had a positive impact on the emissions inventory for both NO<sub>x</sub> and VOC emissions from on-road and non-road mobile sources. Mobile source regulations including Heavy-Duty Diesel Engine Standards and Low-Sulfur Diesel, Tier 2 Rule-Vehicle Standards, Tier 4 Rule-Off Road Mobile Engine Standards, Reformulated Gasoline (RFG), and the Gateway Vehicle Inspection Program (10 CSR 10-5.381 *On-Board Diagnostics Motor Vehicle Emissions Inspection.*) have reduced the NO<sub>x</sub> and VOC emissions from the mobile sector in the St. Louis nonattainment area.

Overall, the retirement of older higher polluting vehicles and the phasing in of federal on-road mobile source standards from 2002 to 2008 have contributed to a decrease of 62.8 tons/ozone season day of direct NO<sub>x</sub> emissions (about 40% reduction), and 10.2 tons/ozone season day of VOC emissions (about 15% reduction). These on-road mobile source emission reductions have significantly contributed to attainment of the 1997 8-hour ozone NAAQS in the St. Louis area.

Federal regulations for the control of mobile sources are permanent and enforceable, and it is likely that standards will become increasingly more stringent for the mobile source sector. The mobile source control measures have resulted in the significant reductions in both NO<sub>x</sub> and VOC emissions. The continued tightening of federal mobile source standards and phase out of older higher-polluting vehicles will continue to contribute to maintenance of the 1997 8-hour ozone NAAQS.

#### **4.2.3 State Regulations**

In addition to the Gateway Vehicle Inspection Program, federal mobile source standards, and the state regulations written to control ozone season NO<sub>x</sub> emissions in response to the NO<sub>x</sub> SIP Call, there are numerous state regulations that provide permanent and enforceable controls for NO<sub>x</sub> and VOC emissions in the St. Louis nonattainment area. The rules in Title 10 Division 10 Chapters 5 and 6 of the Missouri Code of State Regulations include permanent and enforceable control measures for ozone precursor emissions in the St. Louis nonattainment area. These controls include control technique guidelines for numerous VOC sources, open burning restrictions, and emission standards for incinerators. For additional information on state regulations to control VOC emissions in the St. Louis area, see the 2011 Reasonably Available Control Technology Demonstration Update for the 1997 8-Hour Ozone Standard in the St. Louis Area discussed in section 4.3 below.

Furthermore, many regulations designed for one pollutant control program have a benefit in another. For example, the rules which implement the Air Toxics or Hazardous Air Pollutants (HAPs) program pursuant to CAA Section 112 also in many cases control VOCs. In Missouri, this program is implemented through State rules, 10 CSR 10-6.070 *New Source Performance Regulations*, 10 CSR 10-6.075 *Maximum Achievable Control Technology Regulations* & 10 CSR 10-6.080 *Emission Standards for Hazardous Air Pollutants*. Although these rules are ostensibly for the control of HAPs, they benefit ozone control (and as such are listed in section 4.2) because many HAPs are also VOCs.

### **4.3 Reasonably Available Control Technology (RACT)**

Pursuant to Sections 172, 182(b) and (f) of the CAA, RACT is required for all existing major sources of the applicable criteria pollutant and its precursors located in nonattainment areas. The EPA defines RACT as the lowest emissions limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological feasibility and economic reasonableness [70 FR 71612; November 29, 2005]. The major source threshold for moderate nonattainment areas is defined as 100 tons per year (tpy) of NO<sub>x</sub> or VOCs. A source generally consists of several units that emit pollutants. The sum of emissions from all units at the source determines if a unit is major and thus subject to RACT requirements.

On April 20, 2011, the Air Program requested an exemption for sources of nitrogen oxides (NO<sub>x</sub>) in the Missouri portion of the St. Louis metropolitan 8-hour ozone nonattainment area from the NO<sub>x</sub> RACT obligations pursuant to CAA Section 182(f). The waiver demonstrates that additional reductions of NO<sub>x</sub> emissions in the area would not contribute to attainment of the 1997 ozone NAAQS. EPA published this exemption as a direct final rule and received no comments on this rule [76 FR 43598]. The rule became effective September 19, 2011. This NO<sub>x</sub> waiver alleviates the requirements for a demonstration that NO<sub>x</sub> RACT obligations have been met. Therefore, only VOC RACT demonstration requirements are necessary for redesignation.

Sections 172, 182(b)(2), and 182(f) of the CAA also require implementation of RACT for sources that are subject to Control Techniques Guidelines (CTGs) documents that are promulgated by the EPA. The EPA has issued CTGs defining presumptive RACT for those categories of sources that emit the greatest amounts of VOC emissions. In 2006-2008, the EPA issued 12 new CTG's in three groups. The 2006 CTG's addressed industrial cleaning solvents, offset lithographic printing and letterpress printing, flexible package printing and flat wood paneling coatings. The 2007 CTG's address paper, film, and foil coatings, large appliance coatings, and metal furniture coatings. The 2008 CTG's address miscellaneous metal and plastic parts coatings, fiberglass boat manufacturing materials, miscellaneous industrial adhesives, and automobile and light-duty truck assembly coatings. Per the CAA, CTG's establish presumptive RACT for the VOC sources they cover. CTG RACT can apply to sources at a level much lower than the 100 tpy threshold employed for other RACT sources in moderate ozone nonattainment areas. In fact, some of these newly-issued CTGs apply to sources with emissions as low as 2.5 tpy. Any state with moderate ozone nonattainment areas must implement equivalent RACT for all promulgated CTGs prior to redesignation of those areas. The Air Program developed amendments to four VOC rules to address these new CTGs for which there are existing applicable sources in the St. Louis nonattainment area.

