

DRAFT

Maintenance Plan for the
Metro-East St. Louis Ozone Nonattainment Area
for the 1997 8-Hour Ozone
National Ambient Air Quality Standard
(Revised)

AQPSTR 11-03

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EXECUTIVE SUMMARY

This document describes Illinois' Maintenance Plan for the Illinois portion of the St. Louis ozone nonattainment area (NAA), hereafter referred to as the Metro-East NAA. A Maintenance Plan is required before an area can be redesignated from nonattainment to attainment of a National Ambient Air Quality Standard (NAAQS). This document provides technical information required to support a request to redesignate the Metro-East NAA to attainment of the 1997 8-hour ozone NAAQS. This revision incorporates motor vehicle emissions estimates developed using the U.S. EPA's MOVES model. The Illinois Environmental Protection Agency (Illinois EPA) has prepared this plan in consultation with the Missouri Department of Natural Resources (MDNR) and the U.S. EPA. The MDNR is preparing a similar plan for the Missouri portion of the St. Louis nonattainment area.

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. The entire St. Louis nonattainment area has at least three years of complete, quality assured ambient air quality monitoring data for 2007-2009 that demonstrates compliance with the 1997 8-hour ozone NAAQS. These air quality improvements are due to permanent and enforceable emissions control measures.

This Maintenance Plan provides for continued attainment of the 1997 8-hour ozone air quality standard for the Metro-East nonattainment area for a period of at least ten years after U.S. EPA has formally redesignated the area to attainment. The Plan also provides assurances that, even if there is a subsequent violation of the air quality standard, measures listed in the Plan will prevent any future occurrences through contingency measures that would be triggered upon such an occurrence. Finally, the Plan includes on-road motor vehicle emissions budgets for the years 2008 and 2025 for use in transportation conformity determinations to assure that any increases in emissions from this sector do not jeopardize continued attainment of the 8-hour ozone standard during the maintenance period.

1.0 INTRODUCTION

This document describes Illinois' 8-hour ozone Maintenance Plan for the Metro-East NAA. This Maintenance Plan is required before the area can be redesignated from nonattainment to attainment of the National Ambient Air Quality Standard (NAAQS) for ozone promulgated by the U.S. Environmental Protection Agency (U.S. EPA) in 1997. Illinois intends to submit such a request to the U.S. EPA in conjunction with this Maintenance Plan. The Illinois EPA has prepared this plan in consultation with the Missouri Department of Natural Resources (MDNR) and U.S. EPA. The MDNR is preparing a similar plan for the Missouri portion of the St. Louis nonattainment area. The entire St. Louis nonattainment area has at least three years of complete, quality assured ambient air quality monitoring data for 2007-2009, demonstrating attainment with the 0.080 ppm 8-hour ozone NAAQS promulgated in 1997.

This document provides the technical information needed to support a request to redesignate the St. Louis area to attainment. Section 107 of the Clean Air Act (CAA) establishes specific requirements to be met in order for a nonattainment area to be considered for redesignation. Before an area can be reclassified to attainment, U.S. EPA must make a determination that the area has attained the NAAQS based on at least three complete years of ambient monitoring data. U.S. EPA must have approved a State Implementation Plan (SIP) for the area under Section 110 and Part D of the CAA. 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. Finally, the state must submit, and U.S. EPA must approve, a Maintenance Plan under Section 175(A) of the CAA, including provisions for contingency measures that will be implemented if future violations of the NAAQS are measured.

This Maintenance Plan provides for the continued attainment of the 8-hour ozone NAAQS for the Metro-East NAA for a minimum of ten years after U.S. EPA has formally redesignated the area to attainment. The Plan also provides assurances that even if a subsequent violation of the ozone NAAQS occurs, provisions in the Plan will prevent any future occurrences through contingency measures that would be triggered upon such occurrence.

This document addresses the Maintenance Plan requirements established by the CAA and U.S. EPA, and includes additional information to support continued compliance with the 8-hour ozone NAAQS.

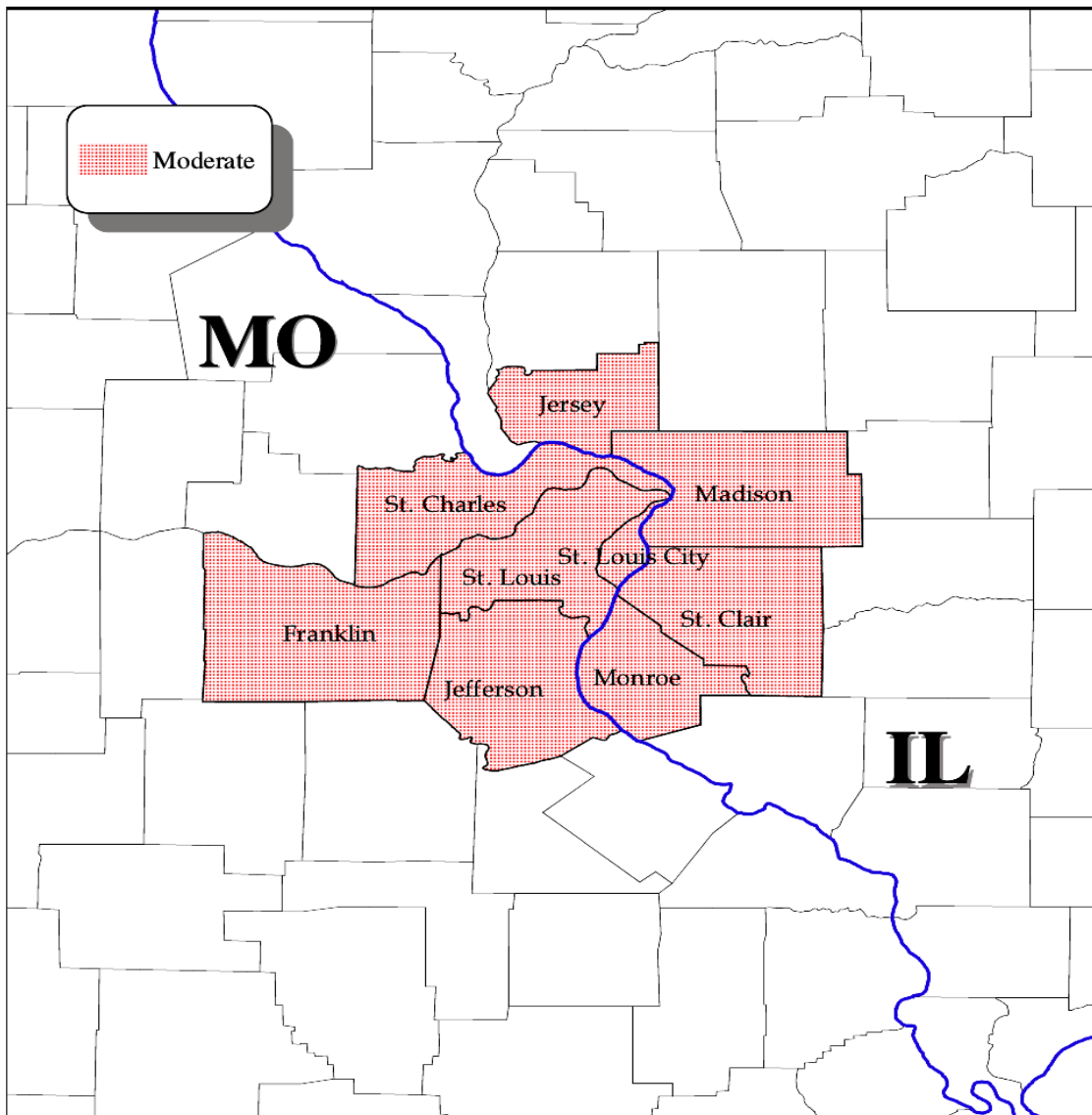
1.1 Regulatory Background

The CAA requires areas that fail to meet the NAAQS for ozone to develop SIPs to expeditiously attain and maintain the NAAQS. Historically, exceedances of the ozone NAAQS have been monitored in Madison and St. Clair counties in Illinois and in the Missouri portion of the NAA.