The (4) four rules that have been amended to account for these new CTGs are —

- 10 CSR 10-5.330 *Control of Emissions From Industrial Surface Coating Operations*
- 10 CSR 10-5.340 *Control of Emissions From Rotogravure and Flexographic Printing*
- 10 CSR 10-5.442 *Control of Emissions from Lithographic Printing Operations*
- 10 CSR 10-5.455 *Control of Emissions from Solvent Cleanup Operations*

These new rulemakings were proposed for public hearing March 31, 2011, and were adopted by the MACC on April 28, 2011. The first three rules listed above were approved by EPA on January 23, 2012 [77 FR 3146] for inclusion into the SIP. The fourth rule, 10 CSR 10-5.455, underwent another minor revision in 2012 and also became SIP-approved by EPA on January 6, 2014 [79 FR 580]. The approval of these CTG rules was a necessary element to allow the St. Louis area to be redesignated to attainment for the 1997 ozone standard.

RACT is not a new requirement for the 1997 8-hour ozone NAAQS. Missouri has previously addressed RACT requirements in the St. Louis nonattainment area in developing attainment plans for the 1-hour ozone standard. For the 1997 8-hour standard, the Air Program developed a RACT demonstration as an element to the ozone SIP revision. Per the federal implementation rule for the 1997 ozone standard, the RACT demonstration was to be submitted as a separate element prior to the submittal of the attainment demo and other elements of the SIP revision. RACT plan was adopted on December 7, 2006 and submitted to the EPA on January 5, 2007.

Since these new CTGs were not considered in the 2006 RACT demonstration, and in an effort to ensure that RACT determinations for the St. Louis nonattainment area are ongoing and continuous, the Air Program developed an update to the 2006 RACT demonstration to support this redesignation request. Because of the NO<sub>x</sub> RACT waiver, this updated RACT demonstration showed how VOC RACT has been upgraded as appropriate since the last RACT submittal. This updated VOC RACT document was adopted by the MACC on April 28, 2011 and submitted to EPA on May 25, 2011. The document was conditionally approved by EPA on January 23, 2012 and finally approved into the SIP on January 6, 2014 [79 FR 580].

For a more detailed discussion of RACT issues, please refer to the updated RACT demonstration adopted April 28, 2011, which can be found at <http://dnr.mo.gov/env/apcp/sips.htm#ozone>

## **5. Maintenance Plan Demonstration: Emission Inventory and Controls from 2008 - 2025**

The purpose of this chapter is to address the first two elements required for a maintenance plan as listed in subsection 2.4 of this document, which include providing a comprehensive attainment year emissions inventory and a projected emissions inventory at least ten years into the future after the SIP is approved. This section demonstrates that emissions of NO<sub>x</sub> and VOC in the Missouri portion of the St. Louis nonattainment area will remain below the levels of the attainment year emissions inventory, based on permanent and enforceable emission control requirements, for a period of ten years after EPA approves this maintenance plan. This section also includes an emissions inventory for an interim year to demonstrate that emissions in the St. Louis area will remain below the attainment year emissions inventory throughout the ten-year maintenance period.

The future year of 2025 was used in this maintenance plan because the future year included in a maintenance plan must be at least 10 years into the future after EPA approves the plan. By selecting 2025 for the future year EPA will have more than a year to approve this plan and redesignate the area to attainment.

This chapter also includes a discussion of regulations that have become effective since 2008, and a list of expected future regulations that will help to continue to control NO<sub>x</sub> and VOC emissions in the St. Louis area. The Air Program commits to keeping all previously adopted control measures that are included in Missouri's approved SIP in place after redesignation unless the SIP is revised and approved by EPA to remove such requirements. If the removal of such requirements would potentially alleviate control requirements for emission sources in Missouri, then the SIP revision shall require an "anti-backsliding" demonstration under Section 110(l) of the Clean Air Act. In addition, nonattainment new source review (NSR) permitting requirements will continue to apply to construction of new major sources and to significant modifications of existing sources due to the area's designation as nonattainment under the more recently promulgated 2008 ozone NAAQS. These existing and future control measures identified in the maintenance plan are relied upon to maintain the 1997 8-hour ozone NAAQS.

### ***5.1 Base/Attainment Year Inventory and Future Year Emission Projections***

A maintenance plan must contain a demonstration that the levels of emissions projected for the ten-year period following redesignation are sufficient to maintain the NAAQS. Accordingly, the Air Program has projected NO<sub>x</sub> and VOC emissions for the St. Louis nonattainment area for 2025. Emissions for this projection year are compared to emissions levels in 2008 to determine if emissions levels are sufficient to maintain the NAAQS during this period. Illinois has an approved maintenance plan for their portion of the nonattainment area under the 1997 ozone NAAQS, which was approved by EPA on June 12, 2012 [77 FR 34819]. Therefore, this section only includes emissions inventories and projections for the Missouri portion of the nonattainment area. The emissions inventories for the years 2008, 2015, 2020, and 2025 for the Illinois portion of the nonattainment area, which were included in Illinois' approved maintenance plan, are provided for reference in Appendix H.

For the purposes of this section, a modified 2008 emission inventory was developed. The 2008 inventory in this section will act as the base year compared to the 2025 inventory detailed in this section. The base year 2008 inventory includes point, area, on-road mobile, and non-road source categories. The emissions from point, area, and non-road source categories are identical to the 2008 attainment year inventory listed in the previous chapter. However, the on-road mobile source inventory is different. This is due to the fact that a different mobile emission model was used to develop the inventory in this section of the document, which is explained in further detail below in paragraph 5.1.1. The 2008 base year annual emissions inventory for the Missouri side of the nonattainment area is included in this plan as Appendix B.

### **5.1.1 On-Road Mobile Source Emissions Inventory Development**

For this section of the document, on-road motor vehicle emissions for the Missouri side of the nonattainment area were developed using U.S. EPA's MOVES motor vehicle emissions model and VMT data from East-West Gateway Council of Government in coordination with the St. Louis Transportation Conformity Interagency Consultation Group.

The method for mobile emissions modeling was changed when EPA's previous on-road mobile model (Mobile 6) was replaced with a completely redesigned model (MOVES). The MOVES model was redesigned to reflect EPA's current understanding of the emissions produced by vehicles and the various factors that affect these emissions.

As a result of these changes to the model, MOVES produced higher emissions estimates for both 2008 and 2025 than were originally created with Mobile 6.2 via NMIM (refer to section 4.1). NO<sub>x</sub> emissions increased for the extended idling of heavy duty vehicles. VOC emissions calculated with MOVES are comparable to VOC emissions calculated with Mobile 6.2, however they are slightly higher. Therefore, in addition to running a projected emissions budget for 2025 for on-road emissions, 2008 base year emissions were also run using MOVES for the Missouri portion of the nonattainment area. This allows for a meaningful comparison in emissions from 2008 to 2025. By using MOVES to calculate the 2008 and 2025 mobile emission inventories, a smooth transition will occur for any new mobile modeling that will be needed in future SIP revisions. Additional details about the development of the MOVES-based 2008 and 2025 on-road mobile emissions inventories for the Missouri side of the nonattainment area are located in Appendix B for 2008 and Appendix D for 2025.

### **5.1.2 Point, Area, and Off-Road Mobile Source Emissions Inventory Development for the Missouri Side of the Nonattainment Area**

The projected point and area source emissions in the Missouri portion of the St. Louis nonattainment area for 2025 were estimated using the 2008 base year inventory and growth factors appropriate for each source category. Growth factors were created from the EGAS model (<http://www.epa.gov/ttnecas1/egas5.htm>) using economic growth projections from the Policy Insight® Model for Regional Economic Model, Inc (REMI). Area source stage II refueling emissions for 2025 were calculated with MOVES and assumed that Stage II vehicle refueling vapor recovery controls would no longer be required in the St. Louis area by 2025. The Air Program is currently developing a SIP revision to remove Stage II requirements as a result of the widespread use of on-board vapor recovery systems, and it is expected that Stage II controls on

refueling stations in the Missouri portion of the St. Louis nonattainment area will be completely removed by December 31, 2015.

An adjustment was made to account for the retirement of two units located at MEMC Electronic Materials, Inc. that were subject to a 2009 Consent Agreement. These two emission units will no longer be permitted to operate unless a new construction permit is granted, therefore, the consent agreement was terminated in 2013. A copy of the 2009 consent agreement and the letter from the Air Program terminating the agreement is included in this document as Appendix G.

Finally, ozone season NO<sub>x</sub> emissions from EGUs in the future year were projected based on permanent and enforceable controls in place for these sources. The ozone season NO<sub>x</sub> emissions from the following four EGU facilities: Ameren's Labadie, Meramec, Rush Island, and Sioux were grown as follows: the actual regulatory ozone season (May–September) NO<sub>x</sub> emissions from these Ameren units from 2008-2011 were obtained from the Clean Air Market Division database and averaged to obtain a yearly regulatory ozone season average of NO<sub>x</sub> emissions over these four years. This yearly regulatory ozone season average of NO<sub>x</sub> emissions over these four years were then divided by 153 (the number of days in the regulatory ozone season to obtain the projected average ozone season day emissions in 2025 for these four facilities. This four year average of regulatory ozone season NO<sub>x</sub> emissions was determined to be representative of the projected NO<sub>x</sub> emissions from these facilities in 2025 because of CAIR. In 2015, their allowances from CAIR drop significantly, but they will likely have some banked allowances allowing them to hold their ozone season NO<sub>x</sub> emissions steady for the first several years after the 2015 CAIR allocations take effect.

NO<sub>x</sub> and VOC emissions from non-road sources for 2008 and 2025 for the Missouri side of the nonattainment area were developed using the U.S. EPA's NONROAD model. The non-road source emissions inventory also includes emissions from aircraft takeoffs and landings, commercial marine vessels, and locomotives. The emissions from these three categories were grown from 2008 levels to the future year using EGAS growth factors. Additional details regarding the development of the 2008 and 2025 non-road source emissions inventory for the Missouri side of the nonattainment can be found in Appendix B for 2008 and in Appendix D for 2025.

### **5.1.3 2008 and 2025 Emissions Inventory Summary for the Missouri Side of the Nonattainment Area**

Table 5-1 displays the 2008 ozone season day emissions inventory summary for the Missouri portion of the nonattainment area for point, area, on-road mobile, and non-road source categories. Table 5-2 displays the projected emissions inventory summary for the future year in this plan (2025) for the Missouri portion of the nonattainment area.

Table 5-3 provides a comparison of emissions for the years 2008 and 2025, using the 2008 on-road mobile source emissions listed in Table 5-1 to reflect the MOVES values for consistent comparison purposes. Table 5-3 shows the differences by source category along with the total changes in emissions for each pollutant listed. As shown in the table, both NO<sub>x</sub> and VOC emissions within the nonattainment area are expected to decrease significantly between 2008 and 2025. NO<sub>x</sub> emissions are expected to drop nearly 47%, while VOC reductions are about 6.5%

over the projected period. Based on these emissions trends for NO<sub>x</sub> and VOC it is expected that air quality will continue to meet the 1997 8-hour ozone NAAQS throughout the maintenance period.

**Table 5-1. 2008 VOC and NO<sub>x</sub> Emissions for the Missouri Side of the 1997 St. Louis 8-Hour Ozone Nonattainment Area (tons per ozone season day)**

Source Category	NO <sub>x</sub>	VOC
Point Sources	88.84	18.0
Area Sources	6.52	98.74
On-Road Mobile Sources	160.38	58.53
Off-Road Mobile Sources	60.85	46.44
<b>Total</b>	<b>316.59</b>	<b>221.71</b>

**Table 5-2. 2025 VOC and NO<sub>x</sub> Emissions for the Missouri Side of the 1997 St. Louis 8-Hour Ozone Nonattainment Area (tons per ozone season day)**

Source Category	NO <sub>x</sub>	VOC
Point Sources	89.81	28.01
Area Sources	6.85	130.91
On-Road Mobile Sources	41.66	20.15
Off-Road Mobile Sources	29.44	28.17
<b>Total</b>	<b>167.76</b>	<b>207.24</b>

**Table 5-3. Comparison of 2008 and 2025 VOC and NO<sub>x</sub> Emissions for the Missouri Side of the 1997 St. Louis 8-Hour Ozone Nonattainment Area (tons per ozone season day)**

Source Category	NO <sub>x</sub>	VOC
Point Sources*	+0.97	+10.01
Area Sources*	+0.33	+31.44
On-Road Mobile Sources*	-119.59	-40.71
Off-Road Mobile Sources*	-24.17	-16.99
<b>Total*</b>	<b>-148.83</b>	<b>-14.47</b>

\*Note: A negative value indicates a projected decrease in emissions from 2008 to 2025. A positive value indicates a projected increase in emissions from 2008 to 2025.