The Metro-East NAA, which includes Madison, Monroe, St. Clair, and Jersey counties in Illinois, was originally designated as nonattainment in 2004 pursuant to the 1997

revisions to the ozone NAAQS. Several counties in Missouri were also designated as nonattainment of the 8-hour ozone NAAQS. Figure 1.1 depicts the current St. Louis Missouri-Illinois NAA.

Figure 1.1
8-Hour Ozone Nonattainment Area
St. Louis, MO-IL



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

The following is a list of the counties contained in the St. Louis Missouri-Illinois 8-hour ozone nonattainment area:

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

As a result of the nonattainment designation and the accompanying classification as moderate, these areas were subject to new requirements, including development of a plan demonstrating that the area would meet the federal 8-hour ozone NAAQS by June 15, 2010.

Recognizing the need for a regional solution, the States of Illinois and Missouri have worked cooperatively to jointly develop and evaluate an effective regional attainment strategy to enable the St. Louis region to attain the 8-hour ozone NAAQS. The attainment strategy recognizes the importance of reducing both locally generated ozone precursor emissions, volatile organic material (VOM) and oxides of nitrogen (NO_x), as well as incoming (transported) ozone and ozone precursor emissions. The emissions reductions needed to attain the 8-hour ozone NAAQS include both State and Federal measures that have reduced ozone precursor emissions both locally and regionally. These measures have allowed the St. Louis Missouri-Illinois NAA to attain the 8-hour ozone standard by the attainment deadline established by the U.S. EPA.

1.2 Status of Air Quality

Ozone monitoring data for the most recent three-year period, 2007 through 2009, demonstrates that air quality has met the 1997 8-hour ozone NAAQS in the St. Louis Missouri-Illinois NAA. Information regarding the air monitoring network and air quality monitoring data is included in Section 3.0 and Appendix A.

2.0 REDESIGNATION AND MAINTENANCE PLAN REQUIREMENTS

Sections 107 and 110 of the CAA list a number of requirements that must be met by nonattainment areas prior to consideration for redesignation to attainment. One of those requirements is the development of a Maintenance Plan, which describes a state's plan for maintaining the NAAQS for a minimum ten-year period after redesignation to attainment. U.S. EPA has published guidance for the preparation of Maintenance Plans and redesignation requests, contained in a document entitled "Procedures for Processing Requests to Redesignate Areas to Attainment" (September 4, 1992).

Before a redesignation to attainment can be promulgated, U.S. EPA must:

- Determine that the NAAQS for ozone, as published in 40 CFR 50.4, has been attained. Ozone monitoring data must show that violations of the NAAQS are no longer occurring. This showing must rely on three consecutive years of data. The ambient air monitoring data must be quality assured in accordance with 40 CFR 58.10, recorded in U.S. EPA's Air Quality System (AQS) data base, and made available to the public.
- Approve the state's plan for demonstrating attainment. The attainment plan, which is based on air quality modeling, must contain enforceable control measures and must be submitted as a revision to the state's SIP after a public hearing.
- Determine that the improvement in air quality between the year violations occurred and the year that attainment was achieved is based on permanent and enforceable emissions reductions.
- Approve the state's Maintenance Plan. The requirements for the Maintenance Plan are discussed below.
- Determine that all other requirements applicable to nonattainment areas have been met.

A Maintenance Plan provides for the continued attainment of the 8-hour ozone NAAQS for a nonattainment area for a period of at least ten years after U.S. EPA has formally redesignated the area to attainment. The plan also provides assurances that even if a subsequent violation of the NAAQS occurs, provisions in the plan will prevent any future occurrences through contingency measures that would be triggered upon such occurrence. To be approvable, the state is required to have a public comment period and provide the opportunity for a public hearing on the Maintenance Plan prior to adoption. The Maintenance Plan must contain the following elements:

- A comprehensive emissions inventory of the precursors of ozone completed for the "attainment year";

- 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;
- A commitment that, once redesignated, the state will continue to operate an appropriate monitoring network to verify maintenance of the attainment status;
- A demonstration of legal authority to implement and enforce all control measures contained in the SIP;
- Provisions for future updates of the inventory to enable tracking of emissions levels, including an annual emissions statement from major sources;
- Motor vehicle emissions budgets for transportation conformity for the maintenance period;
- A commitment to submit a revised Maintenance Plan eight years after redesignation;
- A commitment to enact and implement additional contingency control measures expeditiously in the event that future violations of the NAAQS occur;
- A list of potential contingency measures that would be implemented in such an event.

This Maintenance Plan has been prepared in accordance with the requirements specified in U.S. EPA's guidance document and additional guidance received from U.S. EPA staff.

The following sections of this document describe how U.S. EPA's requirements have been met.

3.0 OZONE MONITORING

U.S. EPA's published guidance document, "Procedures for Processing Requests to Redesignate Areas to Attainment" (September 4, 1992), details specific requirements regarding the collection and use of ambient air monitoring data needed to support a redesignation request. Before the Metro-East NAA can be redesignated, Illinois must demonstrate that the 8-hour ozone NAAQS has been attained. Ozone monitoring data must show that violations of the NAAQS are no longer occurring within the nonattainment area. This showing must rely on three complete, consecutive calendar years of quality assured data. Further, the air monitoring data must be quality assured in accordance with 40 CFR 58.10, recorded in U.S. EPA's AQS data base, and made available to the public. Finally, Illinois must commit to continue to operate an appropriate monitoring network to verify the maintenance of the attainment status, once the area has been redesignated.

The following subsections describe how each of these requirements has been addressed.