It should be noted that the projected increase in VOC emissions for point and area sources are based on (EGAS) growth factors. Due to the use of these growth factors, emissions of VOC from point and area sources are projected to increase by 2025. However, these projected increases are likely overstated and actual point and area source emissions of VOC are not expected to increase as much as the growth factors suggest. EPA's Regulatory Impact Analysis (RIA) for the 2006 PM NAAQS rule, Appendix D (<http://www.epa.gov/ttn/ecas/regdata/RIAs/Appendix%20D--Inventory.pdf>), notes on pages D-29 to D-36, that though REMI data was used in their emission forecasting method, the

oversimplification of emissions growth based on economic factors likely overestimates projected emissions. EPA's recognition of the downward trend in emissions during times of economic growth supports the conclusion that the VOC increases for area sources are likely an artifact of the growth methodology. From page D-36 —

*While it is not clear that all of the factors that have served to produce this historical decline will continue to operate in the future, it appears unreasonable to assume that we currently have arrived at an 'inflection point' past which the trend will stop or reverse itself. Indeed, because the available data show that a number of large sources in the sectors of interest have no or limited pollution controls, it is reasonable to expect emissions rates will be steady or decline. Continuing to ignore this factor in future-year emission projections may increasingly skew the predicted emissions increase, and the farther into the future the forecast the more dramatic the impact. The preceding and other explanations suggested that we need to reevaluate our emission forecasting approaches for stationary non-EGU sources to incorporate factors not adequately considered in past methodologies.*

Despite these conservative projections from EGAS growth factors, NO<sub>x</sub> and VOC emissions are still projected to decrease on the Missouri side of the nonattainment area from 2008 – 2025, when looking at all source categories combined. The projected decrease from each pollutant on the Missouri side of the nonattainment area from 2008 to 2025 is due to permanent and enforceable control requirements.

The projected decreases in NO<sub>x</sub> and VOC emissions from 2008 to 2025 are primarily due to decreases in the on-road mobile and non-road source categories. Average ozone season daily NO<sub>x</sub> and VOC emissions in the St. Louis area from these two categories are projected to decrease by approximately 144 tons/day and 58 tons/day, respectively. That amounts to an over 40% reduction of total NO<sub>x</sub> emissions in the area and an over 25% reduction of total VOC emissions in the area compared to emissions levels in 2008 from on-road mobile and non-road sources.

The maintenance demonstration is based on the comparison of the actual emission levels in 2008 and the projection of emissions in the future year of the plan. Because the area attained the standard in 2008, this is expected to be a level of emissions suitable to maintain the level of the standard. Because aggregate emissions in both pollutant categories in 2025 are expected to be less than 2008 actual levels, this satisfies the maintenance demonstration under the 1997 ozone NAAQS for the Missouri portion of the nonattainment area.

As mentioned above, additional details about the 2008 and 2025 emission inventories can be found in Appendices B and D, respectively. It should also be noted that the emissions projections included here do not reflect the reductions expected from a range of measures being implemented to reduce diesel emissions in the St. Louis nonattainment area. These measures include —

- U.S. EPA's Midwest Clean Diesel Initiative
- Congestion Mitigation and Air Quality Improvement (CMAQ) Program

- Diesel Emissions Reduction Act (DERA) grant projects
- American Recovery and Reinvestment Act of 2009 (ARRA) grant projects
- Heavy Duty Diesel Idling Rule, 10 CSR 10-5.385
- Various supplemental environmental projects.

These projects include the installation of particulate filters, diesel oxidation catalysts, closed-crankcase ventilation systems, and direct-fired heaters on school and transit buses, and municipally-owned utility vehicles, upgrading diesel construction engines with engines meeting more stringent emissions standards, and installing auxiliary power units on over-the-road trucks to reduce idling. It is anticipated that DERA and CMAQ funding will continue to support additional diesel emissions reduction projects in the near future.

## 5.2 Interim Year Emission Inventory: 2017

The Air Program has developed an Interim Emission inventory for the Missouri portion of the St. Louis nonattainment area. Interim year 2017 is the midway point between 2008, the base year of the maintenance plan, and 2025, the last year in the ten year maintenance plan period. An analysis of an interim year emissions inventory is necessary to demonstrate that future emission levels will remain below the attainment year emission levels throughout the entire 10-year maintenance period. This provides assurance that air quality in the St. Louis area will continue to comply with 1997 ozone NAAQS for the duration of the maintenance period addressed in this plan.

All assumptions and controls used in developing the projected 2025 emission inventory in section 5.1 of this document were also used to project the 2017 inventory. Table 5.4 summarizes the emissions for point, area, on-road mobile, and non-road sources that are projected for 2017 for the Missouri portion of the St. Louis nonattainment area. From 2008 to 2017, NO<sub>x</sub> emissions drop by 125.1 tons/day, a reduction of about 40%, while VOC emissions drop by 26.65 tons/day or about 12%. As seen in Table 5-4, the interim year emissions levels in the area will remain below the 2008 base year for both pollutant categories, thus demonstrating that the area will continue to maintain the standard throughout the 10-year maintenance period. The Air Program commits to analyzing actual 2017 emissions for the Missouri side of the St. Louis nonattainment area and comparing the actual 2017 emissions to the projected 2017 emissions listed in Table 5.4 to ensure the area keeps pace with the reductions expected throughout the maintenance period. Additional details about the development of the 2017 interim year emission inventory for the Missouri side of the nonattainment area can be found in Appendix C of this document.

**Table 5-4. 2017 VOC and NO<sub>x</sub> Emissions for the Missouri Side of the 1997 St. Louis 8-Hour Ozone Nonattainment Area (tons per ozone season day)**

Source Category	NO <sub>x</sub>	VOC
Point Sources	87.01	22.82
Area Sources	6.68	115.85
On-Road Mobile Sources	62.32	27.51
Off-Road Mobile Sources	35.53	28.88
<b>Total</b>	<b>191.54</b>	<b>195.06</b>

### **5.3 Future Federal Control Measures**

There are currently several federal control measures that have recently been proposed or promulgated that are expected to greatly reduce the amount of NO<sub>x</sub> and VOC emissions in the St. Louis area. The control measures expected to have the greatest effect on NO<sub>x</sub> and VOC emissions in the St. Louis area include the federal CAIR phase II and/or its future replacement, the Mercury and Air Toxics Standards for Fossil-Fuel Fired Electric Utility Steam Generating Units (MATS), National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (Boiler MACT), improved motor vehicle fuel efficiency standards, the phase in of tier 4 emission standards for non-road engines

CAIR phase II and the improved federal mobile source regulations were both considered when developing the future emissions inventory in order to demonstrate continued maintenance with the 1997 8-hour ozone standard, which shows that projected future year NO<sub>x</sub> and VOC emissions in the St. Louis area will remain below the levels experienced during the attainment year. Under CAIR phase II, which begins in 2015, ozone season NO<sub>x</sub> emissions budgets for EGUs decrease by 17% for covered sources in the Missouri portion of the nonattainment area. As stated earlier, federal motor vehicle and non-road engine standards are only expected to be tightened in the future, which will also contribute to NO<sub>x</sub> and VOC emission reductions. These recent and anticipated future federal control measures are expected to result in continued decreases in NO<sub>x</sub> and VOC emissions both nationwide and in the St. Louis area. These measures will greatly assist current and ongoing efforts in the St. Louis area to maintain compliance with the 1997 8-hour ozone NAAQS.

The MATS and the Boiler MACT were both written to address hazardous air pollutants, and will therefore have the greatest reductions in pollutants such as PM<sub>2.5</sub> and SO<sub>2</sub>. However, if owners of boilers and EGUs subject to these new rules decide to improve plant efficiency or switch to cleaner fuels for compliance strategies, then there is expected to be co-benefits for NO<sub>x</sub> and VOC emissions from these sources. The Air program did not rely on the Utility MACT or the Boiler MACT when developing the future year emissions inventory or to determine that the St. Louis area would remain in attainment of the 1997 8-hour ozone NAAQS. However, the anticipated reductions from these new rules may also contribute to the future attainment of the 1997 8-hour ozone NAAQS in the St. Louis area.

### **5.4 New Source Review: Permitting New or Modified Emissions Sources**

In accordance with the Clean Air Act, Missouri has a long-standing and fully implemented New Source Review (NSR) permitting program for new major sources and significant modifications of existing sources enabled by State rule 10 CSR 10-6.060 *Construction Permits Required*. This NSR program in any attainment area is referred to as a Prevention of Significant Deterioration (PSD) permitting program. One of the major components of the PSD program is the implementation of Best Available Control Technology (BACT) on new major sources or significant modification of existing major sources. Missouri has been delegated full authority to implement the PSD program by the EPA.

In this document, the Air Program is requesting redesignation to attainment under the 1997 8-hour ozone standard. However, the St. Louis nonattainment area has already been designated as

nonattainment under the 2008 ozone NAAQS. Therefore, the State of Missouri is fully committed to continuing its NSR permitting program for nonattainment areas which makes new major sources and significant modifications of existing sources subject to the Lowest Achievable Emission Rate (LAER) as well as offsets and an alternate site analysis pursuant to the CAA.

State rule *10 CSR 10-6.410 Emissions Banking and Trading*, allows the banking and trading of emission reduction credits to be used for permitting purposes. These emission reduction credits are reduced by 25 percent at the time they are banked and they are further reduced by 3 percent every year they remain banked. These credits are intended to be used for NSR offset purposes in nonattainment areas and for PSD increment purposes in areas designated attainment. However, these credits are only one aspect of obtaining a permit under Missouri's EPA approved Title V permitting program, and do not alleviate any source from undergoing a NAAQS impact analysis in any area. Nor do these credits alleviate any source from implementing BACT requirements for PSD permits in attainment areas or LAER/alternative site analysis requirements in nonattainment areas. Therefore, the emission reduction credits that have been banked by Missouri sources are not anticipated to have any impact on Missouri's demonstration that the St. Louis area will continue to maintain the 1997 ozone NAAQS in the St. Louis area.

Therefore, Missouri has satisfied the requirements of both CAA Sections 110(a)(2)(C) & 172(c)(5) (which in turn satisfies a redesignation element of Section 107(d)(3)(E)(v)) for the 1997 ozone NAAQS through its approved NSR program.

## **5.5 Update: Recent Emission Reductions 2012 -**

Monitored ozone air quality concentrations in the St. Louis area for the most recent three-year period of 2011-2013 complied with the 1997 NAAQS despite 2012 being among the hottest, most ozone-conducive years on record. This maintenance plan demonstrates that the downward trend in ozone concentrations is due to permanent and enforceable emission controls. This section addresses additional emission reductions of ozone precursors that have occurred since 2012 to support this downward trend.

### **5.5.1 Stationary Source Ozone Season NO<sub>x</sub> Emission Reductions from EGUs**

Based on a review of continuous emissions monitoring systems (CEMS) data reported to the EPA's Clean Air Market Division, the four Ameren EGU facilities have reduced regulatory ozone season (May–September) NO<sub>x</sub> emissions by 248 tons between 2012 and 2013. These emission reductions are despite the fact that these units produced an additional 283,000 Megawatt-hours of electricity in 2013 compared to 2012, meaning that these reductions were not due to a reduction in electricity production or demand but rather an improvement in average emission rates that have resulted from the continued optimization of the emission controls at these facilities.