3.1 Monitored Design Values

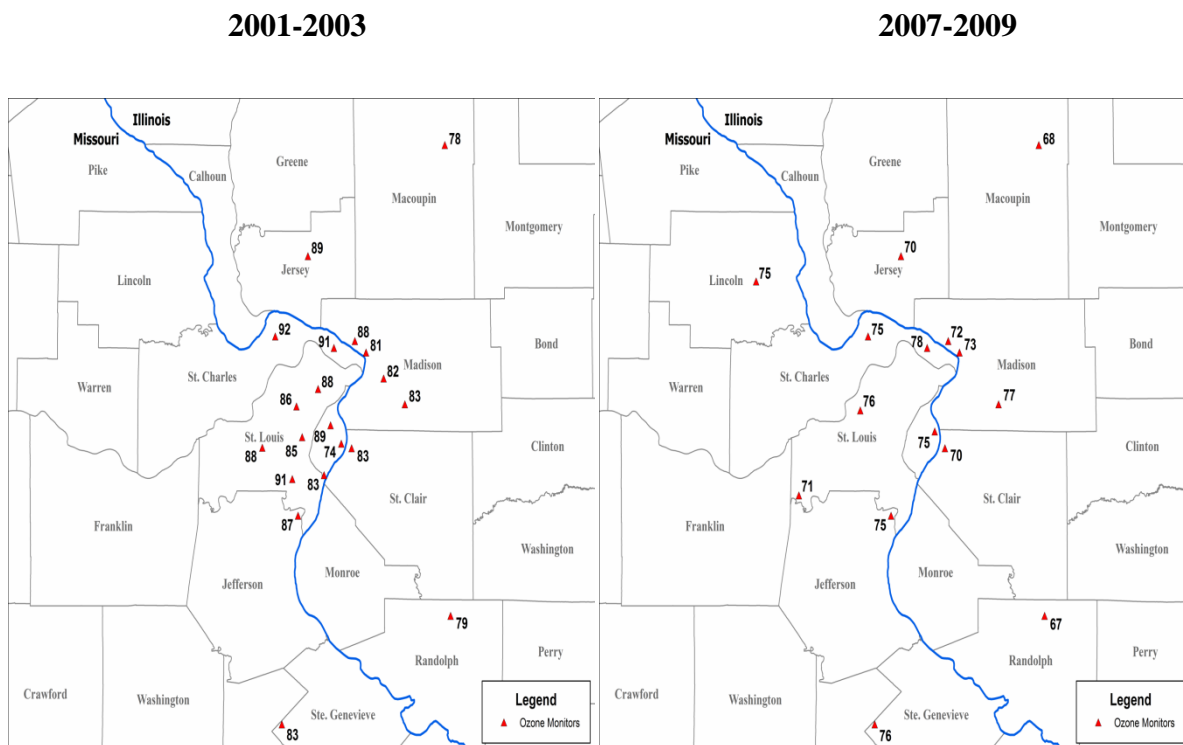
Currently there are 11 ozone monitors located in the nonattainment counties in the St. Louis region; 6 are located in Missouri and 5 are in Illinois. Missouri and Illinois also operate ozone monitors at locations upwind and downwind of the metropolitan area. Figure 3.1 shows the locations of these monitors.

Figure 3.1 Ozone Monitors in the St. Louis Area



To determine whether the NAAQS is being exceeded, the 8-hour ozone design value must be calculated. The current U.S. EPA method for calculating the ozone design value is to average each monitor's 4th highest daily maximum 8-hour value for each year over the 3-year period and compare the calculated design values to the 0.080 ppm (or 85 ppb) level of the NAAQS. The calculated 8-hour ozone design values for the monitors in the St. Louis Missouri-Illinois NAA for 2007-2009 are included as Appendix A of this report. Figure 3.2 compares the design values for the 2001-2003 period for monitoring stations in the St. Louis region to the corresponding design values from 2007-2009. The data demonstrate that ozone air quality has improved dramatically throughout the St. Louis region and that the 1997 8-hour ozone NAAQS has been attained for the 2007-2009 period at all locations.

Figure 3.2
Comparison of 8-Hour Ozone Design Values (ppb) for the St. Louis Region
Between 2001-2003 and 2007-2009



3.2 Quality Assurance

Illinois EPA has quality assured all monitoring data shown in Appendix A for all sites located in Illinois in accordance with 40 CFR 58.10 and the Illinois EPA's Quality Assurance Plan, which describes Illinois EPA's standard operating procedures for operating the ambient monitoring network and validating the data. The Missouri DNR has a similar quality assurance plan. Illinois EPA has recorded the monitoring data in the U.S. EPA's AQS database, which is available to the public.

3.3 Continued Monitoring

Illinois commits to continue monitoring ozone levels according to a U.S. EPA approved monitoring plan, as required to ensure maintenance of the ozone NAAQS. Should changes in the location of an ozone monitor become necessary, Illinois EPA will work with U.S. EPA to ensure the adequacy of the monitoring network. Illinois EPA will continue to quality assure the monitoring data to meet the requirements of 40 CFR 58. Illinois EPA will continue to enter all data into AQS on a timely basis in accordance with federal guidelines.

4.0 EMISSIONS INVENTORY

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 Section 3.0, a three-year monitoring period is used to evaluate whether attainment has been achieved. In this Section, the “attainment year” refers to the mid-point year (2008) of the three-year period (2007-2009) used to demonstrate attainment. The request should also include a projection of the emissions inventory to a year at least 10 years following redesignation, a demonstration that the projected level of emissions is sufficient to maintain the ozone NAAQS, and a commitment to provide future updates of the inventory to enable tracking of emissions levels during the 10-year maintenance period.

4.1 Attainment Year Inventory - 2008

Illinois EPA has prepared a comprehensive emissions inventory for the Metro-East ozone nonattainment area, including point, area, and on-road and off-road mobile sources for precursors of ozone (VOM and NO_x) for the attainment year, 2008. This inventory is based on actual or projected activity levels. Point source information was compiled from 2008 annual emissions reports submitted to the Illinois EPA by emissions sources and the U.S. EPA’s Clean Air Markets Division database for electric utilities. Area source emissions were calculated using the most recently available methodologies and emissions factors from U.S. EPA along with activity data (typically population, employment, fuel use, etc.) specific to 2008. On-road mobile source emissions were calculated using U.S. EPA’s MOVES emissions model with 2008 vehicle miles traveled (VMT) data provided by the Illinois Department of Transportation (IDOT). Off-road mobile source emissions were calculated for summer 2008 using U.S. EPA’s NONROAD emissions model. Biogenic emissions are not included in these summaries.

Table 4.1 summarizes the 2008 emissions estimates for the Metro-East ozone nonattainment area. This summary has been revised to incorporate emissions estimates for on-road mobile sources using U.S. EPA’s MOVES model.

Table 4.1
2008 Metro-East Ozone Nonattainment Area
VOM and NO_x Emissions
(Emissions stated in tons per ozone season weekday)

Source Category	VOM	NO _x
Point Sources	11.92	39.86
Area Sources	23.21	1.50
On-Road Mobile Sources	17.27	52.57
Off-Road Mobile Sources	12.66	39.25
Total	65.06	133.18

4.2 Air Quality Improvements and Emissions Controls

The Metro-East area was designated as nonattainment of the 1997 8-hour ozone NAAQS in 2004, based on ozone air quality monitoring data collected between 2001 and 2003. Since that time, permanent and enforceable reductions of ozone precursor emissions have contributed to improvements in ozone air quality and to the attainment of the 8-hour ozone NAAQS. Some of these emissions reductions were due to the application of tighter federal emissions standards on motor vehicles and fuels, and some due to the requirements of the federal NO_x SIP Call. Section 5.0 of this report describes these reductions in more detail, along with an explanation of their regulatory status. In this subsection, the 2008 attainment year emissions levels are compared to the base year 2002 emissions levels.

U.S. EPA's 8-hour Ozone Implementation Rule required that states with ozone nonattainment areas prepare and submit a 2002 base year inventory of anthropogenic sources of ozone precursor emissions. This base year inventory included emissions from point, area, on-road mobile and off-road mobile emissions. Illinois EPA prepared and submitted this inventory in June 2006. Table 4.2 summarizes 2002 emissions by major source category and by pollutant for the Metro-East NAA. This summary has been revised to incorporate emissions estimates for on-road mobile sources using U.S. EPA's MOVES model.

Table 4.2
2002 Metro-East Ozone Nonattainment Area
VOM and NO_x Emissions
(Emissions stated in tons per ozone season weekday)

Source Category	VOM	NO _x
Point Sources	17.41	53.24
Area Sources	29.86	1.40
On-Road Mobile Sources	25.90	76.82
Off-Road Mobile Sources	12.04	36.79
Total	85.21	168.25

Comparing the 2002 inventory to that for 2008 indicates that total VOM emissions in the Metro-East area decreased by 20.15 tons per day (tpd), due largely to reductions from point and on-road mobile sources. NO_x emissions in the Metro-East area decreased significantly, 35.07 tpd, during the same time period. Again, these reductions were primarily from point and on-road mobile sources. These sizeable emissions reductions in ozone precursor emissions, and corresponding reductions in the Missouri portion of the NAA, plus reductions in upwind areas in Illinois and other nearby states, resulted in a substantial improvement in ozone air quality in the St. Louis area, ultimately resulting in attainment of the 1997 8-hour ozone NAAQS.

4.3 Emissions Projections

A Maintenance Plan must contain a demonstration that the level of emissions projected for the ten-year period following redesignation are sufficient to maintain the NAAQS. Accordingly, Illinois EPA has projected VOM and NO_x emissions for the Metro-East NAA for 2025. Illinois EPA has also projected emissions to 2015 and 2020, to represent two midpoint years during the maintenance period. Emissions for these three projection years are compared to emissions levels in 2008 to determine if emissions are sufficient to maintain the NAAQS during this period.

Metro-East area point and area source emissions for 2015, 2020, and 2025 were estimated using the 2008 base year inventory and growth factors appropriate for each source category. Off-road emissions projections were developed using the growth factors contained in U.S. EPA's NONROAD model. On-road motor vehicle emissions were estimated using U.S. EPA's MOVES motor vehicle emissions model. The figures assume the continued use of reformulated gasoline, the continued phase-in of the Tier 2 motor vehicle emissions standards, and operation of an enhanced vehicle inspection and maintenance (I/M) program. Total vehicle miles of travel (VMT) for 2015, 2020, and 2025 were assumed to increase at a rate of 1.5 percent per year from 2008.

Tables 4.3, 4.4, and 4.5 include the VOM and NO_x emissions estimates for the years 2015, 2020, and 2025, respectively, for the Metro-East nonattainment area.

Table 4.3
2015 Metro-East Ozone Nonattainment Area
VOM and NO_x Emissions
(Emissions stated in tons per ozone season weekday)

Source Category	VOM	NO _x
Point Sources	13.70	31.86
Area Sources	23.76	1.55
On-Road Mobile Sources	9.11	27.85
Off-Road Mobile Sources	9.27	36.41
Total	55.84	97.67

4.4 Demonstration of Maintenance

Table 4.6 demonstrates that the level of emissions projected for the ten-year period following redesignation is sufficient to maintain the ozone NAAQS. As shown in the table, both VOM and NO_x emissions within the nonattainment area are expected to decrease significantly between 2008 and 2025. Projected VOM and NO_x emissions for the mid-point years, 2015 and 2020, are also less than the emissions levels in 2008.

Based on these emissions trends it is expected that air quality will continue to meet the 1997 8-hour ozone NAAQS throughout the maintenance period.

Table 4.4
2020 Metro-East Ozone Nonattainment Area
VOM and NO_x Emissions

(Emissions stated in tons per ozone season weekday)

Source Category	VOM	NO _x
Point Sources	14.73	30.71
Area Sources	25.04	1.56
On-Road Mobile Sources	4.99	16.32
Off-Road Mobile Sources	7.73	33.56
Total	52.49	82.15

Table 4.5
2025 Metro-East Ozone Nonattainment Area
VOM and NO_x Emissions

(Emissions stated in tons per ozone season weekday)

Source Category	VOM	NO _x
Point Sources	15.78	32.12
Area Sources	26.32	1.58
On-Road Mobile Sources	5.68	15.22
Off-Road Mobile Sources	7.31	32.33
Total	55.09	81.25

Table 4.6
Comparison of 2008, 2015, 2020, and 2025 Emissions Estimates
Metro-East Nonattainment Area

(Emissions stated in tons per ozone season weekday)

	2008	2015	Difference (2008 – 2015)	2020	Difference (2008 – 2020)	2025	Difference (2008 – 2025)
VOM	65.06	55.84	9.22	52.49	12.57	55.09	9.97
NO_x	133.18	97.67	35.51	82.15	51.03	81.25	51.93

In addition to the overall emissions reductions projected to occur within the nonattainment area, significant reductions of statewide NO_x emissions resulting from

implementation of Illinois' multi-pollutant standards affecting electric utilities by 2012, will also help to ensure continued attainment of the 8-hour ozone NAAQS.

4.5 Provisions for Future Updates

As required by Section 175A(b) of the CAA, Illinois commits to submit to U.S. EPA, eight years after redesignation, a revised version of this Maintenance Plan. The revision will contain Illinois' plan for maintaining the 8-hour ozone NAAQS for ten years beyond the first 10-year period after redesignation.

5.0 CONTROL MEASURES AND REGULATIONS

This section provides specific information on the control measures implemented in the Metro-East nonattainment area, including the measures that were part of Illinois' Attainment Demonstration, Reasonable Further Progress (RFP) demonstration, CAA requirements, and other state and federal measures. The control measures required in past ozone SIP revisions have been fully implemented, and other, more recent control programs will continue to provide emissions reductions in future years. Illinois EPA commits to keep these measures in effect after redesignation, or to provide equivalent emissions levels using alternate measures. Illinois' SIP contains acceptable provisions to provide for preconstruction review of new emissions sources. After redesignation to attainment, Prevention of Significant Deterioration (PSD) requirements will apply to the construction of new major sources and to significant modifications of existing sources. Illinois has accepted delegation from U.S. EPA of this program. Illinois further commits to continue to require that all future transportation plans in the St. Louis area conform with the SIP.

5.1 Attainment Demonstration Control Measures

Illinois' attainment demonstration for the Metro-East nonattainment area identified control measures that had been promulgated at either the state or federal level that are sufficient to allow the region to meet the 1997 8-hour ozone NAAQS by the required attainment date. The attainment demonstration, which was submitted to U.S. EPA after a public hearing and public comment period, is described in the Illinois EPA's document: "8-Hour Ozone Attainment Demonstration for the Metro-East Nonattainment Area" (Report Number AQPSTR 07-02, June 15, 2007). The primary emissions reduction measures for demonstrating attainment of the ozone standard are as follows:

- NO_x SIP Call and Clean Air Interstate Rule (CAIR)
- New Source Performance Standards (NSPS) and National Emissions Standards for Hazardous Air Pollutants (NESHAPS)/Maximum Achievable Control Technology (MACT) Standards
- VOM Solvent Categories: Aerosol Coatings, Architectural and Industrial Maintenance (AIM) Coatings, Consumer Solvents
- Vehicle I/M Program
- Reformulated Gasoline
- Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements

- On-Highway Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements
- Federal Emissions Standards for Off-Road Equipment (e.g., Nonroad Diesel Engine Rule, Evaporative Large Spark Ignition and Recreational Vehicle Standards) incorporated into NONROAD Model
- Tier 4 Nonroad Diesel Engine Standards and Diesel Fuel Sulfur Content Restrictions
- Marine Compression-Ignition Engine Standards and Locomotive Engine Standards
- Consent Decrees---Dynegy and ConocoPhillips

5.2 Reasonable Further Progress (RFP)

Since the Metro-East area is classified as a moderate nonattainment area for the 8-hour ozone standard, a 15 percent net reduction in ozone precursor emissions from 2002 levels was required by 2008 in order to meet the RFP requirement. In the Metro-East attainment demonstration, the Illinois EPA relied on NO_x substitution to meet the 15 percent RFP reduction requirement.