Looking at the full eastern third of the state, which contributes to ozone concentrations in the St. Louis nonattainment area, regulatory ozone season NO<sub>x</sub> emissions from EGUs decreased by a total of 2,226 tons between 2012 and 2013. In 2013, electricity production from the EGUs located in the eastern third of the state was down 2% compared to 2012; however, the ozone season NO<sub>x</sub> emissions reductions achieved by these EGUs between 2012 and 2013 account for

an 11% reduction, meaning that emission rates have improved at these facilities between these two years.

In 2015, CAIR phase II will begin, which will reduce NO<sub>x</sub> allowances by 17% for EGUs in Missouri. This is only expected to result in continued ozone season NO<sub>x</sub> emission reductions from EGUs in the states subject CAIR including the EGUs located in and in close proximity to the nonattainment area. These allowance reductions also act as a margin of safety since the projected emission inventories for 2017 and 2025 used in this plan to demonstrate maintenance of the 1997 standard did not account for this reduction but rather assumed a steady level of emissions from these sources.

### **5.5.2 On-Road Mobile Source Emission Reductions**

Due to federal motor vehicle standards and the retirement/replacement of older higher polluting engines, on-road mobile source emissions of NO<sub>x</sub> and VOC continue to decline each year in and around the St. Louis nonattainment area. EPA's MOVES model was used to calculate the on-road mobile source NO<sub>x</sub> and VOC emissions in the last two years. Between 2012 and 2013, on-road mobile source NO<sub>x</sub> and VOC emissions inside the Missouri portion of the nonattainment declined by approximately 265 tons/ozone season and 407 tons/ozone season (April – October), respectively. On-road mobile source emission reductions are expected to continue in the nonattainment area as additional older vehicles are retired and replaced by new vehicles meeting the latest federal motor vehicle standards.

On March 3, 2014 the EPA administrator signed the final rule for Tier III motor vehicle engine standards, which will begin in 2017. EPA states in the final rule-

*For many pollutants, the immediate reductions in 2018 are significant; for example, combined NO<sub>x</sub> and VOC emissions will be reduced by over 300,000 tons. By 2030, combined NO<sub>x</sub> and VOC emissions will be reduced by roughly 500,000 tons, one quarter of the onroad inventory.*

The Tier III standards were not relied upon in the maintenance demonstration included with this plan, but the new standards will provide additional assurance that ozone precursor emissions continue to decline in the MO-St. Louis nonattainment area and throughout the entire country as a result of permanent and enforceable on-road mobile source control measures.

### **5.5.3 Diesel Emissions Reduction Act Projects**

The Missouri Department of Natural Resources has implemented numerous grant projects under the Diesel Emissions Reduction Act (DERA) since 2008. These projects have resulted in the reduction of NO<sub>x</sub>, PM, VOC, CO, and CO<sub>2</sub> emissions from diesel engines that operate in Missouri. Many of the projects have targeted diesel fleets that operate in and around the St. Louis nonattainment area including school buses, construction equipment, refuse haulers, street sweepers, long-haul trucks, locomotives, and tugboats.

Below is a list of DERA projects that have been implemented by the Air Program in the St. Louis area since 2012:

1. Massman Construction: Engine repowers for two 230 horsepower propulsion engines on a tugboat operating almost exclusively inside the nonattainment area. The repower project replaced unregulated tier 0 engines with engines meeting tier 2 emission standards. The tier 0 engines were disabled ensuring the permanence of the emissions reductions.
2. Pullen Enterprise: Early replacement for a long-haul class 8 truck that operates almost exclusively in Missouri with approximately 50% of its operations inside the nonattainment area. The project replaced a 2000 model year truck with a 2013 model year truck that is certified at approximately 90% lower NO<sub>x</sub> and PM emissions standards than the truck that was replaced. The old truck's engine and chassis were disabled ensuring the permanence of the emissions reductions.
3. DeSoto School District: Idle reduction and tailpipe emission control retrofits for 23 buses operated by the school district. All of these buses operate almost exclusively inside the nonattainment area.
4. ADM Grain: Engine repower for a 1200 horsepower engine for a switch locomotive stationed in the City of St. Louis that operates almost exclusively inside the nonattainment area. The repower project replaced an unregulated tier 0 engine with a new engine meeting tier 3 emission standards. The old engine was disabled ensuring the permanence of the emissions reductions.
5. JB Marine: Engine repowers for four propulsion engines on two different tugboats operating almost exclusively inside the nonattainment area. Two engines were 285 horsepower and the other two were 300 horsepower. All four engines that were replaced were unregulated tier 0 engines, and each was replaced by new engines meeting tier 2 emissions standards. All four of the tier 0 engines were disabled ensuring the permanence of the emissions reductions.

These permanent voluntary emissions reductions, although not relied upon in this plan to attain the NAAQS or to demonstrate maintenance of the NAAQS, provide additional emissions reductions that have occurred in the St. Louis area in the recent past, which have contributed to improved ozone concentrations in the area.

## 6. Transportation Conformity

Transportation conformity is required under CAA Section 176(c) (42 U.S.C. 7506(c)) to ensure that transportation plans, transportation improvement programs and federally supported highway transit project activities are consistent with (“conform to”) the purpose of the SIP. Conform to the purpose of the SIP means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant NAAQS or any interim milestones. These requirements are found in CAA Section 176(c)(B)(i), (ii), and (iii):

*That such activities will not cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emissions reductions or other milestones in any area.*

Transportation conformity applies only to those areas that are designated nonattainment, and those areas redesignated to attainment after 1990 (“maintenance areas”) for transportation-related criteria pollutants: Carbon monoxide (CO), ozone, nitrogen dioxide (NO<sub>2</sub>) and particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>). The Transportation Conformity program for the St. Louis area is included in the SIP via State rule 10 CSR 10-5.480 *St. Louis Area Transportation Conformity Requirements*.