The control measures identified in the RFP document, including those listed above, were projected to result in a 6.48 percent reduction in VOM emissions and a 10.01 percent reduction in NO_x emissions from 2002 levels by the year 2008, a total reduction of 16.49 percent. All of the identified emissions control measures were implemented by 2008. These emissions reductions achieve the 15 percent RFP target for the Metro-East NAA.

5.3 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 NAAs. U.S. 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 NAAs is defined as 100 tons per year (tpy). 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.

RACT is not a new requirement under the CAA. Illinois previously addressed RACT requirements in the Metro-East area in developing attainment plans for the 1-hour ozone standard. Illinois has previously adopted RACT requirements for VOM emissions in the NAA. (See 35 Ill. Adm. Code Part 219) The Illinois EPA has evaluated the previously

adopted regulations to determine if the RACT requirement is still being met for 8-hour ozone. The RACT requirement for NO_x was waived for the 1997 8-hour ozone standard, based on U.S. EPA's finding that additional NO_x reductions were not needed for the area to attain the standard.

Sections 172, 182(b)(2), and 182(f) of the CAA require implementation of RACT for sources that are subject to Control Techniques Guidelines (CTGs) that are promulgated by U.S. EPA. The U.S. EPA has issued CTGs defining RACT for those categories of sources that emit the greatest amounts of VOM emissions. Illinois EPA has proposed regulations to implement the revised CTGs issued by the U.S. EPA in 2006, 2007, and 2008. 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. Other than the above mentioned CTGs, Illinois has adopted applicable rules addressing all CTGs published by U.S. EPA for which there are existing sources in the Metro-East NAA.

Non-CTG sources are defined as major VOM sources which are not subject to CTGs, but for which RACT is required. All major sources of ozone precursors located in the ozone NAA that are not subject to individual RACT rules are subject to a generic RACT rule. These rules apply to non-CTG sources that have the potential to emit 100 tons or more per year of VOM. Thus, Illinois has met the obligation to implement RACT on non-CTG VOM sources in the NAA.

It should be noted that other regulatory requirements also affect VOM emissions sources within the Metro-East ozone NAA. These include MACT, federal NSPS, and NESHAPs. These programs satisfy the RACT requirements for specific source categories because these rules are more stringent than RACT. It is concluded from this review that Illinois' existing VOM RACT rules fulfill U.S. EPA's RACT requirements for VOM sources in the Metro-East NAA.

As mentioned previously, the RACT requirement for NO_x was waived under the 1997 8-hour ozone NAAQS. Although the Illinois EPA has adopted NO_x RACT rules, the attainment demonstration for the St. Louis NAA for the 1997 ozone NAAQS did not rely on emissions reductions from the Illinois EPA's NO_x RACT rules. The reductions resulting from this program, when implemented, will help the area to maintain the NAAQS in future years.

5.4 Controls to Remain in Effect

Illinois will maintain all of the control measures listed in this Section to ensure maintenance of the 8-hour ozone NAAQS. Any revisions to the control measures included as part of the Maintenance Plan will be submitted as a SIP revision to U.S. EPA

for approval, and will be accompanied by a showing that such changes will not interfere with maintenance of the NAAQS.

Illinois EPA has the necessary resources to enforce any violations of its rules or permit provisions. After redesignation, it intends to continue enforcing all rules that relate to the emissions of ozone precursors in the Metro-East nonattainment area.

5.5 Provisions for Permitting New or Modified Emissions Sources

Illinois has longstanding and fully implemented programs for the review of new major sources and significant modifications of existing sources. The PSD program, which includes requirements for Best Available Control Technology (BACT) on major new sources or significant modifications of existing sources, will be applicable in the Metro-East area once the area has been redesignated to attainment. Illinois has been delegated full authority to implement the PSD program by U.S. EPA.

5.6 Transportation Conformity

The purpose of this section is to describe and establish the Metro-East nonattainment area motor vehicle emissions budgets associated with the 8-hour ozone Maintenance Plan SIP. Average summer weekday motor vehicle emissions budgets are being proposed for the attainment year 2008 and for the final year of the Maintenance Plan, 2025, for the precursor pollutants VOM and NO_x. Although motor vehicle emissions were estimated for the milestone years of 2015 and 2020, only the 2008 and 2025 estimates are being proposed as budgets.

A motor vehicle emissions budget is that portion of the total allowable emissions allocated to highway and transit vehicle use that are defined in the SIP for a certain year. The rules governing transportation conformity require certain transportation activities to be consistent with motor vehicle emissions budgets contained in control strategy implementation plans (40 CFR § 93.118). Section 93.101 of the rule defines a “control strategy [State] implementation plan revision” as a “plan which contains specific strategies for controlling the emissions and reducing ambient levels of pollutants in order to satisfy CAA requirements of reasonable further progress and attainment.” In order to demonstrate conformity to the motor vehicle emissions budget, emissions from the implementation of a transportation plan or a transportation improvement program must be less than or equal to the budget level (40 CFR § 93.118(a)).

The motor vehicle emissions budgets established and described herein were developed consistent with the methodology and control strategy assumptions used in the 8-hour ozone attainment demonstration. The budgets reflect an emissions level determined using actual motor vehicle VMT for 2008 and VMT growth at an annual rate of 1.5% from year 2008 levels to 2025. The effects of motor vehicle control measures are incorporated into the emissions factors produced by the U.S. EPA’s MOVES model. These control measures include the implementation of national motor vehicle emissions standards, the operation of a vehicle I/M program, and the required use of reformulated

gasoline and low sulfur gasoline and diesel fuel.

The motor vehicle emissions budgets, which reflect the VMT and control program assumptions and methodology described here, are listed in Table 5.1.

Table 5.1
Proposed 2008 and 2025 Motor Vehicle Emissions Budgets
Metro-East 8-hour Ozone Maintenance Plan
(tons per ozone season weekday)

Year	VOM	NO_x
2008	17.27	52.57
2025	5.68	15.22

Additional details on the derivation of the motor vehicle emissions budgets, including discussion of the MOVES model inputs and assumptions are included in Appendix B of this report.

6.0 CONTINGENCY MEASURES

6.1 Contingency Measures

Section 175(A) of the CAA specifies the requirements for Maintenance Plans, including provisions for contingency measures that will be implemented if violations of the 8-hour ozone NAAQS are measured after redesignation to attainment. A list of potential contingency measures that would be implemented in such an event should also be included in the Maintenance Plan. Finally, the plan should provide a commitment to submit a revised Maintenance Plan eight years after redesignation to ensure continued maintenance for the next ten-year maintenance period.

Contingency measures are intended to provide further emissions reductions in the event that violations of the 8-hour ozone NAAQS occur after redesignation to attainment. While these measures do not need to be fully adopted by the Illinois Pollution Control Board (IPCB) prior to the occurrence of NAAQS violations, the contingency plan should ensure that the contingency measures are adopted expeditiously once they are triggered. The Maintenance Plan must identify the triggers that determine when contingency measures will be adopted, and the measures that the state will consider.

Illinois EPA's contingency plan for the Metro-East NAA is described in Table 6.1. Consistent with this plan, Illinois agrees to adopt and implement, as expeditiously as practicable, the necessary corrective actions in the event that violations of the 8-hour ozone NAAQS occur within the Metro-East maintenance area after redesignation to attainment. Further, Illinois commits to continue to implement the control measures identified in the attainment demonstration and RFP demonstration. As described in Section 5.0 of this report, Illinois has adopted and is continuing to implement a range of control measures that will greatly reduce precursor emissions, both locally and statewide. The contingency plan anticipates that these emissions reductions will be sufficient to mitigate exceedances or violations of the NAAQS that may occur in the coming years without further regulatory action.

The contingency plan provides for different levels of corrective responses should ambient 8-hour ozone levels exceed the NAAQS in any year, if emissions in the NAA increase significantly above current attainment levels, or if the NAAQS is violated. A Level I response would occur in the event that: 1) the fourth highest 8-hour ozone concentration at any monitoring site in the St. Louis NAA (including sites in Missouri and Illinois) exceeds 84 ppb in any year, or 2) if VOM or NO_x emissions increase more than 5% above the levels contained in the attainment year (2008) emissions inventory. It should be noted that U.S. EPA does not require a state to implement contingency measures when occasional exceedances are recorded. The Illinois EPA's voluntary commitment to initiate a Level I response is intended to prevent future violations of the NAAQS from ever occurring.

Illinois commits to compiling VOM and NO_x emissions inventories for the Metro-East area every three years for the duration of the Maintenance Plan to facilitate the

Table 6.1
Contingency Plan for the Metro-East 8-Hour Ozone Nonattainment Area

Contingency Measure Trigger	Action to be Taken	List of Potential Contingency Measures
<u>Level I Trigger</u> <ul style="list-style-type: none"> 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. The Metro-East maintenance area's NOx or VOM emissions inventories increase more than 5% above the levels included in the 2008 emissions inventories. 	IL will evaluate air quality, or determine if adverse emissions trends are likely to continue. If so, IL will determine what and where controls may be required, as well as level of emissions reductions needed, to avoid a violation of the NAAQS. The study shall be completed within 9 months. If necessary, control measures shall be adopted within 18 months of determination and implemented as expeditiously as practicable, taking into consideration the ease of implementation and the technical and economic feasibility of the selected measures.	<p>Point Source Measures</p> <ul style="list-style-type: none"> IL Multi-Pollutant Program for electric generating units NOx RACT Clean Air Transport Rule, after promulgation by USEPA Best Available Retrofit Technology (BART) Broader geographic applicability of existing measures <p>Mobile Source Measures</p> <ul style="list-style-type: none"> Tier 2 Vehicle Standards and Low Sulfur Fuel Heavy Duty Diesel Standards and Low Sulfur Diesel Fuel High-enhanced I/M (OBDII) Federal railroad/locomotive standards Federal commercial marine vessel engine standards Portable fuel containers <p>Area Source Measures</p> <ul style="list-style-type: none"> Architectural/Industrial Maintenance (AIM) Coatings Commercial and Consumer Products Aerosol coatings
<u>Level II Trigger</u> <ul style="list-style-type: none"> A violation of the NAAQS at any monitoring station in the St. Louis MO-IL maintenance area. 	IL will conduct a thorough analysis to determine appropriate measures to address the cause of the violation. Analysis shall be completed within 6 months. Selected measures shall be implemented within 18 months of a violation.	

emissions trends analysis included in the contingency plan under Level I. The Illinois EPA will coordinate with the Missouri DNR to evaluate the causes of high ozone levels or the emissions trends and to determine appropriate control measures needed to assure continued attainment of 8-hour ozone NAAQS. Under Level I, measures that could be implemented in a short time would be selected so as to be in place quickly after the Illinois EPA is aware that corrective measures have been triggered. Control measures selected under Level I will be adopted in most cases within 18 months after a determination is made, and implemented, generally, within 24 months of adoption by the IPCB.

A Level II response would be implemented in the event that a violation of the 8-hour ozone NAAQS were to be measured at a monitoring site within the St. Louis maintenance area (including sites in Missouri and Illinois). In order to select appropriate

corrective measures, the Illinois EPA will work with the Missouri DNR to conduct a comprehensive study to determine the causes of the violation and the control measures necessary to mitigate the problem. The analysis will examine the following factors:

- the number, location, and severity of the ambient ozone exceedances;
- the weather patterns contributing to the elevated ozone levels;
- potential contributing emissions sources;
- the geographic applicability of possible contingency measures;
- emissions trends, including timeliness of implementation of scheduled control measures;
- current and recently identified control technologies; and
- air quality contributions from outside the maintenance area.

Contingency measures will be selected from those listed in Table 6.1 or from any other measure deemed appropriate and effective at the time the selection is made. It is expected that implementation of only a few of these measures would be necessary. The selection between measures will be based upon cost-effectiveness, emissions reduction potential, ease and timing of implementation, and other appropriate factors.

Implementation of necessary controls in response to a Level II trigger will take place as expeditiously as possible, but in no event later than 18 months after the Illinois EPA makes a determination, based on quality-assured ambient data, that a violation of the NAAQS has occurred.

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

6.2 Commitment to Revise Plan

As noted in Section 4.5 above, the Illinois EPA commits to review its Maintenance Plan eight years after redesignation, as required by Section 175(A) of the CAA. The Maintenance Plan revision is intended to ensure continued attainment of the 8-hour ozone NAAQS for an additional ten-year period.

6.3 Public Participation

In accordance with Section 110(a)(2) of the CAA, the Illinois EPA is required to have a public comment period and provide for the opportunity of a public hearing prior to adoption of this Maintenance Plan and submittal to U.S. EPA. Public participation in the SIP process was provided for as follows:

- Notice of availability of the Metro-East 8-Hour Ozone Maintenance Plan document and the time and date of the public hearing was published in the Illinois

Edition of the St. Louis Post Dispatch on July 8, 2011.

- If requested, the public hearing to receive comments on the Metro-East Maintenance Plan was scheduled for August 18, 2011, at 1:00 p.m. in the Sangamo Room at the Illinois EPA's Headquarters at 1021 N. Grand Ave. East, Springfield, Illinois.
- A 30-day public comment period was also available after the public hearing to receive comments on the Maintenance Plan. A summary of the comments received and Illinois EPA's responses thereto will be included as part of the submittal to U.S. EPA.

6.4 Legal Authority to Implement and Enforce

The Maintenance Plan must contain a demonstration that the State of Illinois has the necessary legal authority to implement and enforce the measures relied upon to attain and maintain the NAAQS. Illinois has the legal authority to implement and enforce the requirements of this SIP submittal pursuant to the Illinois Environmental Protection Act.

7.0 CONCLUSIONS

The Metro-East 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 NAAs. Illinois has submitted an attainment demonstration that was based on air quality modeling and contains enforceable control measures. The attainment demonstration included an RFP Plan which demonstrated the required 15% reduction in ozone precursor emissions. Illinois has performed an analysis that demonstrates that the Metro-East NAA has attained the 1997 8-hour ozone NAAQS and believes the air quality improvements are due to permanent and enforceable control measures. Supporting documentation is contained herein.