The establishment of MVEBs for transportation conformity purposes is one of the redesignation elements of CAA Section 175A as mentioned in section 2.4 of this document. EPA’s final rule for establishing ozone area classification thresholds under the 2008 ozone NAAQS revoked the 1997 ozone NAAQS for transportation conformity purposes [77 FR 30160]. This revocation is effective one year after the effective date of designations for the 2008 ozone NAAQS (July 20, 2013). Therefore, transportation conformity (and the corresponding establishment of MVEBs) for the 1997 ozone NAAQS is no longer required. This revocation date also corresponds with the end of the one-year conformity grace period for the 2008 ozone NAAQS. This action was taken by EPA to bring certainty to the transportation planning process in ozone nonattainment and maintenance areas. EPA stated that no backsliding will result from the revocation for purposes of transportation conformity, and areas designated nonattainment for the 2008 ozone NAAQS will be required to use any existing adequate or approved SIP MVEBs for a prior ozone NAAQS when determining conformity for the 2008 ozone NAAQS until budgets for the 2008 ozone NAAQS are either found adequate or are approved. Therefore because of the revocation, this maintenance plan does not establish MVEBs for the 1997 ozone NAAQS.

As mentioned above, transportation conformity for the 2008 ozone NAAQS applies one year after the effective date of nonattainment designations for this NAAQS, i.e., July 20, 2013. As a result, on January 30, 2013, East-West Gateway Council of Governments, the designated Metropolitan Planning Organization for the greater St. Louis area, approved a Transportation Conformity Determination addressing the 2008 NAAQS :

<http://www.ewgateway.org/pdffiles/library/AQ/AQConformityDoc/AQConformityDoc-FY2013.pdf> .

Although not a requirement for this redesignation under the 1997 standard, an Early Progress Plan establishing MVEBs for the 2008 standard has been separately developed by the Air

Program prior to our marginal-classified area plan obligations for the St. Louis area under this newer standard. This Early Progress Plan was adopted by the Missouri Air Conservation Commission on March 28, 2013. The Air program submitted the plan to EPA on August 16, 2013 and EPA deemed the new budgets adequate in a letter dated October 28, 2013 just in time for the next conformity determination that began in the fall of 2013. More information on the MVEBs for the 2008 ozone NAAQS may be found in the Early Progress Plan at: <http://www.dnr.mo.gov/env/apcp/docs/complete-epp-submittal-8-16-13.pdf>.

## 7. Contingency Measures

CAA Section 175(A) specifies the requirements for maintenance plans. In addition to providing a plan for the maintenance of the NAAQS for at least ten (10) years after the redesignation, the plan shall also include a list of contingency measures to correct any violation of the fine particulate matter NAAQS after redesignation to attainment.

Contingency measures are to be used to further reduce emissions in the event that future violations of the 1997 8-hour ozone NAAQS occur after redesignation to attainment. While these measures do not need to be fully adopted by the Missouri Air Conservation Commission prior to the occurrence of a NAAQS violation, the contingency measures are expected to be implemented as expeditiously as possible once a triggering event occurs. The maintenance plan must identify the triggers that determine when contingency measures will be adopted, and the measures that the Air Program will consider.

The Air Program has developed a contingency plan for the Missouri portion of the St. Louis ozone maintenance area. The contingency plan which details the Level I and Level II triggers and corresponding actions to be taken is summarized in Table 7-1. The potential contingency measures, to be evaluated after a triggering event, are listed in Table 7-2. Consistent with this contingency plan, the Air Program agrees to adopt and implement, as expeditiously as is practicable, the necessary corrective actions in the event that violations of the 1997 8-hour ozone NAAQS occur anywhere within the St. Louis ozone maintenance area after redesignation to attainment. The implementation of contingency measures under Level I or Level II triggers will take place as expeditiously as practicable, but in no event later than twenty-four (24) months after the Air Program makes a determination that a trigger has occurred, based on quality-assured ambient data that has been entered into EPA's Air Quality System database.

The contingency plan provides for different levels of corrective responses should the ambient 8-hour ozone levels exceed the NAAQS in any year. A Level I response would occur in the event that the fourth highest 8-hour ozone concentration at any monitoring site in the St. Louis maintenance area (including sites in Missouri and Illinois) exceeds 84 ppb in any year. The Air Program will evaluate the air quality and determine if adverse emission trends are likely to continue. If so, the Air Program will determine what and where controls may be required, as well as the level of emissions reductions needed to avoid a violation of the NAAQS. If controls are required, the potential contingency measures listed in Table 7-2 will be evaluated in addition to other measures that may be identified through the evaluation or that become available through future advances in control technology and methods. It should be noted that the EPA does not require a state to implement contingency measures when occasional exceedances are recorded. The Air Program's voluntary commitment to initiate a Level I response is intended to prevent future violations of the NAAQS from ever occurring.

A Level II trigger occurs when a violation of the 1997 8-hour ozone NAAQS at any monitoring station in the St. Louis maintenance area is recorded after it has been redesignated to attainment. The Air Program will conduct a thorough analysis to determine appropriate measures to address the cause of the violation. Contingency measures will be selected from those listed in Table 7.2 or from any other measured identified and deemed appropriate and effective at the time the

selection is made. Level II triggers are more serious than Level I triggers and cost effectiveness thresholds could be increased when determinations for additional controls are made.

The contingency measures listed in Table 7.2 are expected to be evaluated in the event of a Level I or Level II trigger; however federal actions that require control measures may also be taken into account when the analysis to determine the cause of a future violation occurs. These additional federal actions, while not actual contingency measures, may be evaluated in the event of a trigger to determine their effect on the levels of expected emissions from sources in the area in order to determine whether or not additional local control measures are necessary. The measures that may be evaluated in the event of a future trigger include future federal on-road vehicle standards, future federal non-road engine standards for marine and locomotive engines, any future federal emission trading programs designed to address future ozone NAAQS promulgations, the Commercial-Industrial-Institutional Boiler Maximum Achievable Control Technology (MACT) requirements, and the Utility MATS requirements. Furthermore, the Air Program remains committed to addressing future ozone NAAQS revisions through state implementation plans. These plans could include other control techniques not included in Table 7.2. These and any other newly identified potential control measures may also be considered in the analysis following a future Level I or II triggering event.

The Air Program commits to compiling NO<sub>x</sub> and VOC emissions inventories for the St. Louis maintenance area every three years for the duration of the Maintenance Plan to facilitate the emissions trends analysis included in the contingency plan under Levels I and II. Since St. Louis is a bi-state nonattainment area, the Air Program commits to work with Illinois EPA to evaluate emissions trends and the causes of Level I and Level II triggers to determine appropriate control measures needed to assure continued attainment of the 1997 8-hour ozone NAAQS.

Adoption of additional control measures is subject to necessary administrative and legal processes. The Air Program will solicit input from all interested and affected persons in the area prior to selecting appropriate control measures. No contingency measures 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 Missouri law.

**Table 7-1. Contingency Plan for the Missouri Portion of the 1997 St. Louis 8-Hour Ozone Maintenance Area**

<b>Contingency Measure Trigger</b>	<b>Action to be Taken</b>
<p><u>Level I Trigger</u></p> <p>Fourth highest monitored 8-hour average ozone concentration exceeding 84 ppb in any year at any monitoring station in the St. Louis, MO-IL maintenance area.</p>	<p>The Air program will evaluate the air quality and determine if adverse emission trends are likely to continue. If so, the Air Program will determine what and where controls may be required, as well as the level of emissions reductions needed to avoid a violation of the NAAQS. The evaluation shall be completed as expeditiously as possible and, if necessary, control measures shall be adopted and implemented as expeditiously as practicable, taking into consideration the ease of implementation and the technical and economic feasibility of the selected measures. This action will be taken no later than 24 months after the Air Program has determined that a Level I trigger has occurred.</p>
<p><u>Level II Trigger</u></p> <p>A monitored violation of the NAAQS at any monitoring station in the St. Louis, MO-IL maintenance area.</p>	<p>The Air Program will conduct a thorough analysis to determine appropriate measures to address the cause of the violation. Analysis shall be completed within 6 months after the trigger occurs. Selected measures shall be implemented as expeditiously as practicable, taking into consideration the ease of implementation and the technical and economic feasibility of the selected measures. The appropriate contingency measures to address the violation shall be implemented as expeditiously as possible, but no later than 24 months after quality-assured ambient data that has been entered into EPA's Air Quality System database indicating that this trigger has occurred.</p>

**Table 7-2. Potential Contingency Measures for the Missouri Portion of the 1997 St. Louis 8-Hour Ozone Maintenance Area**

**List of Potential Contingency Measures to be Considered**

- Identify local sources with significant NO<sub>x</sub> and/or VOC emissions and develop controls through rules, NSR/PSD permits or consent agreements (e.g. For major NO<sub>x</sub> sources — boilers, cement kilns & incinerators);
- Lower the applicability thresholds in existing rules that control NO<sub>x</sub> and VOC:
  - Some recent CTG RACT rules have reduced threshold for subject sources from 100 tpy to as low as 2.5 tpy. See section 4.3.
  - Examine other source categories for similar reductions and revise rules accordingly.
- Lower the emission limits in existing rules:
  - Review current state of control technologies. Reference RACT/BACT/LAER Clearinghouse for new ideas.
  - Revisit RACT determination and update RACT plan accordingly.
  - Example: Lower the emissions from certain surface coating sources under 10 CSR 10-5.330 *Control of Emissions From Industrial Surface Coating Operations* as lower VOC content / control technology improves.
- New or strengthened Alternative Control Techniques (ACTs) for NO<sub>x</sub> sources & CTGs for VOC sources;
- Develop rules to address contributing parts of Missouri outside of St. Louis nonattainment area;
- Enhanced Heavy-Duty Diesel Anti-Idling Program (e.g. mandated rest periods and locomotives);
- Update 10 CSR 10-6.130 *Controlling Emissions During Episodes of High Air Pollution Potential*:
  - Lower the alert / action trigger levels.
  - Amend rule to require alert / action level abatement plans at more facilities.
  - Require existing abatement plans be amended with more current emission reduction measures (e.g. telecommuting at major facility would lower vehicle CO, VOC, NO<sub>x</sub> emissions)
- Architectural/Industrial/Maintenance (AIM) Coatings similar to Ozone Transport Commission (OTC) model rule.

## **8. Conclusion**

The St. Louis nonattainment area has attained the 1997 0.080 ppm 8-hour ozone NAAQS and has complied with the applicable provisions of the CAA required of moderate ozone nonattainment areas. Missouri has supported, with appropriate submittals, including this one, all of EPA's redesignation obligations under CAA Section 107 and has addressed all the applicable maintenance plan requirements of CAA Section 175A. This plan submission serves as the official redesignation request for the Missouri portion of the St. Louis moderate nonattainment area under the 1997 ozone NAAQS to be considered for approval concurrently with the maintenance plan also contained herein.

The Missouri Department of Natural Resources' Air Pollution Control Program has prepared this maintenance plan to provide for the continued attainment of the 1997 8-hour ozone NAAQS for a period of ten years after U.S. EPA has formally redesignated the area to attainment and also supplies adequate contingency measures for potential, additional emissions reductions in the event that future violations of the 1997 8-hour ozone NAAQS are observed in the area.

The Air Program has prepared a comprehensive emissions inventory of the precursors of ozone completed for the "attainment" year 2008, and has prepared projections of the emissions inventory to 2025. These emissions projections indicate that emissions levels in the St. Louis nonattainment area will continue to decrease from attainment year 2008 levels, thereby maintaining the ozone NAAQS in future years. The state commits to continue to operate an appropriate air quality monitoring network to verify the maintenance of the attainment status once the area has been redesignated and to prepare a second maintenance plan 8 years after redesignation. The Air Program has the legal authority to implement and enforce all control measures. This maintenance plan has been prepared in accordance with the requirements of the CAA and in conjunction with EPA staff and guidance documents.