The Illinois EPA has prepared a Maintenance Plan that meets the requirement of the Clean Air Act. This Maintenance Plan provides 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. This Maintenance Plan provides 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 Illinois EPA 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 2015, 2020, and 2025. These emissions projections indicate that emissions levels in the Metro-East nonattainment area will continue to remain much lower than emissions from the attainment year 2008 levels, thereby maintaining the ozone NAAQS in future years. The Illinois EPA 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. The Illinois EPA has the legal authority to implement and enforce all control measures.

Finally, the Metro-East Maintenance Plan includes year 2008 and 2025 on-road motor vehicle emissions budgets for use in transportation conformity determinations to assure that any increases in emissions from this sector do not jeopardize continued attainment of the 8-hour ozone standard during the ten-year maintenance period. The Metro-East Maintenance Plan has been prepared in accordance with the requirements specified in U.S. EPA’s guidance document, and additional guidance received from U.S. EPA staff.

APPENDIX A

Summary of Ambient Air Monitoring Data (2007-2009)

Table A.1
2007-2009 8-hour Ozone Design Values
for Monitors in the St. Louis Region

State of Missouri

County	AQS Code	Site Name	Design Value	4th High 2007	4th High 2008	4th High 2009
St. Charles	291831004	Orchard Farm	75	83	72	72
St. Charles	291831002	West Alton	78	89	76	71
St. Louis City	295100085	Blair St	75	87	73	65
St. Louis	291890014	Maryland Hts	76	94	69	67
St. Louis	291890005	Pacific	71	85	64	64
Jefferson	290990019	Arnold/Arnold W	75	87	70	70

State of Illinois

County	AQS Code	Site Name	Design Value	4th High 2007	4th High 2008	4th High 2009
Jersey	170831001	Jerseyville	70	75	69	68
Madison	171190008	Alton	72	81	68	67
Madison	171193007	Wood River	73	86	67	66
Madison	171191009	Maryville	77	87	70	74
St. Clair	171630010	E. St. Louis	70	77	64	69

APPENDIX B

Transportation Conformity

TRANSPORTATION CONFORMITY

This section describes the development of the Metro-East nonattainment area motor vehicle emissions budgets associated with the revised Maintenance Plan for the 1997 8-hour NAAQS. Average summer weekday motor vehicle emissions budgets are being proposed for the attainment year 2008 and for the Maintenance Plan year 2025 for the ozone precursor pollutants volatile organic material (VOM) and oxides of nitrogen (NO_x). These budgets were developed consistent with the motor vehicle activity assumptions and emissions control strategies incorporated into the Metro-East 8-hour ozone Attainment Demonstration analysis. The enclosed budgets were developed using emission factors generated by the United States Environmental Protection Agency's (U.S.EPA) MOVES model. These emission factors were then multiplied by summer weekday vehicle miles of travel (VMT) converted by the model from actual and projected annual VMT levels.

Background

Section 176(c)(4) of the Clean Air Act Amendments of 1990 requires that transportation plans, programs, and projects which are funded or approved under Title 23 of the United States Code (USC) must be determined to conform with State or Federal air implementation plans. A motor vehicle emissions budget is that portion of the total allowable emissions allocated to highway and transit vehicle use that are defined in the SIP for a certain year. Section 93.101 of the rule defines a "control strategy [State] implementation plan revision" as a "plan which contains specific strategies for controlling the emissions and reducing ambient levels of pollutants in order to satisfy Clean Air Act (CAA) requirements of reasonable further progress and attainment." In order to demonstrate conformity to the motor vehicle emissions budget, emissions from the implementation of a transportation plan or a transportation improvement program (TIP) must be less than or equal to the budget level (40 CFR § 93.118(a)).

Transportation conformity will be determined based on these proposed on-road motor vehicle emissions budgets after the U.S. Environmental Protection Agency (U.S. EPA) determines that the budgets meet the adequacy criteria of the transportation conformity rule under §93.118(e). The motor vehicle emissions budgets in this submittal are adequate as each of the six criteria under §93.118(e) is satisfied. These six criteria include:

1. The submitted control strategy implementation plan revision or Maintenance Plan was endorsed by the Governor (or his or her designee) and was subject to a State public hearing.
2. Before the control strategy implementation plan or Maintenance Plan was submitted to U.S. EPA, consultation among federal, State, and local agencies occurred; full implementation plan documentation was provided to U.S. EPA; and U.S. EPA's stated concerns, if any, were addressed;
3. The motor vehicle emissions budgets(s) is clearly identified and precisely quantified;

4. The motor vehicle emissions budget(s), when considered together with all other emissions sources, is consistent with all applicable requirements for reasonable further progress, attainment, or maintenance (whichever is relevant to the given implementation plan submission);
5. The motor vehicle emissions budget(s) is consistent with and clearly related to the emissions inventory and the control measures in the submitted control strategy implementation plan revision or Maintenance Plan, and
6. Revisions to previously submitted control strategy implementation plans explain and document any changes to previously submitted budgets and control measures, impacts on point and area source emissions; any changes to established safety margins; and reasons for the changes (including the basis for any changes related to emissions factors or estimates of vehicle miles traveled).

Regarding adequacy criterion #1, this State Implementation Plan and the associated motor vehicle emissions budgets have been developed by the Illinois Environmental Protection Agency (Illinois EPA), the designated air quality agency for the State of Illinois. The public hearing to accept public comment on the original proposed Maintenance Plan and budgets was held on April 8, 2010 in Collinsville, Illinois. Notification of this hearing was published in the Belleville News Democrat, East St. Louis Monitor, and Alton Telegraph on March 5, 2010 and in the Granite City Press Record Journal on March 7, 2010. Comments on the proposed Maintenance Plan and associated motor vehicle emissions budgets were accepted for 30 days after the public hearing. A "Responsiveness Summary" which addressed the written comments received was prepared and included in the submission to the U.S.EPA.

Notification of the revised Maintenance Plan and associated MOVES-based motor vehicle emissions budgets will be placed in local area newspapers and on the Illinois EPA's web site. Comments will be accepted for 30 days. All comments will be addressed in a "Responsiveness Summary" which will be included in the final submission to the U.S. EPA.

In compliance with criterion #2 above, an Inter-Agency Conformity Consultation Team meeting was held at the offices of the East-West Gateway Council of Governments on January 26, 2010. The Consultation Team includes representatives from the Federal Highway Administration, the U.S. EPA, the East-West Gateway Council of Governments (EWGCOG), the Missouri Department of Transportation, the Missouri Department of Natural Resources, the Illinois Department of Transportation (IDOT), and the Illinois EPA. At this meeting the development of the proposed Maintenance Plan motor vehicle emissions budgets was discussed. The draft Maintenance Plan was also forwarded to the U.S. EPA Region V representative for his review and comment. A follow-up meeting of the Inter-Agency Consultation Team to discuss the revised motor vehicle emissions budgets was held on June 14, 2011.

The motor vehicle emissions budgets proposed and described herein were, in compliance

with adequacy criterion #5, developed consistent with the methodology and control strategy assumptions used in the Metro-East 1997 8-hour Ozone Attainment Demonstration as well as the associated Reasonable Further Progress (RFP) plan. The effects of these controls are incorporated into the emissions factors produced by the U.S. EPA's MOVES model. In response to adequacy criteria 4 and 6, the narrative of the Metro-East 8-hour Ozone Maintenance Plan discusses the emissions estimates from other sectors and any changes in regulations. Following, in response to adequacy criteria #3, is a discussion of the inputs and assumptions incorporated into the development of the proposed Maintenance Plan motor vehicle emissions budgets.

Vehicle Miles Traveled: The proposed Metro-East 8-hour Ozone Maintenance Plan attainment year 2008 motor vehicle emissions budgets were developed using actual annual 2008 county-level vehicle miles travelled (VMT) data from the IDOT. The 2008 annual VMT for the 4-county (Madison, Monroe, St. Clair and Jersey) Metro-East St. Louis 8-hour ozone nonattainment area was 5.878 billion miles. This figure was projected to the Maintenance Plan end year, 2025, using an annual growth rate of 1.5 percent, yielding an annual VMT of 7.57 billion. These annual VMT figures are model inputs and converted to summer weekday levels.

Following is a summary of the information and MOVES model assumptions used in the development of the draft motor vehicle emissions budgets.

Meteorological Data: U.S. EPA guidance for the use of the MOVES model requires the use of local temperature and absolute humidity data. Average 2008 maximum and minimum monthly temperatures for the region were obtained from the National Weather Service observations for St. Louis Lambert Airport. Corresponding absolute humidity levels were determined for the observed temperatures. These 2008 temperatures and absolute humidity values were used in the year 2025 emissions modeling.

Motor Vehicle Emissions Controls: Beyond the U.S. EPA's federal motor vehicle control program emissions standards, the primary local motor vehicle emissions control programs that were in place in the Metro-East NAA in 2008 and are projected to still be required are a vehicle I/M program and the required use of Reformulated Gasoline.

Inspection and Maintenance (I/M): The Illinois I/M program in effect since 2007 requires biennial On-Board Diagnostics II (OBD) testing on all model year (MY) 1996 and newer (MY96+) light-duty gasoline vehicles, and biennial exhaust idle and gas cap testing on MY96+ heavy duty gasoline vehicles including gasoline-powered buses, registered in the I/M testable area. Motorcycles and diesel vehicles are not subject to I/M. The program includes a 4-year grace period for new vehicles. This post-2007 I/M program was established when the Illinois legislature amended the Illinois Vehicle Inspection law in 2005 to (a) end dynamometer testing of vehicles, (b) require an OBD-based program beginning in February 2007, and (c) remove the requirement for testing compliant pre-MY96 vehicles.

The Metro-East vehicle testing domain includes the urbanized areas in Madison, Monroe and St. Clair Counties. There are no urbanized areas in Jersey County. An "I/M

Coverage” percentage was developed based on the amount of VMT from vehicles subject to the inspection program compared to total area VMT. The I/M Coverage percentage for the Metro-East 8-hour ozone nonattainment area is 84%.

Fuels: The use of federal Reformulated Gasoline (RFG) has been required in the Metro-East St. Louis NAA since 2007 and the St. Louis, Missouri area since 2001. Since the Metro-East NAA is a part of the St. Louis NAA, classified a “southern” area for purposes of motor fuel control programs, southern grade RFG is required and assumed to be used in the Metro-East area. The 8-hour ozone Attainment Demonstration assumed the use of southern grade RFG in 2008 and beyond. RFG was assumed to contain 10% ethanol. The MOVES model can account for other fuels, such as E85, natural gas, methanol, etc, but for all practical purposes the gallons of such alternative fuels and hence the number of vehicles using them is very small compared to the number of gasoline and diesel vehicles, therefore, the use of such fuels was not considered.

Gasoline Sulfur: The federal Tier 2 regulations require gasoline sulfur levels to average no greater than 30 parts per million (ppm) with a maximum of 80 ppm beginning in 2007. There are no Illinois gasoline sulfur requirements. Therefore, the MOVES gasoline sulfur levels were used in the emissions modeling.

Diesel Sulfur: The federal Tier 2 regulations limit the level of sulfur in diesel fuel requiring on- highway diesel fuel to 15 ppm beginning in 2006. There are no Illinois diesel sulfur requirements. Therefore, the MOVES diesel sulfur levels were used in the emissions modeling.

Fuel Volatility: The volatility of summer RFG, measured as Reid vapor pressure (RVP), is not specifically regulated. However, a fuels’ RVP is one of the primary characteristics controlled in order to meet the RFG performance standards. Therefore, the MOVES RVP levels were used in the emissions modeling.

Registration Distribution: The Registration Distribution (RD) is the fraction of vehicles of a given vehicle type and age in the fleet of vehicles of that type as a whole. Different vehicle types have different RDs. A Metro-East area-specific vehicle registration distribution profile based upon 2008 information data was developed by Illinois EPA’s Division of Mobile Source Programs from data provided by the Illinois Secretary of State’s Department of Motor Vehicles. This profile is assumed to remain valid for 2025.

Source Type Population represents the number of vehicles of each MOVES vehicle type in the fleet as a whole within the area under consideration. Accurate local source-type populations were not available; therefore the MOVES default fractions modified by VMTs by vehicle type were used.

VMT Temporal Fractions are the VMT fractions of annual VMT by month of the year, of weekly VMT by day of the week, and daily VMT by hour of the day. The Illinois EPA uses temporal fractions derived from data collected from continuous count stations and presented by IDOT. Temporal fractions vary by road type.

Speed distributions are the fractions of VMT on a given road type by given vehicle types in various speed ranges (bins). Thus, on a typical Urban Arterial, a small fraction of the vehicles are traveling at less than 10 mph (plus or minus 5 mph), more at 20 mph, more at 30mph, most at 40 mph, less at 50 mph, and so on. These fractions differ by hour of the day—in more congested conditions during rush hours, the maximum fraction might be in the 30 mph range rather than the 40 mph range. The Illinois EPA relied on the MOVES model default speed distributions when aggregating emissions (or emission rates) for vehicles at different speeds.

Ramp fraction is the fraction of total VMT on limited-access highways such as Interstates that is from on- and off-ramps to or from those highways. Driving on limited-access highways is more or less at uniform speed, but driving on ramps involves considerable acceleration and deceleration; and these speed changes affect emissions. The default MOVES Ramp Fractions are 15% on Rural Interstates, 10% on Urban Interstates, and 2% on Other Freeways and Expressways. Illinois does not have actual or observed Ramp Fraction data; therefore the MOVES default values were used.

Road Type Distribution is the (fraction of) VMT on different road categories within an area under consideration. The Illinois EPA uses VMT data by HPMS functional class (FC) published by IDOT as the basis of its emission calculations. The Road Type Distribution for Rural Interstates in a county is the county's Rural Interstate VMT divided by the county's total all-road-type VMT. Similar calculations can be made for MOVES road types and vehicle types.

Motor Vehicle Emissions Budgets

Using the emissions factors and summer weekday VMT generated by the MOVES model, following are the Attainment Year 2008 and Maintenance Plan Year 2025 Metro-East S. Louis 8-hour ozone motor vehicle emissions budgets for use in determining transportation conformity.

Proposed Metro-East 8-hour Ozone Maintenance Plan 2008 and 2025 Motor Vehicle Emissions Budgets (tons per ozone season weekday)		
Year	VOM	NO_x
2008	17.27	52.57
2025	5.68	15.22